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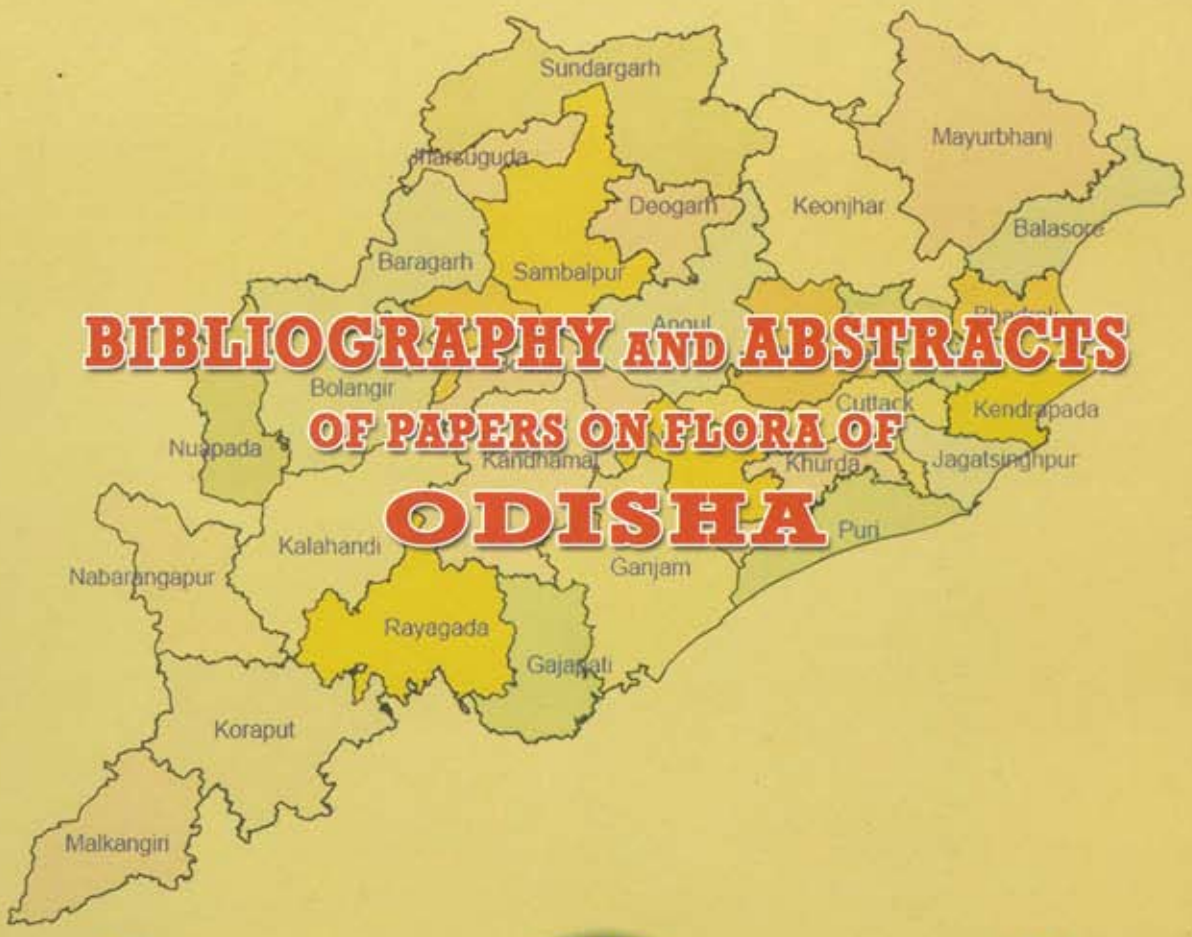

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Ministry of Environment, Forest & Climate Change

ENVIS Centre on Floral Diversity

भारतीय वनस्पति सर्वेक्षण
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Compiled by

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under ENVIS Programme

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ISBN 978-81-8177-086-2

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Ministry of Environment, Forest and Climate Change

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Botanical Survey of India

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Published by the Director, Botanical Survey of India, ENVIS Centre on Floral Diversity, Botanical Survey of India, Central National Herbarium, P.O. Botanic Garden, Howrah – 711 103, West Bengal.

FOREWORD

The ENVIS Centre on Floral Diversity of the Botanical Survey of India has been publishing Bibliography and Abstracts of Papers pertaining to Floras of States and Union Territories of India. In this attempt, the Centre has already published consolidated bibliography and abstracts of papers on flora of West Bengal (in two parts), North East India – I, Andaman and Nicobar Islands, Maharashtra, Kerala, Tamil Nadu, Karnataka, Goa and Andhra Pradesh (including Telangana). In continuation to this series of publication, compilation of wide range of papers pertaining to the flora of Odisha state has been completed by the ENVIS Centre.

Odisha (formerly Orissa), is situated on the east coast of India, lying between 81°27'–87°29' E and 17°49'–22°34' N. The state is bounded by West Bengal to the northeast, Jharkhand to the north, Chhattisgarh to the west and northwest, Andhra Pradesh and Telangana to the south and southwest and on the east by the Bay of Bengal with a coastline of 482 km. The state covers an area of 155,707 km^2, which constitutes 4.87% of total area, is the ninth largest state in the country by geographical area. The state of Odisha divided administratively into 30 districts, and physiographically the state can be divided into four distinct regions namely the Northern Plateau, the Central River Basins, the Eastern Hills and Coastal Plains.

Odisha has diverse topography and variable climatic condition that support a rich and varied flora. In fact, the state has one of the most thickly forested areas in the country. According to "India State of Forest Report 2015", the state has 50,354 km^2 forest-covered area, constitutes 32.33% of total geographical area of the state, and 4.27% of India's forest cover. The state harbours 2,630 species of angiosperms distributed in 1,060 genera and 194 families, of which about 30 taxa are endemic and 144 are threatened.

The state is an abode of 62 different tribes, and has the second highest tribal population in the country; 12 of the 30 districts are predominantly populated with tribal communities. About 30% of wild species occurring in the state are economically important, and the plant resources are predominantly utilized by the tribal communities. The Central Botanical Laboratory (in Howrah) and the Deccan Regional Centre (in Hyderabad) the two units of Botanical Survey of India have been actively involved in inventorization of various types of forests in the state to document the existing plant diversity of Odisha. In fact, the scientific personnel of Central Botanical Laboratory are documenting district-wise the indigenous botanical knowledge of various tribal communities of the state exclusively.

The present work was initiated with an objective to compile the scattered literature to prepare a comprehensive bibliography and abstracts of research articles, floras/books pertaining to the rich and diverse flora of Odisha state. This present issue of bibliography and abstracts of papers on flora of Odisha state consists a total of 1112 references, including 468 on flora, vegetation, and forestry and ecology, 111 references on fungi, lichens and algae, and other non-flowering plant groups and gymnosperms, 168 references on revision, monograph, new discovery, new reports and rediscovery, 14 references on endemism, IUCN threat status and conservation, and 351 references on ethnobotany, sacred groves and medicinal plants. An electronic version of this publication will be made available on ENVIS-BSI website (www.bsienvis.nic.in).

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Director

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INTRODUCTION

Odisha (formerly Orissa), one of the 29 states of India, lying between 81°27'– 87°29' E and 17°49'–22°34' N is situated on the east coast of India. The state is bounded by West Bengal to the northeast, Jharkhand to the north, Chhattisgarh to the west and northwest, Andhra Pradesh and Telangana to the south and southwest and on the east by the Bay of Bengal with a coastline of 482 km, from Balasore to Malkangiri. The state covers an area of 155,707 km^2, which constitutes 4.87% of total area of India, and ranks ninth largest state in the country. The state of Odisha divided administratively into 30 districts namely Angul, Balasore (Baleswar), Bargarh (Baragarh), Bhadrak, Balangir, Boudh (Baudh), Cuttack, Debagarh (Deogarh), Dhenkanal, Ganjam, Gajapati, Jharsuguda, Jajpur, Jagatsinghapur, Khordha (Khurda), Kendujhar (Keonjhar), Kalahandi, Kandhamal, Koraput, Kendrapara, Malkangiri, Mayurbhanj, Nabarangpur, Nuapada, Nayagarh, Puri, Rayagada, Sambalpur, Subarnapur (Sonepur) and Sundergarh. The headquarters of the state, Bhubaneshwar is situated in the district of Khordha.

PHYSIOGRAPHY: The entire geographical region of the state can be divided into four distinct regions namely the Northern Plateau, the Central River Basins, the Eastern Hills and Coastal Plains. The interior region of the state is mostly composed of plateau, which slopes down gently towards the Bay of Bengal into which the great rivers of Odisha fall. Mahanadi, Brahmani and Baitarani, the three major rivers of the state cut wide valleys across the plateau and bring down much sedimentary matter, forming the deltaic area over Puri, Cuttack and Balasore districts. The Chilika Lake, a prominent coastal feature in the state, is the largest brackish water lagoon of Asia, and the first Indian wetland of international importance under Ramsar Convention in 1981 because of its unique biodiversity and socio-economic importance.

(i) Northern Plateau: It covers Mayurbhanj, Keonjhar and Sundargarh districts and Pallahara subdivision of Dhenkanal district. The plateau region is an undulating upland frequently intersected by hill ranges, is a continuation of the Chotanagpur plateau of Bihar. Some of the notable hill ranges found towards north and east of this tract in this region are Malaygiri (1,188 m), Mankarnacha (1,117 m) and Fyleghasani (1,166 m). The plateau forms an important watershed of the rivers Baitarani and Brahmani.

(ii) Central River Basins: The river basins lie between the Northern Plateau and the Eastern Hills comprising the watershed areas of the principal rivers and containing some of the fertile parts of the state. The plains also consist of isolated hills rising abruptly in this tract.

(iii) Eastern Hills: This region is composed of the last stretch of Eastern Ghats lying to the south and southwest of the central river basins, extending for about 248 km in northeast-southwest direction through Koraput, Kalahandi, Phulbani and Ganjam districts. The Eastern Ghats of this region comprises wide open upland plateaus fringed by forests and hills having the tallest peaks in the state as well as in the entire Eastern Ghats. Deomali (1,673 m), Turia

Konda (1,599 m), Singharaju (1,515 m) and Mahendragiri (1,500 m) are some of the prominent peaks. The hills act as the watershed of rivers namely Rushikulya, Nagavali and Vamsadhara, which fall in the Bay of Bengal, and other major rivers in the region feed Godavari and Mahanadi rivers. The hills support luxuriant forests.

(iv) Coastal Plains: This coastal plain region comprises most parts of the districts of Balasore, Cuttack and Puri and a portion of Ganjam district. It has an extensive alluvial tract in between the hills in the west and salt tracts in the east. There are many brackish streams influenced by tidal waters from the sea, forming a littoral zone along the shore of Bay of Bengal. The area is generally sandy in Balasore and Puri but swampy and marshy in Cuttack district.

Rivers: Mahanadi, Brahmani and Baitarani are the major rivers of the state, all running almost parallel from north-west to southeast direction. The state also has several smaller rivers: Salandi, Burabalanga and Subarnarekha, flowing over the northern part of the state; Rushikulya, Vamsadhara, Nagavalli, Indravati, Kolab and Machkund draining in the districts of Ganjam and Koraput in the south.

Geology and Soil: The terrain of the state is by and large made of Precambrian rocks, and about 25% of the land is constituted of the Phenerozoic rocks. The coastal tracts and the Brahmani and Mahanadi valleys composed of Quaternary formations and the recent to sub-recent alluvium. Khondalites and charnockites are the chief rock types of Eastern Ghats in the state.

There are six different types of soils found in the state: (i) Coastal Alluvium (consists of fine sand and soft clay with a saline admixture found along the coastline from Balasore to Chilika in Puri district), (ii) River Alluvium (rich deltaic alluvial soil with large content of clay, found in coastal districts of Balasore, Cuttack, Puri and Ganjam, the richest agricultural lands in the state), (iii) Lateritic Soil (from southwest corner of Koraput to the northern part of Balasore district, especially the Eastern Ghats region), (iv) Red Soil (of both loamy and sandy types, coloured by iron oxide, found in central tableland comprising the Mahanadi-Tel basin and the whole of northern portion of the state from Sundargarh to Mayurbhanj), (v) Brown Soil (found in the thick reserved forest regions of Baliguda subdivision, a portion of Rayagada subdivision and Kalahandi Sadar subdivisions) and (vi) Black Cotton Soil (found in patches in the Central belt on either side of the Mahanadi river and in the northern part of Koraput district).

CLIMATE: The northernmost point of the state being situated below the tropic of Cancer it experiences high temperature and being in the belt of medium pressure has medium rainfall. The state has three main seasons namely winter (December–February), summer (March–June) and rainy season (June–September); October–November (autumn season). The mean maximum day temperature of the state is 32.8°C, which rises to 38.3°C during April and May, and in the inland districts temperature reaches 42°C. The mean minimum temperature is 22.8°C which falls to 15°C in December. The state receives rainfall from northeast and

southwest monsoons. The annual average rainfall in the state is 1,482 mm, and up to 2,000 mm in the hills, mostly from mid-June to end of September. Relative humidity is high throughout the year especially in the coastal region. It usually varies from 60 to 74% in May to 84% in August. Winds are fairly strong, particularly in the coastal region during summer and monsoon months.

INDIGENOUS TRIBAL COMMUNITIES: Of the 30 districts in the state 12 are predominantly populated with tribal communities. There are 62 different indigenous tribes in the state, the second highest tribal population in the country. Of which, Kondh (Kandho, Konda), Gond, Santal, Saora, Kolha, Shabar, Munda, Paroja (Paraja), Bhotada, Bhunya (Bhuiyan), Kissan, Oraon, Bhumija, Bathudi, Kharia, Binjhal, Koya, Bhumia, Kol, Saunti, Gadabas and Mirdhas and Juang are the predominant communities. Districts of Mayurbhanj, Koraput, Sundargarh, Keonjhar, Phulbani and Kalahandi have high concentration of tribal population. As per 2011 Census, the state has 22.85% of tribal population.

VEGETATION: The diversified topography and variable climatic condition of the state support a rich and varied flora. The state has one of the most thickly forested areas in the country. The total forest cover of the state is 50,354 km^2, covering 32.33% of total geographical area of the state, constitute 4.27% of India's forest cover (FSI, 2015). Northern Dry Mixed Deciduous Forest (23.93%), Moist Peninsular Low Level Sal Forest (20.11%) and Dry Peninsular Sal Forest (15.45%) are the three major forest types of the state.

The distribution of the forests within the state is uneven. The coastal region has small patches of littoral and swamp forests, which covers 75.06 km^2 geographical area of the state (only 0.14%). The forest cover is predominantly concentrated in the hilly regions of the state. The forests in the state can broadly be classified under five different types (Champion & Seth, 1968), they are: (i) Tropical Semi-evergreen Forest, (ii) Tropical Moist Deciduous Forest, (iii) Tropical Dry Deciduous forests, (iv) Subtropical Broad-leaved Hill Forest, and (v) Littoral and Swamp Forest.

1. **Tropical Semi-evergreen Forest**: This kind of forest mostly confined to permanently moist valleys in the hills and also found in small patches a little away from the sea, and are characterised by deciduous trees forming the upper canopy, evergreen undergrowth, luxuriant growth of epiphytic flora comprising orchids, ferns and mosses. The predominant constituents are: *Aphanamixis polystachya*, *Artocarpus lakoocha, Beilschmiedia roxburghiana, Bridelia retusa, B. stipularis, Carallia brachiata, Dillenia pentagyna, Diospyros malabarica, Elaeocarpus tectorius, Ficus* spp., *Firmiana colorata, Garcinia xanthochymus, Glochidion* spp., *Grewia disperma, Litsea* spp., *Mesua ferrea, Michelia champaca, Neocinnamomum caudatum, Persea villosa, Phoebe lanceolata, Prunus ceylanica, Schleichera oleosa, Syzygium cumini, Turpinia nepalensis* and *Vitex* spp. The common climbers include *Gnetum ula, Schefflera venulosa, Smilax* spp., *Dioscorea* spp., *Entada rheedii, Clematis* spp., *Cissus repanda, C. adnata and Cayratia auriculata*. The ground flora is rich in herbaceous flora especially during rainy season,

consisting of mostly *Curcuma* spp. and ferns. The epiphytic flora is rich comprising several species of ferns, mosses, lycopods and orchids, and grasses are scantily distributed due to heavy shade.

2. **Tropical Moist Deciduous Forest**: This forest type is found in continuation with semi-evergreen type close to the moist valleys. The top-storey of this forest consists of predominantly deciduous species but the second-storey has some evergreen elements. *Shorea robusta* (Sal) is the predominant species associated with *Actinodaphne angustifolia, Anogeissus latifolia, Bombax ceiba, Bridelia retusa, Buchanania lanzan, Callicarpa* spp., *Careya arborea, Casearia graveolens, Cassia fistula, Croton roxburghii, Dalbergia latifolia, Dendrocalamus strictus, Dillenia pentagyna, Ficus* spp., *Flacourtia indica, Garuga pinnata, Grewia* spp., *Haldinia cordifolia, Ixora* spp., *Kydia calycina, Lagerstroemia parviflora, Lannea coromandelica, Litsea* spp., *Madhuca indica, Mallotus philippensis, Mangifera indica, Memecylon umbellatum, Miliusa tomentosa, Mitragyna parvifolia, Phyllanthus emblica, Polyalthia cerasoides, Pterocarpus marsupium, Schleichera oleosa, Schrebera swietenioides, Stereospcrmum chelonoides, Syzygium cumini, Teminalia alata, T. bellirica, Trema orientalis* and *Xylia xylocarpa.*

   The shrub layer consists of mainly *Ardisia solanacea, Flacourtia indica, Flemingia* spp., *Gardenia* sp., *Helicteres isora, Indigofera cassioides, Leea* spp., *Randia* spp. and *Ziziphus* spp. Climbers are heavy, consisting of *Ampelocissus* spp., *Bauhinia vahlii*, *Cayratia trifolia*, *Cissus* spp., *Dioscorea* spp., *Gnetum ula*, *Jasminum* spp., *Millettia extensa*, *Smilax* spp. The herbaceous flora is rich, consisting of *Curcuma* spp., *Desmodium gangeticum*, *Zingiber* spp., and members of Acanthaceae, Rubiaceae, Asteraceae, ferns and terrestrial orchids.

3. **Tropical Dry Deciduous Forest**: This forest type occurs in drier regions of state. Both upper and lower canopies of this forest are usually composed of deciduous species. The predominant constituent arboreal species of this forest besides *Shorea robusta* are: *Terminalia alata, T. bellirica, Bombax ceiba, Anogeissus latifolia, Cochlospermum religiosum, Sterculia* spp., *Oroxylum indicum, Protium serrata, Dalbergia* spp., *Cleistanthus patulus, Callicarpa arborea, Grewia tiliifolia, Hymenodictyon orixense, Firmiana colorata, Desmodium oogeinensis, Bridelia retusa, Diospyros* spp., *Ziziphus* spp., *Cassia fistula, Mallotus philippensis, Lagerstroemia parviflora, Semecarpus anacardium, Buchanania lanzan, Lannea coromandelica, Garuga pinnata, Mitragyna parvifolia, Albizia* spp., *Stereospermum suaveolens, Melia dubia, Holarrhena pubescens, Casearea elliptica, Chloroxylon swietenia, Dendrocalamus strictus, Spondias pinnata, Boswellia serrata, Butea monosperma, Antidesma acidum, Nyctanthes arbor-tristis* and others. The shrubs include *Cleistanthus collinus*, *Randia* spp., *Gardenia latifolia*, *Ziziphus* spp., *Helicteres isora*, *Flacourtia indica*, *Strobilanthes* spp., *Flemingia* spp. The climbers are represented by *Acacia* spp., *Bauhinia vahlii, Combretum roxburghii, Ventilago denticulata, Millettia extensa* and *Gouania tiliifolia*.

4. **Subtropical Broad-leaved Hill Forest**: This type is found on hill-tops of about 1200 m elevation. The forests are mostly of inferior type and there is little left of the climax vegetation. The vegetation comprises of tropical dry deciduous and evergreen elements. The forests consists of *Syzygium cumini*, *Manilkara hexandra*, *Ficus* spp., *Mallotus philippensis*, *Homalium nepalense,* species of *Symplocos*, *Neolitsea*, *Phoenix*, *Memecylon umbellatum, Glochidion velutinum* and a shrubby undergrowth, including species of *Strobilanthes*, *Indigofera*, *Ixora* and *Gymnosporia*, and climbers such as *Bauhinia vahlii*, *Cissus* spp., and *Clematis smilacifolia*.

5. **Littoral and Swamp Forest**: The most characteristic species of this type is *Casuarina equisetifolia*, which often forms an almost pure stands on sandy beaches and dunes along the coast. Thickets of *Pandanus fascicularis* are also of frequent occurrence in similar situations. The mangroves or the tidal forests are found in deltaic regions of Mahanadi, Brahmani and Baitarani rivers and their tributaries mostly between Dhamra and Devi river estuaries in the Cuttack district. These are considered to be a kind of Tropical Semi-evergreen Forest type. The area under mangrove forests has considerably been decreased in the past due to several biotic factors. The mangroves which were once plentiful towards the margins of Chilika Lake and its islands are no more found there. Some of the predominant mangrove elements are: *Aegiceras corniculatum, Avicennia alba, A. officinalis, Bruguiera cylindrica, B. gymnorrhiza, Ceriops tagal, Heritiera fomes, H. littoralis, Lumnitzera racemosa*, *Rhizophora mucronata, Sonneratia apetala, S. caseolaris* and *Xylocarpus granatum*. *Caesalpinia nuga, Dalbergia spinosa, Derris scandens, D. trifoliata* and *Sarcolobus carinatus* are some of the common climbing species found in the mangroves of the state.

The state also supports rich aquatic vegetation in its freshwater lakes, ponds and reservoirs. The freshwater species include floating, submerged and species of marshy and swampy habitats. Some of the common freshwater species in the state are: *Aponogeton crispus, Euryale ferox, Lemna perpusilla, Ludwigia adscendens, Nelumbo nucifera, Nymphaea nouchali, Nymphoides hydrophylla, Sagittaria guayanensis, Spiordela polyrhiza* and *Utricularia* spp. The aquatic systems also support submerged species such as *Ceratophyllum demersum, Halophila ovalis, Hydrilla verticillata, Najas foveolata, Ottelia alismoides, Potamogeton crispus, Ruppia maritima* and *Vallisneria natans*.

EARLIER FLORISTIC WORKS: William Roxburgh (1795–1820) might have included the plants from southern part of the state in his 'Plants of the Coast of Coromandel' and 'Flora Indica' (1820–1832), plants those collected from this region were labelled as plants from 'Circars' or 'Circars in Coromandel', however one cannot ascertain the exact locality. Dunlop (J. Agric. Hort. Soc. India 3: 93–94. 1844) published a list of the plants in the Garden of the Agri-Horticultural Society of Cuttack. Hooker & Thomson's Flora Indica (1855) includes some account on the vegetation of Odisha. Hooker (1872–1897) refers some of the stray collections from Odisha. David Prain (1903) included some plants of Odisha in his 'Bengal Plants'.

Haines's Botany of Bihar and Orissa (1921–1925) and its Supplement by Mooney (1950) and Gamble's Flora of the Presidency of Madras (1915–1936) are some of the important floristic works relating to the flora of Odisha. Out of 2529 plant species described by Haines only about 30% are reported from Odisha region. Later Mooney (1950) added 153 species to the work besides notes on a number of species described by Haines. Gamble's Flora of the Presidency of Madras (1915–1936), has covered southern part of the present Odisha, especially 'Ganjam' region which included Srikakulam, Ichhapur, Sonpeta and Tekkali of Andhra Pradesh and Balliguda subdivision of Phulbani district and Ganjam district of the present Odisha state. Beddome (1877) published a list of trees growing in the Jamidary of Jeypore. Gamble (1881, 1884) provided a brief account on the forests of Khoardah, and on the forests of Northern forest circle, Madras Presidency. Gamble (1884–1885) also revised the list of trees and shrubs of Northern Circars recorded on tour during 1883–1884 and 1884–1885. Haines (1919) described some new species of plants from Bihar and Orissa. Mooney (1933) outlined the forests of Odisha state, and also added some species to the Botany of Bihar and Orissa (Mooney, 1941).

Srinivasan & Subba Rao (1961) studied the flora of Parlekimedi and its immediate neighbourhood. Panigrahi (1963) explored the indigenous drugs of Gandhamardan Parbat. Kapoor (1964) contributed to the flora of Mahendragiri hills. During 1970 and till date a large number of publications on the flora of Odisha and indigenous botanical knowledge of various tribal communities in the state have been documented by the Botanical Survey of India, the Universities and colleges in the state, and the Regional Research Laboratory, Bhubaneswar. Saxena & Brahmam (1994–1996) published the four-volume Flora of Orissa state, which includes 2576 species (2417 indigenous and 159 cultivated species) of angiosperms belonging to 994 genera and 185 families. The Flora also includes 10 species (7 cultivated and 3 indigenous) of gymnosperms belonging to 2 genera in 2 families, and 141 species of pteridophytes belonging to 66 genera and 41 families.

DIVERSITY OF VARIOUS PLANT GROUPS: According to Sahoo & al. (1999) the state of Odisha harbours 2630 species of angiosperms distributed in 1060 genera and 194 families, of which 1868 species under 799 genera belong to dicotyledons, and 762 species in 261 genera are monocotyledons; Poaceae (265 spp.), Fabaceae (245 spp.), Cyperaceae (140 spp.), Orchidaceae (129 spp.), Asteraceae (117 spp.), Euphorbiaceae (108 spp.), Rubiaceae (89 spp.), Acanthaceae (82 spp.), Lamiaceae (59 spp.) and Scrophulariaceae (56 spp.) are the dominant families of the angiospermic flora of the state.

Gymnosperms are represented by 10 species in the state, of which 7 are cultivated, only *Cycas circinalis, Gnetum montanum* and *G. ula* are found in wild. The Pteridophytes are represented by 141 species in 66 genera and 41 families, of which Polypodiaceae and Thelypteridaceae show the maximum species diversity (Saxena & Brahmam, 1994–1996).

ENDEMIC AND THREATENED PLANTS: The state harbours 29 endemic taxa, of which 27 species under 27 genera and 14 families belong to angiosperms. The state has only one

endemic gymnosperm *Cycas circinalis* var. *orixensis* and one pteridophyte *Selaginella nairii*. There are 144 rare and threatened plant species belonging to 119 genera and 41 families in the state.

ECONOMIC PLANTS: Apart from a number of cultivated species, about 30% of wild species occurring in the state are economically and ethnobotanically important. The plant resources are majorly exploited as edible plants. About 600 plants are identified for their various medicinal properties to treat various ailments, especially among the various tribal communities of the state. The state also has plants of timber, fibre, gum and resin and oil-yielding.

PROTECTED AREAS: According to Wildlife Institute of India database (http://www.wii.gov.in), the Protected Area Network of the state has 19 Wildlife Sanctuaries (including 4 Marine Sanctuaries) and 2 National Parks (1 Marine National Park), besides, there are 1 Biosphere Reserve (Similipal), 2 Tiger Reserves (Similipal and Satkosia), 5 Elephant Reserves [including 2 approved (Baitami and South Odisha), 2 proposed (Mahanadi and Sambalpur) and the established Mayurbhanj Elephant Reserve], and 1 Ramsar Wetland Site (Chilika Lake).

CONSERVATION: The flora and fauna of the state are facing severe threats due to various anthropogenic activities. Developmental activities along the coast, rapid industrialisation and urbanisation resulting in decrease in forest cover. Felling of trees for fuel, timber, tannin and prawn culture pose tremendous pressure on the mangrove vegetation of Bhitarkanika. There should be regular monitoring of activities such as illegal felling of trees, illegal poaching, and encroachment of forest areas for shifting cultivation, mining and overexploitation of plant resources in order to reduce or prevent further depletion of natural resources in the state by the state government.

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ODISHA

Flora, Vegetation, Forestry and Ecology

1. **Acharya, P.K., Mukherjee, A.K. & Panda, P.C. 2012.** "Analysis of genetic variability and phylogenetic relationships among the species of *Vigna* Savi (Fabaceae) using molecular markers". *Pl. Sci. Res.* 34(1&2): 1–9.

Abstract: Genetic diversity and species relationships among 9 species of *Vigna* (*V. aconitifolia*, *V. adenantha*, *V. mungo*, *V. pilosa*, *V. radiata*, *V. sublobata*, *V. trilobata*, *V. umbellata* and *V. unguiculata*) with 29 accessions collected from Odisha, Andhra Pradesh and Assam were analysed using 11 RAPD and 16 ISSR markers. A total of 2426 fragments were amplified with both the primer sets, of which 2368 bands were of polymorphic nature. Eighteen unique bands and 58 monomorphic bands were also detected. In the present study, clustering of species in the dendrograms constructed using RAPD, ISSR and combined data was not in complete agreement with the intra-generic classification of Verdcourt (1970) as modified by Marechal & al. (1978) but certain species followed the pattern of species placement stated therein. *Vigna sublobata*, considered as a variety of *V. radiata* by many is established here as a distinct species. The phylogenetic tree generated from combined RAPD and ISSR data revealed segregation of taxa into two distinct clusters, one with *Vigna radiata-Vigna mungo* belonging to the sect. *Ceratotropis* of the subg. *Ceratotropis* along with *V. unguiculata* of the sect. *Vigna* of subg. *Vigna*; and the other with members of sect. Leptospron of subg. Sigmoidotropis and sect. Angulares and sect. *Aconitifoliae* of the subg. *Ceratotropis*. The necessity to reinvestigate the sectional classification of the subgenus *Ceratotropis* of genus *Vigna* has been suggested.

2. **Acharya, S. & Mohapatra, P.K. 2012.** "Distribution of Rhizophoraceae mangroves of intertidal regions of Odisha coast, India". *Pl. Sci. Res.* 34(1&2): 65–71.

Abstract: Phytosociological analysis of the Rhizophoraceae mangroves was carried out in Bhitarkanika mangrove division, Odisha to describe the forest composition and structure, and to assess the distribution of these species. Ten transect plots of 10 m × 100 m with a total area of one hectare were established perpendicular to the coast line in five different mangrove blocks of the study site. A total of eight species of trees and saplings were recorded. Three community types were recognized namely *Rhizophora apiculata – R. mucronata, Bruguiera–Kandelia candel* and *Ceriops* reflecting the zonation in this forest. The maximum number of trees was 6780/ha found in Kadua block. *Rhizophora apiculata* was most successful in distribution with 6440 saplings and trees/ha followed by *R. mucronata* (3600/ha). Trees of both the *Rhizophora* species were mostly growing under Low Tide Lines (LTL) while the *Bruguiera* and *Ceriops* species occurred around the High

Tide Lines (HTL). The IVI values of *R. apiculata* indicates maximum in Mahanadi deltaic region whereas *R. mucronata* exhibits maximum in core areas of Bhitarkanika. The study also reveals the fact that *Bruguiera gymnorrhiza* is well-adapted in the varying salinities between LTL and HTL.

3. **Ambastha, K.R., Hussain, S.A., Badola, R. & Roy, P.S. 2010.** "Spatial analysis of Anthropogenic disturbances in mangrove forests of Bhitarkanina Conservation Area, India." *J. Indian Soc. Remote Sens.* 38: 67–83.

Abstract: The dependence of coastal communities on mangrove forests for direct consumptive use due to the scarcity of alternate resources makes them one of the highly distributed landscapes. This paper examines the spatial characteristics and extent of anthropogenic disturbances affecting the mangrove forests of Bhitarkanina Conservation Area situated along the east coast of India by using remotely sensed data and GIS, supplemented with socioeconomic surveys. The study reveals that resources extractions from these forests were considerable despite the protected status. Around 14% of the total fuel wood consumed annually in each of the household came from the mangrove forests of the park. The patterns of consumption were spatially heterogeneous, controlled by the availability of alternatives, ease of accessibility, and presence of markets, human density, and forest composition. The disturbance surface showed 30% of the major forest classes to be under high to very high levels of disturbance especially at easy access points. Besides, the distribution of economically of economically useful species also determined the degree of disturbance. Resource use surfaces clearly identified the biotic pressure zones with respect to specific mangrove use and could be combined with the disturbance regime map to prioritize areas for mangrove restoration.

4. **Bahadur, K.N. & Das, T. 1969.** "On the occurrence and gregarious flowering of *Perilepta edgeworthiana* (Nees) Brem. in Orissa" *Indian Forester* 95: 208–212.

Abstract: The occurrence as well as the gregarious flowering of *Perilepta edgeworthiana* (Nees) Brem. [syn. *Strobilanthes auriculatus* Nees var. *edgeworthiana* (Nees) C.B. Clarke] are recorded for the first time from southern Orissa and Orissa as a whole, respectively. The occurrence is interesting as earlier floristic workers were fairly certain that this species did not extend south of the Mahanadi. The last general flowering of this species was reported from the adjoining Bihar state in 1961–1962. The present record of the 1967–1968 gregarious flowering, therefore, confirms the 6-year flowering cycle for this *Strobilanthes*. The systematic position of the taxon is discussed giving notes on its synonymy, description, distribution, economic aspects and distinction from allied species.

5. **Bahali, D.D., Agrawala, D.K. & Chowdhery, H.J. 2007.** Similipal Tiger Reserve. In: Sanjappa, M., Singh, D.K., Singh, P. & Gopal, R. (eds.), *Floral Diversity of Tiger Reserves of India*. Botanical Survey of India, Kolkata. pp. 418–441.

Abstract: The chapter reports occurrence of 1276 species, 12 subspecies and 39 varieties of vascular plants, including 73 cultivated or naturalized taxa belonging to 720 genera under 180 families from Similipal Biosphere Reserve, Odisha.

6. **Bairiganjan, G.C., Panda, P.C. & Patnaik, S.N. 1984.** "Cytotaxonomic studies in *Sesbania* Scop. (Fabaceae) in Orissa". *J. Orissa Bot. Soc.* 6(1): 22–30.

Abstract: This paper deals with a cytotaxonomic account of seven species of *Sesbania* (Fabaceae) occurring in the State of Orissa. The taxonomy of the genus has been discussed and an artificial key to its species has been given. In the enumeration, each species has been provided with nomenclature, short description, phenology, citation of specimens, local names, uses etc. Three species, viz., *S. cannabina, S. javanica* and *S. speciosa* are reported as new to the flora of Orissa. The chromosome numbers of all the species have been determined through mitotic and meiotic counts and their morphology has been studied in detail. Of these the chromosome numbers in respect of *S. javanica* (n = 6; 2n = 12) and *S. procumbens* (n = 6; 2n = 12) are reported here for the first time. On taxonomic and cytological grounds, inclusion of *S. grandiflora* in a separate sub-genus *Agati* Desv. has been supported.

7. **Banerjee, L.K. 1983.** "Mangrove vegetation of Mahanadi delta in Orissa". *Proc. 8th Annual Conf. Orissa Bot. Soc. (Rayagada)*. p. 5.

Abstract: The second largest Indian delta (20°.15'–20°.70' N, 87°.40' E) spreading over two districts, Cuttack and Balasore in the humid tropical climate is notably associated with river estuaries, innumerable meandering creeks, channels distributories, and islets. The entire area falls under the dynamic geomorphological processes with enormous sedimentation caused by compaction. Land mass is very much intersected due to rapid delta formation. Flora is very rich and maximum number of mangrove species occurs in this delta in comparison to Sunderbans, Godavari, Cauvery, Andaman and Nicobar Islands. Vegetation or mangals of this delta has been studied on the basis of topographic diversity, zonal patterning, structural character and interacting environmental factors. It has been proved in this study rhat the variety of plant habitats and distribution of mangroves are strongly influenced by the habitat's topographic form, frequency of tidal inundation, the sediment type, the salinity of the soil and water. Vegetation of this delta has been classified into two main categories: The outer estuarine mangal and inner or riverine mangal. The first type subjected to high wave energy regime with high salinity and less protection from the sea is dominated with some species of *Avicennia*, *Sonneratia*, and *Aegialitis* with salt excreting mechanism for tolerating the conditions. The second type subjected to less tidal wave but greater tidal forces, lower year-round salinity and less protected from the sea is dominated with some species of *Rhizophora* adapted by means of stilt roots and vivipary for withstanding this situation. The second type can be again divided into three sub types in successional stages mainly depending

upon the supply of freshwater flow and this is also very prominent features in this delta resulting the remarkable fresh water *Heritiera* formation like that of the present Bangladesh Sunderbans.

8. **Banerjee, L.K. 1984.** "Vegetation of Bhitarkanika Wildlife Sanctuary in Cuttack district, Orissa". *J. Econ. Taxon. Bot.* 5(5): 1065–1079.

Abstract: The paper is an attempt to furnish an account of flora and vegetation of Bhitarkanika Wildlife Sanctuary and it is hoped that it would provide basic information, useful for future attempts for conservation of wild flora specially the mangroves.

9. **Banerjee, L.K. 1986.** "Comparative study of the mangroves of the Sunderbans and that of the Mahanadi delta in Eastern India". *Proc. Nat. Symp. Biol. Utln. Conservation Mangroves (Kolhapur)*. pp. 527–530.

10. **Banerjee, L.K. 1987.** "Comparative study on mangroves of Sunderbans and that of the Mahanadi delta in Eastern India". *J. Econ. Taxon. Bot.* 9(1): 119–131.

Abstract: Tidal forests of the Gangetic Sunderbans delta in West Bengal and of the Mahanadi delta in Orissa constitute two distinct ecogeographical zones with similar climatic and edaphic conditions. Though these two deltas largely harbour mangals, there exist some similarities and differences in the species composition, structure and distribution of vegetation. Similarities and differences in species composition, distribution, some major interacting environmental factors like soils, salinity and tidal inundation and frequency and density of some common mangrove species of the two deltas have been studied here. Vegetation status and some important uses of mangroves of the two deltas have also been briefly discussed in this paper.

11. **Banerjee, L.K. 1992.** Mangal formation of the Mahanadi delta: Exploitation and management. In: Singh, K.P. & Singh, J.S. (eds.), *Tropical Ecosystem, Ecology and Management*. Willey Eastern Ltd., New Delhi. pp. 289–294.

12. **Banerjee, L.K. & Rao, T.A. 1990.** *Mangrove of Orissa coast and their ecology*. Bishen Singh Mahendra Pal Singh, Dehra Dun.

Abstract: This book deals with topography, climate, geomorphology of the study areas along with the major environmental and ecological factors such as tidal flow, seasonal water salinity ranges and soil characteristics in relation with the changing pattern of mangrove zonation. The structural characteristics of mangrove vegetation have been studied with the help of Importance Value Index method through the analysis of quatitative ecological data in the field. A new approach to the classification of mangrove vegetation depending upon the interaction of the environmental factors and adaptive charaters has been formulated in this book. This is followed by detail floristic study of the mangrove plants with brief ecological, distributional and phonological notes.

13. **Banerjee, L.K. & Rao, T.A. 1995.** Mangals of the Mahanadi delta, Cuttack district, Orissa state, India. In: Krishnamurthy, V. & Untawale, A.G. (eds.), *The Marine Plants*. Sea weeds Research and Utilization Association, Madras.

14. **Banerjee, L.K. & Sastry, A.R.K. 1998.** Floral status of Similipal Tiger Reserve, Orissa. In: Hajra, P.K., Gangopadhyay, M. & Chakraborty, T. (eds.), *Plant Diversity in the Tiger Reserves of India*. Botanical Survey of India, Kolkata. pp. 67–70.

Abstract: According to the dominance of plant communities in different topographic conditions, the vegetation in the area can be divided into 6 types: (i) Semi-evergreen mixed formation, (ii) Moist-Deciduous 'Sal' dominated formation, (iii) Dry-Mixed formation without 'Sal', (iv) Open grasslands formation, (v) Wetland vegetation and (vi) High hill upper 'bhabar' 'Sal' formation.

15. **Banerjee, L.K. & Srivastava, S.K. 2002.** Similipal Biosphere Reserve. In: Singh, N.P. & Singh, K.P. (eds.), *Floristic Diversity and Conservation Strategies in India*. Vol. V. *in situ* and *ex situ* conservation. Botanical Survey of India, Kolkata. pp. 2783–2800.

Abstract: The flora of Similipal Biosphere Reserve comprises 992 species exclusing cultivated ones, belonging to 597 genera and 168 families of angiosperms, gymnosperms and pteridophytes. An analysis of flora revelas that dicots represents 655 species, monocots 273, pteridophytes 60 species and gymnosperms with only 4 species in this reserves.

16. **Bansal, A.K. 1990.** "Changes in forest cover in Orissa". *Orissa Rev.* 4(5): 7–14.

17. **Basak, U.C., Das, A.B. & Das, P. 1996. "**Chlorophylls, carotenoids, proteins and secondary metabolites in leaves of 14 species of mangrove". *Bull. Marine Sci.* 58(3): 654–659.

Abstract: Chlorophyll a, b, a+b. a:b, carotenoids. TAN (Titrable Acid Number), proteins, polyphenols, and tannin content of 14 species of mangroves, viz., *Aegiceras corniculatum, Aglaia cucullata, Avicennia officinalis, Bruguiera parviflora, B. sexangula*, *Ceriops decandra, Cynometra iripa, Excoecaria agallocha, Heritiera fomes, H. litttoralis, H. macrophylla, Kandelia candel, Rhizophora mucronata* and *Xylocarpus granatum* found in the mangrove forests of Bhitarkanika and the Mahanadi delta of Orissa were estimated. Total chlorophyll content varied from 0.21% in *A. cucullata* and *C. decandra* to 0.56% in *A. corniculatum*. Calculated chlorophyll a:b ratio was the minimum (1.55) in *A. officinalis* and the maximum (3.50) in *B. sexangula.* The carotenoids also varied from 0.04% in *B. sexangula* to 0.17% in *A. corniculatum.* Analysis of Variance showed intra- and interspecific variations in photosynthetic activities. The TAN values revealed appreciable variations from 20.00 to 45.00 in *A. officinalis* and *H. littoralis*, respectively. The TAN values showed negative correlation with chlorophyll b and carotenoids, but highly significant positive

correlation was noted with chlorophyll a:b ratio among the species. Total leaf protein content significantly varied from 12.21% in *H. macrophylla* to 29.22% in *H. fomes.* The quantitative analysis of tannin and polyphenols from the leaves of mangroves showed significant variation, 8.39% to 44.27% in *A. cucullata* and *B. sexangula* and 11.39% to 52.89% in *A. officinalis* and *C. decandra,* respectively. Statistical analysis of the endogenous level of polyphenols and tannins showed no interde-pendence with leaf proteins.

18. **Basak, U.C., Das, A.B. & Das, P. 1998.** "*In situ* quantitization of DNA and karyotype analysis in four threatened mangrove species found in Bhitarkanika forests of Orissa". *Cytobios* 93: 147–155.

Abstract: Cytophotometric estimation of 4C nuclear DNA amount and detailed karyotype analysis were carried out in *Aegialitis rotundifolia, Bruguiera cylindrica, Ceriops tagal* and *Xylocarpus mekongensis* found in the mangrove forests of Orissa. Somatic chromosome numbers 2n = 34 in *A. rotundifolia* and *B. cylindrica,* 2n = 36 in *C. tagal and* 2n = 44 in *X. mekongensis,* were reported for the first time. Karyotype analysis revealed species specific chromosomal characteristics, numerical and minute structural alterations of chromosomes. Critical analysis of nuclear DNA showed significant variation of 4C DNA amount among the species. The correlation coefficient among the various chromosomal and nuclear parameters was interdependent.

19. **Basak, U.C., Das, A.B. & Das, P. 1999.** "Organic constituents in leaves of 9 mangrove species of Orissa coast, India". *Pakistan J. Bot.* 31(1): 55–62.

Abstract: Photosynthetic pigments, TAN (Titrable Acid Number), proteins, polyphenols and tannin content in leaves of nine species of mangroves, viz., *Acanthus ilicifolius, A. ebracteatus, A. volubilis, Brownlowia tersa, Bruguiera cylindrica, B. gymnorrhiza, Ceriops tagal, Rhizophora apiculata* and *Xylocarpus mekongensis* found in the mangrove forests of Bhitarkanika and Mahanadi delta of Orissa were estimated. Total chlorophyll content varied from 0.16% in *B. tersa* to 1.05% in *A. volubilis.* Calculated chlorophyll a:b ratio was minimum (1.23) in *C. tagal* and maximum (3.85) in *A. ilicifolius*. The carotenoids as accessory pigments also varied from 0.08% in *B. tersa* to 0.76% in *A. ilicifolius.* Analysis of variance showed intra- and interspecific variations in photosynthetic activities. The TAN values revealed appreciable variations from 20.61 to 32.86 in *B. gymnorrhiza* and *A. ilicifolius*, respectively. The TAN values showed negative correlation with chlorophyll b and carotenoids but highly significant positive correlation was noted with chlorophyll a:b ratio among the species. Total buffer soluble protein content in leaf varied significantly from 13.26% in *B. cylindrica* to 21.05% in *X. mekongensis.* The quantitative analysis of tannin and polyphenols from the leaves of mangroves showed significant variation ranging from 14.56% to 40.11 % in *X. mekongensis* and C. *tagal*, and 15.65% to 38.64% in *A.*

volubilis and C. *tagal,* respectively. Statistical analysis of the endogenous level of polyphenols and tannins showed no interdependence with leaf proteins.

20. Beddome, R.H. 1877. "The Jeypore Forest". *Indian Forester* 3: 188–205.

Abstract: The paper discusses about the climate, geolgy and vegetation of Jeypore forest and also provides a list of trees growing in the Zamindari of Jeypore with Telugu and Oria names.

21. Behera, B.N., Sharma, C.B.S.R. & Dash, S.K. 1979. "Grasses of Bhubaneswar and neighbourhood". *J. Bombay Nat. Hist. Soc.* 74: 651–656.

Abstract: A total of 36 species of grasses belonging to 24 genera have been reported from Bhubaneswar and its neighbourhood, of which 13 are new reports from the state of Orissa. The tribe Paniceae is dominant with 15 species followed by Eragrosteae with 8 species. Among the genera, however, both *Panicum* and *Eragrostis* are represented by 5 species each.

22. Behera, S.K. & Misra, M.K. 2006. "Aboveground tree biomass in a recovering tropical sal (*Shorea robusta* Gaertn.f.) forest of Eastern Ghats, India". *Biomass & Bioenergy* 30: 509–521.

Abstract: The aboveground biomass of individual tree species by component and total biomass per unit area for four different stages of a recovering tropical dry deciduous forest stands, dominated by sal (*Shorea robusta* C.F. Gaertn.) of the Eastern Ghats were investigated during 2001–2002. Different periods of recovering (2, 4, 6, and 10-year) forest stands (84°13'E, 20°29'N) were selected in the Kandhamal district of Orissa and sample trees of all species were harvested. Tree species diversity was 23, 23, 21 and 22 in 2, 4, 6, and 10-year recovering stands, respectively. Species-wise *Ixora pavetta* showed the highest biomass in 2 and 4-year stands while *Shorea robusta* in 6 and 10-year stands. Component-wise, in all species, bole-wood contribution ranged between 22.6% and 60.9%. Above ground tree biomass, in all the stands, was dominated by *Shorea robusta*, which ranged between 12.68 and 231.91 Mg ha^{-1}. Total aboveground tree biomass was 30.12, 49.21, 107.54 and 261.08 Mg ha^{-1} in 2, 4, 6 and 10-year stands, respectively.

23. Behera, S.K. & Misra, M.K. 2006. "Floristic and structure of the herbaceous vegetation of four recovering forest stands in the Eastern Ghats of India". *Biodivers. & Conservation* 15: 2263–2285.

Abstract: Floral composition and structural parameters of the herbaceous vegetation of four recovering tropical dry deciduous forest stands protected for 2, 4, 6 and 10-year periods, on the Eastern Ghats of India, situated at Kandhamal district of Orissa, India were investigated. More than one hectare of recovering forest stands of each of the

four stages was selected and fifteen sample quadrats of 1 m × 1 m were randomly placed at each stand for vegetation analysis. Floristic analysis revealed highest number of species (69) in 2-year recovering stands, which declined with increase in age. A total of 87 species, 71 genera and 32 families were recorded in the forest stands. Total number of herbaceous species encountered in the stands was 44, 28, 30 and 24 in 2, 4, 6 and 10-year stands, respectively. Total individuals of all herbs species were 114, 70, 88 and 68 plant m^{-2} in 2, 4, 6 and 10-year stands, respectively. Herbaceous stand basal areas were 7.84, 3.66, 4.77 and 5.23 cm^2 m^{-2} in 2, 4, 6, and 10- year stands, respectively. Importance value index (IVI) revealed that *Heteropogon contortus* was predominant in 2 and 4-year stands, *Andrographis paniculatus* in 6- year stand and *Elephantopus scaber* in 10- year stand. Diversity-dominance curve revealed lognormal distribution in all the four stands. Simpson's dominance index (C) was highest in 2-year stand which decreased in other stands, while Shannon's diversity (H^1) was almost the same in all the stands. Biomass of herbaceous vegetation was 83.2 g m^{-2} in 2 year, 62.2 g m^{-2} in 4 year, 58.0 g m^{-2} in 6 year and 64.0 g m^{-2} in 10-year stand.

24. **Behera, S.K. & Misra, M.K. 2007.** "Floristic analysis of the regerating forest stands in the Eastern Ghats of Orissa, India". *Indian J. Forest.* 30(3): 343–348.

Abstract: The paper reports the floristic composition of four regenerating forest stands in the Kandhamal district of Orissa. Highest number of species (69) was observed in 2 years regenerating stand, which declined with increase in age. The number of species was 55, 55 and 51 in 4-year, 6-year and 10-year stands, respectively. Altogether 87 species under 71 genera and 32 families were recorded in the forest stands. The change in the number of species with age is mainly due to the elimination of herbaceous species in the undergrowth. Tree and shrub species maintain their number in all the stands.

25. **Behera, S.K., Panda, A. & Misra, M.K. 2009.** "Survey and conservation of homoeopathic medicinal plants of Orissa, India". *J. Econ. Taxon. Bot.* 33(Suppl.): 39–58.

Abstract: The paper reports an account of the plants of Orissa that are useful for the extraction of homoeopathic drugs. A total of 107 species have been enlisted through literature survey as homoeopathic medicinal plants with their correct nomenclature and local names. These species belong to 97 genera under 48 families. Each species is provided with its place of availability, natural and exotic, chemical property and other information that are useful for homoeopathic pharmaceutical industry.

26. **Behura, S. & Rout, N.C. 2003.** "Diversity of Zingiberaceae plants from Orissa". *J. Econ. Taxon. Bot.* 27(3): 546–550.

Abstract: The spice family Zingiberaceae comprised of 53 genera and over 1400 species is distributed throughout the world. The family is economically most important for spices, medicines, essential oil, dye and oleoresin, and also a few of them are used as vegetables

as well as garden plants. Orissa records only 9 genera and 24 species widely growing in different forest areas belonging to this family. Regional Research Laboratory has been trying to collect the germplasm of Zingiberaceous plants and develop the agrotechnology of their large scale cultivation. This paper includes the enumeration of these species, their present status and distribution, vernacular name(s), uses, flowering as well as ecology.

27. Bhadra, A.K., Dhal, N.K. & Pattanayak, S.K. 2014. "Altitude based tree species occurrence in the protected natural forest of Gandhamardan hill ranges, Balangir, Odisha". *Biolife* 2(2): 420–441.

Abstract: Study of the tree community was carried out in the forest of Gandhamardan hills belonging to Eastern Ghats at Harishankar of Balangir district, Odisha, India in the year 2008 from January to December. A total of 80 quadrates of 20 × 20 m size were laid in the 100 ha protected forest (20°51'027" N, 82°51'59.2" E) across eleven elevational ranges between 350 m and 625 m. A total of 42 species (39 genera and 25 families) were recorded in the present study. Species occurring at only single elevational range are *Acacia lenticularis* Buch.-Ham. ex Benth., *Bombax ceiba* L., *Euphorbia nivula* Buch.-Ham., *Holarrhena pubescens* (Buch.-Ham.) Wall. ex G. Don, *Pongamia pinnata* (L.) Pierre and *Schrebera swietenioides* Roxb. Only one species, i.e., *Anogeissus latifolia* (Roxb. ex DC.) Wall. ex Guill. & Perr. occurs in all the eleven elevational ranges. Throughout all elevational ranges; 47, 75 and 101 species show regular, random and contiguous distribution pattern. This reflects the contiguous distribution to be prevalent in the forest community. When random and contiguous distribution increase from lower altitude to mid altitude and again decrease from mid to higher altitudes, the reverse trend is observed in case of regular distribution. Total species and family occurrence increases from lower to mid altitude and again in decreases towards higher altitudes. Highest thirty five species occur in the mid altitude range of 400–425 m while lowest seven species occur in the higher elevations of 575–600 m, respectively. Species occurring in all elevational ranges have been ranked based on their IVI values and D-D (Dominance–Diversity) curves for each range have been drawn. The co-efficient of determination (R^2) of the D–D curves show that the two highest value 0.924 and 0.895 fall in the elevational range of 425–450 m and 450–475 m. Hence tree species diversity can be best studied at elevational ranges of 425–450 m and 450–475 m.

28. Bhadra, A.K., Dhal, N.K. & Rout, N.C. 2009. "Assessment of floristic diversity in the Harishankar protected forest area of Gandhamardan hill ranges using Shannon-Wiener Index"**.** *Pl. Sci. Res.* 31(1&2): 71–77.

Abstract: Survey and documentation of the floristic wealth of a region is a prerequisite for planning proper utilization of its potential plant resources on one hand and to conserve the depleting genetic resources on the other. Population structure and dispersion pattern

of all trees, seedlings, shrubs, climber, twinner and herbs were surveyed in the *in situ* preserved forest plot at Harishankar of Gandhamardan hill ranges in varying elevations (365.45 m to 561.441 m) and slope (10% to 85%) gradients from January to June, 2008. In total 58 plant taxa were documented in which 40 trees, 8 shrubs, 2 climbers, 1 twinner and 7 herbaceous species were present. Besides 35 seedling species were found during the study. The probability of occurrence of highest and lowest number of species of tree, seedling, shrub, climber, twinner and herb at a time in a sample quadrate is 21, 13, 3, 3, 1 and 3 and 7, 1, 1, 1, 1 and 1, respectively. Phytosociological characterstics of all tree species have been analysed. Frequency ranges from 3.33 to 93.33, density from 0.03 to 5.1, dominance from 0.00000031523 to 00005006423, abundance from 1.0 to 5.46 and IVI value from 0.616658676 to 34.49630147 amongst different species. Shannon-Wiener diversity index (H') varies between 0.00552614008 *(Ficus benghalensis)* and 0.108048339 *(Shorea robusta) whereas* 1.428292243 represents the whole tree community. Higher is this value, greater is the species richness. The present study provides information on species richness and diversity for sustainability of this biodiversity hub of Orissa in the wake of indiscriminate bioresource exploitation and forest fire.

29. Bhatta, K.S., Misra, M.K. & Misra, B.N. 1982. "Community structure and standing crop biomass of a shallow tropical pond of Orissa, a coastal province of India". *Indian J. Ecol.* 9(1): 130–141.

Abstract: Vegetation of a shallow tropical pond at Behrampur (19°16' N, 84°53' E), Orissa was analysed during March and April, 1977. On the basis of horizontal stratification two vegetation zones were differentiated outer *Scirpus–Oryza* and the inner *Ceratophyllum–Hydrilla*. Fourteen macrophytic species were recorded, of which *Ceratophyllum demersum* and *Scirpus articulatus* were the dominants; Negative correlation ($r = - 0.3931$, $p \leq 0.01$) for the association of *Scirpus* and *Oryza* was observed in zone I. The standing crop biomass was 2054.59 kg (1.72 kg/m^2) and 1425.34 kg (1.0 kg/m^2) in the zones I and II, respectively. The highest contributions were 818.4 kg (39.82%) and 669.18 kg (46.94%) by *Scirpus articulatus* and *Hydrilla verticillata* in the two respective zones. Standing crop biomass of this pond was found to be higher as compared to many temperate lakes and ponds of the world, although much higher values than this were recorded in many tropical lakes and ponds.

30. Bhola, N. & Sinha, S.K. 2006. "Effect of super cyclone of different tree species in and around Bhubaneswar". *Indian J. Forest.* 29(1): 25–30.

Abstract: The effect of super cyclone (October 29–30th, 1999 in Orissa) witnessed varying degree of damage to different species at different stages of growth. The effect was more pronounced in tree stage while it was least in seedling stage. Further,

different species were damaged to different extent at particular stage of growth. The rating of species damaged would be done in order of *Delonix regia* > *Acacia mangium* > *Anthocephalus cadamba* > *Melia azadirachta* > *Casuarina equisetifolia* > *Eucalyptus hybrida* > *Tectona grandis* > *Acacia auriculiformis* > *Gmelina arborea* > *Mangifera indica* > *Cocos nucifera* > *Dendrocalamus strictus* > *Emblica officinalis* > *Annona squamosa* > *Bambusa nutans* > *Polyalthia longifolia* > *Syzygium cumini* > *Ailanthus excelsa* > *Pongamia pinnata* > *Azadirachta indica*.

31. **Biswal, A.K. & Choudhury, B.P. 1991.** "Preliminary survey of flora in the Badrama wildlife sanctuary, Ushakothi". *Proc. Orissa Bot. Soc.* 15: 23.

32. **Biswal, A.K. & Choudhury, B.P. 1993.** "Bhitarkanika wildlife sanctuary: Exploitation and management". *Neo Bot.* 1(1&2): 17–22.

33. **Biswal, A.K. & Choudhury, B.P. 1994.** "Floristic Studies in the Sanctuaries of Orissa-II: Badrama Wild-Life Sanctuary". *Pl. Sci. Res.* 16(1&2): 17–21.

Abstract: After the enactment of Wildlife Protection Act, 1972, the conservation of rare and endangered life-forms in particular and wildlife in general got momentum in India. In 1974, the act was adopted in the state of Orissa. In order to keep in record the existing plant resources of the "Badrama Wildlife Sanctuary" in the district of Sambalpur and with a view to explore the threatened elements therein, an exhaustive floristic survey programme was conducted. The sanctuary spreads over an area of 304.03 km^2. The vegetation of this region comes mainly under *three* categories such as: (a) Sal forests, (b) Mixed deciduous forests and (c) Bamboo brakes. Sal (*Shorea robusta* C.F. Gaertn.) is the predominant species and forms pure community at places. A total number of 345 species belonging to 276 genera and 92 families have been collected, properly identified, well-documented and preserved in the Herbarium, P.G. Department of Botany, Utkal University. Some of the threatened elements found during the survey are: *Peristylus goodyeroides* and *Drosera indica*. *Jasminum trichotomum* turns out to be a new record for the state of Orissa.

34. **Biswal, A.K., Thatoi, H.N. & Sahu, D. 2005.** "Floral diversity in Chandaka Wildlife Sanctuary, Orissa". *J. Econ. Taxon. Bot.* 29(2): 385–402.

Abstract: Chanmdaka Wildlife Sanctuary in the state of Orissa is a grand repository of flora and fauna. The forest type of the sanctuary broadly comes under tropical semi-evergreen type. During 1960–1970 the rich vegetation as well as wild animals met serious depletion due to biotic references of various magnitudes such as establishment of state capital at Bhubaneswar and rapid growth of industrialization in the vicinity of the sanctuary. After establishment of an elephant sanctuary in 1984 by Forest Department, Government of Orissa, the wildlife as well as vegetation of the habitat

enjoy adequate protection. Now luxuriant, rejuvenated forests are observed in the locality. Floristic account of the wildlife sanctuary is provided in the paper. Through systematic survey programme a total of 542 angiospermic species in 394 genera belonging to 107 families have been collected, identified and documented. In addition to it 16 pteridophytic elements and 1 gymnospermic plant are also reported.

35. Biswas, K. & Chaudhuri, S.K. 1955. "Observations on the strand vegetation of some parts of Bengal, Orissa and Madras". *J. Asiat. Soc. Bengal* 21: 39–54.

36. Brahmam, M. 1982. *Flora of Ganjam district (Orissa), India*. Ph.D. Thesis, Utkal University, Bhubaneswar (unpublished).

37. Brahmam, M. & Dhal, N.K. 2004. "Floristic and vegetational analysis of Nabarangapur district of Orissa, India". *Bull. Bot. Surv. India.* 46(1–4): 50–56.

Abstract: Nabarangapur district of Orissa is floristically worked out. The vegetation of the district is found to fall broadly under (i) Tropical semi-evergreen forests and (ii) Tropical dry deciduous forests as per the classification of Champion & Seth (1968). In addition to the above, several subtypes and seral types such as Bamboo brakes, Riparian Fringing Forest, Scrubs and Grasslands are noticed. The natural vegetation which was predominantly arboreal before 1970 became greatly modified due to the settlements of East Bengal (Bangladesh) refugees under Dandakaranya rehabilitation programme.

38. Brahmam, M. & Saxena, H.O. 1978. "A survey of the plants of Orissa (India) for tannins, saponins, flavonoids and alkaloids – II". *Bull. Bot. Surv. India* 20: 72–79.

Abstract: Phytochemical screening of 236 plant species from Orissa has shown the presence of tannins in 74, saponins in 14, flavonoids in 74 and alkaloids in 51 species. The presence of alkaloids in 13 species is reported for the first time. The tannin content of 32 species is found to be between 0.4 and 21.2 per cent.

39. Brahmam, M. & Saxena, H.O. 1980. "Flora of Ganjam, Orissa (India)". *J. Econ. Taxon. Bot.* 1: 119–125.

Abstract: The Flora of Ganjam district is quite interesting because the wide range of its physical features have given rise to a rich and varied flora. The area remained under explored in the past as neither Haines (1921–1924) nor Mooney (1950) included it in the territory of their works. In the present studies, explorations were carried out for a period of seven years and 1483 species of vascular plants, representing 177 families were collected from the district. The paper deals with the general information about the area, review of the previous work, vegetation types, phytogeography and statistical analysis of the flora.

40. **Brahmam, M. & Saxena, H.O. 1981.** "Additions to the flora of Bihar and Orissa – III". *J. Bombay Nat. Hist. Soc.* 78: 415–417.

Abstract: Fourteen species, viz., *Acalypha racemosa* Wall. ex Baill., *Aganosma cymosa* (Roxb.) G. Don, *Argyreia choisyana* (Wight) Wight ex C.B. Clarke, *Combretum latifolium* Blume, *Cyanotis vaga* (Lour.) Schult. & Schult.f., *Dunbaria conspersa* Benth., *Justicia glabra* J. König ex Roxb., *J. prostrata* (C.B. Clarke) Gamble, *Maoutia puya* (Wall. ex Hook.) Wedd., *Meschosma polystachyum* Benth., *Polystachya flavescens* (Blume) J.J. Sm., *Sida rhombifolia* L. subsp. *retusa* (L.) Borss.Waalk., *Sophora interrupta* Bedd. and *Syzygium cuneatum* (Duthie) Wall. ex Brahman & H.O. Saxena, which were not hitherto recorded from Bihar and Orissa are recorded from Ganjam district of Orissa. *Syzygium cuneatum* (Duthie) Wall. ex Brahman & H.O. Saxena is a new nomenclatural combination.

41. **Brahmam, M. & Saxena, H.O. 1984.** "Additions to the flora of Bihar and Orissa – IV". *J. Bombay Nat. Hist. Soc.* 81: 509–510.

Abstract: Fourteen species, viz., *Acalypha lanceolata* Willd., *Ammannia octandra* L.f., *Cyperus alopecuroides* Rottb., *Eulalia quadrinervis* (Hack.) Kuntze, *Glycine wightiana* (Wight & Arn.) Verdc., *Jansenella griffithiana* (Müll.Hal.) Bor, *Lepidagathis cristata* Willd., *Neanotis quadriloculari*s (Thwaites) W.H. Lewis, *Ophiorrhiza trichocarpos* Blume, *Parthenium hysterophorus* L., *Paspalum compactum* Roth, *P. conjugatum* P.J. Bergius, *Plectranthus nilgherricus* Benth. and *Psychotria fulva* Buch.-Ham. ex Hook.f. not hitherto recorded from Bihar and Orissa are recorded from Bhubaneswar and Ganjam districts of Orissa, and *Ophiorrhiza trichocarpos* Blume, hitherto restricted to Andaman and Nicobar Islands is reported from the main peninsula of India for the first time from Mahendragiri, Orissa.

42. **Brahmam, M. & Saxena, H.O. 1984.** "Phytochemical screening of the plants of gandhamardan hill of Orissa (India) for tannins, saponins, flavonoids and alkaloids". *Asian J. Pl. Sci.* 1: 89–92.

43. **Brahmam, M. & Saxena, H.O. 1993.** The flora of Mahendragiri hills. In: S.N. Patra (ed.), *Mahendragiri – The Pride of Eastern Ghats*. Orissa Environmental Society, Bhubaneswar, pp. 35–57.

44. **Brahmam, M., Dhal, N.K. & Rout, N.C. 2001.** "Floristic diversity of Orissa – A critical assessment of new, rare, endemic and threatened taxa for *in situ* and *ex situ* conservation". In: Sahoo, S., Ramesh, D.B., Rao, Y.R., Debata, B.K. & Misra, V.N. (eds.), *Conservation and Utilization of Medicinal and Aromatic Plants*. Allied Publishers Ltd., New Delhi. pp. 14–21.

Abstract: Floristic surveys of Orissa have resulted in recording 2,727 species of vascular plants belonging to 1128 genera distributed over 228 families. Of which 27 taxa are found to be endemic to Orissa, and nearly 50% could not be collected even after

repeated efforts. Quite a few are presumed to be extinct or on the verge of extinction. New, rare, endemic threatened species are listed out from the field surveys and herbarium studies. Six potential biodiversity granaries are identified which need urgent attention for *in situ* conservation by declaring them as biosphere reserves. New taxa described from Orissa such as *Dimeria mahendragiriensis*, *Heritiera kanikensis, Habenaria panigrahiana*, *H. panigrahiana* var. *parviloba* and *Liparis vestita* subsp. *seidenfadenii* and endangered species such as *Stemona tuberosa, Cassipourea ceylanica* and *Balanophora polyandra* require *ex situ* conservation. Domestication of *Olax scandens, Melastoma malabathricum, Osbeckia chinensis, Hypericum gaitii, Ochna squarrosa* and *O. pumila* as ornamentals, is pleaded to prevent genetic loss. Debarking of *Litsea glutinosa* and *Symplocos racemosa* and unscientific tapping of *Sterculia urens, S. villosa, Shorea robusta* and *Cochlospermum religiosum* by injuring trees for gums resins need to be stopped. Special care is advocated for Mahendragiri hills complex because of their phytogeographical significance.

45. **Brahmam, M., Dhal, N.K. & Saxena, H.O. 1996.** "Phytochemical screening of some Orissa plants for tannins, saponins, flavonoids and alkaloids". *Bull. Bot. Surv. India* 38(1–4): 8–13.

Abstract: A total of 83 plant samples collected from the forest of erstwhile Kalahandi, Keonjhar, Koraput, Cuttack, Dhenkanal and Khurda districts of Orissa were screened for finding out new source of therapeutically important active compounds. Tannins were found in 33, saponins in 4, flavonoids in 19 and alkaloids in 7 samples. Out of 83 samples screened, 40 are belonging to 34 species were found to respond negatively for all the above ingredients. *Garuga pinnata* was found to contain 24.7% of tannins in its bark and the presence of saponins was recorded for the first time in the fruits of *Eriolaena hookeriana.*

46. **Brahmam, M., Acharya, B.C., Mohanty, J.K. & Sahoo, R.K. 1998.** "Floristic studies and vegetational assessments in graphite mining areas of Temerimal, Baragarh district, Orissa, India". *Advances Pl. Sci.* 11(1): 241–248.

Abstract: Floristic surveys and vegetational studies carried out along the line transact in the core and buffer zones of Temerimal graphite mines at different distances (50 m, 100 m, 250 m, 500 m, 1000 m, and 2000 m) for identifying tolerant species showed that with increase in distance from the mine site, there was an increasing trend of diversity index and decreasing trend of dominance index. No definite trend was observed as regards to equitability index but species richness increased with increase in distance. Six communities were identified on the basis of IVI values. The wider the distance of the site, closer was the similarities between communities. Although species composition differs from site to site, only a few species have been found to participate in community formation

as dominants and co-dominants. *Hyptis* and *Combretum* with three or four other species dominated at different stages in varied combinations. *Hyptis suaveolens, Cleistanthus collinus, Woodfordia fruticosa, Mimosa rubicaulis, Lantana camara* and *Helictres isora* were found to be tolerant in graphite mining areas.

47. Brahmam, M., Dhal, N.K., Thirunavoukkarasu, M. & Rout, N.C. 2000. "Orchid flora of Eastern Ghats". In: Brahmam, M., Thirunavukkarasu, M., Dhal, N.K. & Rout, N.C. (eds.), Eastern Ghats of Orissa. Assessment of Natural Resources. RRL & EPTRI, Bhubaneshwar. pp. 73–78.

Abstract: The family Orchidaceae constitutes one of the largest families of angiosperms and there are about 24,000 species in the world (Hawkes, 1965). They are widely distributed but the concentration of species is usually high in the humid forests of tropical countries. A total of 126 orchid taxa distributed over 41 genera are distributed in the Orissa portion of Eastern Ghats. The orchid flora of the region includes 5 endemic species and 1 monotypic genus.

48. Chadha, S. & Kar, C.S. 1999. *Bhitarkanika: Myth and Reality*". Natraj Publishers, Dehra Dun.

Abstract: The book contains comprehensive and complete information about forests, wildlife and associated management problems in this protected area. This book is first of its kind to embody subjects like history of the area, past management of forests and wildlife, bio-diversity including endangered flora and fauna, human dimensions, land status, special conservation schemes on crocodile and sea turtles including census methodologies, protection of wildlife biodiversity, legal aspects and Environmental Impact Assessments.

49. Chauhan, R. & Ramanathan, A.L. 2008. "Evaluation of water quality of Bhitarkanika mangrove system, Orissa, east coast of India". *Indian J. Mar. Sci.* 37(2): 153–158.

Abstract: The nutrient and dissolved metal concentration in Bhitarkanika mangrove system, Orissa, east coast of India had been examined. Surface water samples were collected from the different regions of mangrove-estuarine complex during the post monsoon seasons. There was distinct variation in chemical constituents of water among the estuarine, mangrove and bay region. Physicochemical parameters such as pH, EC and TDS and nutrients such as NO_3, PO_4 varied significantly among three sectors. The cations like K^+, Ca^{2+}, NH_4 and anions like SO_4^{2-}, HCO^-_3, SiO_2 did not showed any significant variation. There is high concentration of dissolved metal in this mangrove system. The above fact will reveal that mangrove is facing severe threat due to industrial pollution. The metals, Cu, Zn and Co showed higher affinity, while Pb and Cr also result in strong coupling with each other.

50. Chorghe, A., Prasanna, P.V. & Rao, Y.V. 2013. "Additions to the Flora of Odisha state". *J. Econ. Taxon. Bot.* 37(2): 320–323.

Abstract: Two grasses, viz., *Phacelurus zea* (C.B. Clarke) Clayton and *Arundinella ciliata* (Roxb.) Nees ex Miq. are being reported as new distributional records for Odisha from Similipal Biosphere Reserve and Niyamgiri hills, Kalahandi districts, respectively. Detailed description and illustrations are provided in the paper.

51. Chorghe, A., Prasanna, P.V. & Rao, Y.V. 2015. "Two new additions to the grasses of Odisha state". *J. Econ. Taxon. Bot.* 39: 81–84.

Abstract: Two grasses, viz., *Isachne pulchella* Roth and *Schoenefeldia gracilis* Kunth are being reported as new distributional records to Odisha state from Similipal Biosphere Reserve and Sundargarh district, respectively. *Isachne pulchella* earlier reported from Tamil Nadu, Maharashtra, Andhra Pradesh, Madhya Pradesh, West Bengal and Assam and *Schoenefeldia gracilis* reported from Uttar Pradesh, Madhya Pradesh, Maharashtra and Bihar. Detailed description and illustrations are provided here.

52. Choudhury, B.K. 1990. "Bhitarkanika mangrove swamps". *J. Environm. Sci.* 3(1): 1–16.

53. Choudhury, B.K. 1991. "Flora of Similipahar Reserve Forest". *Orissa Rev.* 43(6): 15–16.

54. Choudhury, B.P. 1984. "A glimpse into the vegetation of Bhitarkanika Wildlife Sanctuary in the state of Orissa". *Indian Bot. Reporter* 3(2): 121–124.

55. Choudhury, B.P. 1985. "A contribution to the flora of Nandankanan in the state of Orissa". *Proc. 72nd Indian Sci. Cong.* Part. III. p. 26.

56. Choudhury, B.P. 1986. "Nomenclature and distribution of some mangrove elements in the Bhitarkanika Wildlife Sanctuary". *Nat. & Wildlife Conservation Soc. Newslett*. 4(1&2): 58–60.

Abstract: Correct nomenclature and distribution of 29 mangrove taxa in the Bhitarkanika Wildlife Sanctuary has been presented in the paper along with synonyms, family name, short ecological notes and field number.

57. Choudhury, B.P. 1987. "Socio-economic aspect of wildlife sanctuary in the state of Orissa". *Orissa Rev.* 43(9): 45–47.

58. Choudhury, B.P. 1988. "Past and present mangrove flora of Paradeep and adjoining region in the district of Jagatsinghpur (Orissa) – An overview". *Parijatak* 24: 4–6.

59. Choudhury, B.P. 1989. "A glimpse into the mangrove forests of Orissa". *Parijatak* 19: 13–18.

Abstract: The mangrove vegetation in the estuarine regions of Orissa has been discussed in the paper. The mangrove vegetation at Balasore, Puri and Ganjam are extremely degraded and at places totally lost due operation of pestilent biotic activities while mangrove forest at Bhitarkanika in Cuttack district is extent as an epitome of rich mangrove forest of Orissa in remote past.

60. Choudhury, B.P. 1990. "Bhitarkanika: Mangrove swamps". *J. Environm. Sci.* 3(1): 1–16.

Abstract: Bhitarkanika Wildlife Sanctuary, in the district of Cuttack is a grand repository of mangrove elements. Like other mangrove forests of India, it was subjected to high degree of biotic interference which caused a considerable amount of devastation of the mangrove vegetation as well as wild animals present therein. Consequently, many were on the threat of extinction. However, in 1975 this region was declared as a sanctuary by the Government of Orissa. Thereafter, it has been enjoying adequate protection and hence the mangroves as well as their associates are in luxuriant forms. The general information pertinent to this sanctuary, its vegetational analysis, sociability of the mangrove species, their socio-economic importance, identification of vulnerable and rare taxa, further strategies for their conservation have been highlighted in this paper. An appendix, enumerating the typical mangrove species and some of their associates has been provided. Nomenclature of the taxa has been made up-to-date in pursuance with the provisions of the Berlin code. Those, not cited by Haines (1921–1925) and Mooney (1950) in their respective treatise have been marked with asterisks in the enumeration.

61. Choudhury, B.P. 1990. "The unique mangrove forest of Bhitarkanika in the state of Orissa". *Orissa Rev.* 46(9): 34–39.

62. Choudhury, B.P. 1994. A comparative study of mangrove vegetation in Bhitarkanika and Paradeep area in the state of Orissa. In: Subba Rao, M.V. (ed.), *Forest, Wildlife, Environment*. Andhra University, Vishakhapatnam. pp. 33–41.

63. Choudhury, B.P. & Biswal, A.K. 1994. "Floristic studies in the sanctuaries of Orissa – I. Nandankanan". *Bull. Environm. Sci.* 12: 55–63.

64. Choudhury, B.P. & Patnaik, S.N. 1975. "Flora of Bhubaneswar and adjoining region – I. Trees". *Prakruti* 12: 1–40.

65. Choudhury, B.P. & Patnaik, S.N. 1980. "Flora of Bhubaneswar and adjoining regions – III. New records of plants for the state of Orissa". *Pl. Sci. Res.* 2(1): 19–26.

Abstract: Through an exhaustive collection from 1971 to 1979 in and around Bhubaneswar 939 species belonging to 567 genera distributed in 133 angiospermic families have been collected, preserved and housed in the Herbarium of the P.G. Department of Botany, Utkal University. A brief analysis of the flora is presented and 16 species

established as new reports of species for Orissa, are dealt with along with their diagnostic features, phenology and localities of collections.

66. Choudhury, B.P. & Patnaik, S.N. 1981. "Aquatic flora of Bhubaneswar". *Proc. 6th Annual Conf. Orissa Bot. Soc. (Sambalpur)*. pp. 20–21.

67. Choudhury, B.P. & Patnaik, S.N. 1982. "A contribution to the flora of the Khandagiri-Udayagiri hills". *J. Econ. Taxon. Bot.* 3: 797–810.

Abstract: A total of 262 species of flowering plants belonging to 221 genera and 67 families have been collected from this area and the specimens have been housed in the herbarium of the Post-Graduate Department of Botany, Utkal University, Bhubaneswar.

68. Choudhury, B.P. & Patnaik, S.N. 1982. "Flora of Bhubaneswar and adjoining region – II. Diagnostic Key to the Families of Angiosperms". *J. Orissa Bot. Soc.* 4(1): 33–51.

Abstract: A programme has been launched for the exploration of flowering plants of Bhubaneswar and adjoining regions since 1971 and through an exhaustive collection for the last 8 years 939 species of angiosperms belonging to 567 genera and 133 families have been collected. Though it is necessary to publish the enumeration of all plants, diagnostic key for the identification of the families is presented at the first instance since none of the earlier workers like Haines or Mooney have provided key to the families in "The Botany of Bihar and Orissa" and its "Supplement". being typical dichotomous in nature and simple, his key will not only serve as a handy tool for assigning any plant of this area to its family but it will also be useful for identification of majority of families from other parts of the State.

69. Choudhury, B.P. & Patnaik, S.N. 1982. "Flora of Bhubaneswar and adjoining region". *J. Econ. Taxon. Bot.* 3: 549–555.

Abstract: A survey of Bhubaneswar and its adjoining regions covering 935.2 km^2 has been conducted during 1971–79 for a detailed floristic account as the natural flora of this area is being largely obliterated during the recent years due to capital construction and urbanization. Through these years, 939 species of flowering plants belonging to 567 genera and 133 families have been collected from this area and the specimens have been housed in the herbarium of the Post-Graduate Department of Botany, Utkal University, Bhubaneswar. A concise account of this floristic survey is presented in the paper.

70. Choudhury, B.P. & Patnaik, S.N. 1982. "Phyto-geographical analysis of the flora of Bhubaneswar". *Proc. 7th Annual Conf. Orissa Bot. Soc. (Berhampur)*. p. 17.

Abstract: While Hooker (1904) and Champion & Trevor (1938) were of opinion that the flora of India is largely a mixture of flora of neighbouring countries. Chatterjee (1962)

held the view that more than 60% of the dicotyledonous species of India are endemic. It is of course difficult to determine the nativity and mode of migration of each and every foreign element occurring in the flora of any region. However through the survey of literature it has been observed that quite a large number of naturalised foreign elements in India are present in the flora of Bhubaneswar and its adjoining regions. On the basis of distributional data the occurrence of various phytogeographical groups in this region has been determined. This reveals that the Indian elements are the most dominant in the flora of this region. Next in order come the Indo-malayasian elements. Other elements which are a few in number but quite conspicuous in this flora are Austro-Asian, Afro-Asian, Afro-Asiatic-Australian, Pantropical and Cosmopolitan. In addition to these, elements of Tropical American, Eurasian, Euro-Siberian and Mediterranean are found in this flora though very poorly represented.

71. Choudhury, B.P. & Patnaik, S.N. 1983. "A revised list of grasses of Bhubaneswar and neighbourhood". *J. Econ. Taxon. Bot.* 4(2): 559–566.

Abstract: Identity and nomenclature of 36 species of grasses belonging to 24 genera reported by Behera & al. (1979) from Bhubaneswar and its neighbourhood have been checked and a revised list of grasses including 23 species not reported by the earlier workers from this region has been prepared. The total number of grass species in this area comes to 54 (excluding 2 species of Bambuseae) which are distributed under 37 genera. The nomenclature of these taxa has been made up-to-date. Pertinent synonyms, references, field numbers and local names wherever available have also been provided in the enumeration.

72. Choudhury, B.P. & Patnaik, S.N. 1983. "Grasses of Bhubaneswar and adjoining regions". *Proc. 8th Annual Conf. Orissa Bot. Soc. (Rayagada)*. p. 16.

Abstract: Poaceae are the third dominant family next to Fabaceae and Cyperaceae of this region comprising of 55 taxa belonging to 37 genera. Identity and nomenclature of 36 species reported by the earlier workers from this area have been critically checked up and revised. Two species namely, *Panicum miliare* Lam. and *Sporobolus fertilis* (Steud.) W.D. Clayton turn out to be new records for the state of Orissa, while a few taxa of doubtful identity are excluded from the compendium. Diagnostic features, distribution, up-to-date nomenclature, pertinent synonyms, references, field numbers and local names (wherever available) of these 55 taxa have been provided. These are arranged alphabetically in the enumeration for easy reference. Genera represented in this area are: *Alloteropsis* (1 sp.), *Arthraxon* (1 sp.), *Bothriochloa* (2 sp.), *Brachiaria* (1 sp.), *Chloris* (1 sp.), *Chrysopogon* (2 sp.), *Coix* (1 sp.), *Cynodon* (1 sp.), *Dactyloctenium* (1 sp.), *Desmostachya* (1 sp.), *Diectomis* (1 sp.), *Digitaria* (2 sp.), *Echinochloa* (2 sp.), *Eleusine* (2 sp.), *Elytrophorus* (l sp.), *Eragrostis* (6 sp), *Eriochloa* (1 sp.), *Hackelochloa* (1 sp.), *Hygroryza*

(1 sp.), *Hymenachne* (1 sp.), *Ischaemum* (2 sp.), *Iseilema* (1 sp.), *Oplismenus* (1 sp.), *Oryza* (2 sp.), *Panicum* (5 sp.), *Paspalidium* (2 sp.), *Paspalum* (1 sp.), *Pennisetum* (1 sp.), *Perotis* (1 sp.), *Phragmites* (1 sp.), *Pogonatherum* (1 sp.), *Saccharum* (2 sp.), *Setaria* (1 sp.), *Sporobolus* (1 sp.), *Triticum* (I sp.), *Vetiveria* (1 sp.) and *Zea* (1 sp.).

73. Choudhury, B.P. & Patnaik, S.N. 1985. "Aquatic angiosperms of Bhubaneswar – The capital city of Orissa". *J. Econ. Taxon. Bot.* 7(3): 527–536.

Abstract: An account of 47 typical angiosperms collected in and around Bhubaneswar has been presented in this paper. They are distributed under 39 genera which belong to 24 families. An artificial key to the species has been provided for easy identification. Enumeration, up-to-date nomenclature, pertinent synonyms, references and field numbers of collection have been given. Monocot and dicot species occur in approximate proportion of 1:1.3.

74. Choudhury, B.P., Biswal, A.K. & Subudhi, H.N. 1991. "Mangroves of Orissa and aspects of their conservation". *Rheedea* 1(1&2): 62–67.

Abstract: Orissa had a rich mangrove forest in the remote past. However, as in other states of India, this has been devastated largely due to biotic interference. Naturally, there is a considerable amount of shrinkage in the mangrove vegetation of Orissa due to habitat destruction especially at Paradeep-Hukitola, Devi, Jambu estuaries etc. The mangrove forests at these places have degraded to scrub jungle and at places they have totally disappeared. In contrast to these regions, Bhitarkanika sustains luxuriant mangroves. This is due to adequate protection given to this plant community since this terrain has been declared as a sanctuary in 1975. General information about mangroves and their distributional pattern have been highlighted. Conservation of some taxa whose population exhibit considerable degree shrinkage has also been suggested.

75. Choudhury, B.P., Nayak, P.K. & Das, J. 2004. "Mangroves of Chilka: Past and Present". *J. Econ. Taxon. Bot.* 28(1): 18–24.

Abstract: Chilka, the largest lagoon of Asian continent, in the state of Orissa is a grand repository of aquatic organisms as well as terrestrial biota of which, mangroves deserve special mention. By the palynostratigraphical method, the soil profiles of islets such as Barakuda, Nalabana and Breakfast, the reconstruction of palynostratigraphical flora of about five thousand years back has been done successfully. From the existence of pollen grains of gymnosperms, angiosperms, pteridophytes as well as non-vascular plants in and around Chilka, it is decidedly concluded that in remote past *Caesalpinia crista, Rhizophora apiculata, R. mucronata, Pandanus tectorius, Sonneratia apetala, Nypa fruticans, Avicennia officinalis, Heritiera fomes, Excoecaria agallocha, Derris trifoliata, Acrostichum aureum* and *Acanthus ilicifolius* were extant in Chilka lagoon and its neighourhbood.

Discovery of *Nypa fruticans* in the islands of Chilka indicates that this taxon was also present in the mangrove forest of Bhitarkanika since Mallick & al. (1972) are of opinion that Chandbali seashore, Brahmani–Baitarani estuaries are one geological formation. This came into existence before six thousand years. Haines (1921–1925) presumed that *Nypa fruticans* might be present in the Mahanadi delta. However, floristic exploration for about 20 years indicates that this species is singularly absent in the mangrove swamps and forests of Orissa. The reason for disappearance of this species is still wrapped in obscurity. Later on, Haines (l.c.), Narayanswami & Carter (1922) have collected a few mangroves and their associates such as *Acanthus ilicifolius, Lumnitzera racemosa, Excoecaria agallocha* and *Suaeda maritima* from this terrain. The disappearance of major mangrove taxa is probably due to constant operation of anthropogenic and some other ecological factors. Despite its rank as a sanctuary assigned by the Government of Orissa (1983), biodiversity of this unique ecosystem is degrading at an alarming rate and its environ is now highly polluted. Through regeneration and rehabilitation programme, man-made mangrove forest can be created which being blended with tourism programme will improve the economic status of the inhabitants and there by the normalcy of the conflict related to prawn culture will be reduced and the lost flora of Chilka will be restored.

76. Choudhury, D.B. & Choudhury, B.P. 2003. "Judicious exploitation of mangrove resources of Orissa – An assessment". *J. Econ. Taxon. Bot.* 27(3): 551–558.

Abstract: The pristine mangrove resources of Orissa were remarkable. However, paradoxically due to lack of knowledge regarding their judicious exploitation and high socio-economic value, the mangrove biota were neglected and were ruthlessly devastated, in order to meet the various requirements of the nearby inhabitants. Reclamation of mangrove forest land for the settlement of immigrants, paddy cultivation and prawn culture have accelerated the depletion of mangrove biota. In recent time, mangrove conservation vis-à-vis prawn culture has become a debatable issue in Orissa. As per an estimate provided by Satellite Data (LANDSATTMF) the total mangrove spread in Devi-Mahanadi Brahmani Baitarani-Subarnarekha deltaic complex sustained 217.93 km^2 of mangrove in 1985 which has degraded to 199.19 km^2 in 1993 as per a report by IRSLISSIIFCC organization. Hence, there is a significant depletion of 17.93 km^2 of mangrove coverage during a period of eight years. And it is further degraded to 195 km^2 in 1995 (Misra, 1999). Notwithstanding the variability in respect of the mangrove coverage in Orissa given by various agencies or research institutes it is evident that this plant community is degrading at an alarming rate. Yet, it is high time to develop appropriate strategies for sustainable exploitation of the mangrove biota which has got a significant bearing on the socio-economic development of the Orissa state. Concurrently, effective steps should be adopted for the natural regeneration of the mangrove taxa in the denuded area simply by giving protection. This should be

supplemented with rehabilitation of the mangrove species basing on multidisciplinary scientific research data. In other words, conservation and judicious utilization of the mangrove resources should proceed in a harmonious manner.

77. **Dani, S.C. 1984.** "Vegetation of Eastern Ghats of Orissa". *Proc. Seminar Resources Developm. & Env. E. Ghats (Waltair)*. pp. 43–46.

78. **Das, A.B., Basak, U.C. & Das, P. 1994.** "Karyotype diversity in three species of *Heritiera,* a common mangrove tree on the Orissa coast". *Cytobios* 80: 71–78.

Abstract: Chromosome number and karyotype analysis of *Heritiera fomes*, *H. macrophylla* and *H. littoralis* from Bhitarkanika and Mahanadi delta, Orissa, revealed 2n = 38 chromosomes. Total chromosome length and metaphase chromosomes volume varied from 57.68–74.26 µm and 18.43–46.02 μm^3 in *H. littoralis* and *H. fomes*, respectively. The total form percentage (TF%) values of a karyotype were statistically significant among the species. Detailed analysis of chromosome morphology revealed minute structural alterations in chromosomes with regard to chromosome length and chromosome volume and TF% which played an important role in the establishment and adaptability of such species.

79. **Das, A.B., Basak, U.C. & Das, P. 1995**. "Chromosome number and karyotype diversity in the Rhizophoraceae found in mangrove forests of Orissa". *Cytobios* 81: 27–35.

Abstract: The somatic chromosome number, karyotype and interphase nuclear volume of each of five mangrove species belonging to the Rhizophoraceae were investigated. Species-specific chromosomal characteristics, and numerical and structural alterations in chromosomes were manifest at the intraspecific level. Except for *Rhizophora mucronata* (2n = 36), the somatic chromosome number is reported for the first time in *Kandelia candel* (2n = 38), *Ceriops decandra* (2n = 36), *Bruguiera parviflora* (2n = 34) and *B. sexangula* (2n = 34). The correlation coefficient among the various chromosomal and nuclear parameters was interdependent.

80. **Das, A.B., Basak, U.C. & Das, P. 1996**. "Karyotype analysis and 4C nuclear DNA estimation in three species of *Acanthus*, a mangrove associate from coastal Orissa". *Cytobios* 87: 151–159.

Abstract: Karyotype analysis and cytophotometric estimation of 4C nuclear DNA were carried out in *Acanthus ebracteatus, A. ilicifolius* and *A. volubilis* found in the mangrove forests of Orissa. The somatic chromosome numbers, except in *A. ilicifolius* (2n = 44), are reported for the first time in *A. ebracteatus* (2n = 44) and *A. volubilis* (2n = 44). Karyotype analysis revealed species-specific chromosomal characteristics, numerical and minute structural alterations of chromosomes. Critical analysis showed significant variations in

the 4C DNA amount between the species. The correlation coefficient among the various chromosomal and nuclear parameters was interdependent suggesting a compromise between structural and molecular changes of the genome in speciation.

81. Das, A.B., Basak, U.C. & Das, P. 1999. "Genetic erosion of wetland biodiversity in Bhitarkanica forest of Orissa, India". *Biologia (Bratislava)* 54(4): 415–422.

Abstract: Evidences of increasing damage to coastal ecosystem and hardship for coastal populations are accumulating throughout the world. Millions of hectares of wetlands and inter-tidal flats have been destroyed or damaged globally as a result of uncontrolled development and land reclamation programmes. In India, about 4.1 million hectares are covered by wetlands of different categories; mangroves - occupy an area of about 6,740 square km which is about 7% of the world's mangroves. The world's total mangrove area which spreads over 30 countries, including India is about 99,300 km^2. Bhitarkanika mangrove forests of Orissa situated in the confluence of Brahmani and Baitarani rivers, is am unique coastal ecosystem spread over 191.44 km^2 having 62, out of 64 species of mangroves found in India. Many chromium, manganese, iron and led mines located in the catchment of these rivers contribute greatly to the heavy metal load in the sediments of the mangrove ecosystems. The increasing toxicity of the heavy metals bringing about structural alterations and anomalies in meiotic and mitotic chromosomes of a number of tree mangroves are reported as compared to the plants grown in Hookitola Island of Mahanadi delta devoid of heavy metal load. Significant decrease in the in situ DNA content in the roots as well as shoot meristematic cells of *Aegiceras*, *Avicennia*, *Bruguiera*, *Cynometra*, *Excoecaria*, *Heritiera*, *Kandelia*, *Rhizophora*, *Xylocarpus* were noted. The chromosomal aberrations like lagging, early separation, chromosome erosion and chromosome break were prominent in plants grown at the heavy metal contaminated sites. The overall decrease of mitotic index from 5.3% to 2.6%, genome length, volume and 4C nuclear DNA content suggest the mutagenic effects of heavy metals during DNA replication. Thus, the fragile gene pool of this ecosystem is threatened due to genetic erosion by heavy-metal stress.

82. Das, A.B., Parida, A., Basak, U.C. & Das, P. 2002. "Studies on pigments, proteins and photosynthetic rates in some mangroves and mangrove associates from Bhitarkanika, Orissa". *Marine Biol.* 141: 415–422.

Abstract: Pigment contents, proteins and net photosyn-thesis were investigated in fully developed leaf of 1 year old seedlings of six mangroves (*Bruguiera gymnorrhiza, Rhizophora apiculata)* and mangrove associates *(Caesalpinia bonduc, Cerbera manghas*, *Derris heterophylla, Thespesia populnea),* collected from Bhitarkanika, located on the east coast of India. Large variations in the photosynthetic rates (P_N) among the six species were observed, ranging from 10.16 µmol CO_2 m^{-2} s^{-1} in *C. bonduc* to 15.28

µmol CO_2 m^{-2} s^{-1} in *R. apiculata.* The total leaf protein content ranged from 12.09 mg g^{-1} dry wt in *T. populnea* to 51.89 mg g^{-1} dry wt in *B. gymnorrhiza.* The chlorophyll *a/b* ratio was typically about 3.0 in all the studied species, except *C. bonduc* (2.8). Photosynthetic rates and chi a/b ratio in the leaves were found to be correlated. Analysis of chlorophyll and xanthophyll spectra suggested: (1) variations in different forms and amounts of carotenes as well as xanthophylls and (2) the presence of high amounts of near-UV-absorbing substances in leaves, particularly in the two mangroves *(B. gymnorrhiza*, *R. apiculata)* and a mangrove associate (*T. populnea),* which appears to be an adaptive feature. Estimation of the chi *a/b* ratios in isolated thylakoids yielded a low value of 1.8 for *R. apiculata* and > 2.6 for other species. The total protein, chlorophyll ratios in thylakoids varied considerably from 3.14 *(D. heterophylla)* to 10.88 (*T. populnea)* among the mangrove associates and from 16.09 to 18.88 between the members of the Rhizophoraceae. The chlorophyll/carotenoid ratios in thylakoids of the six species were more or less similar. The absorption spectra for washed thylakoids of *C. manghas* and *D. heterophylla* exhibited absorption characteristics typical for C_3-plant thylakoids. However, thylakoids isolated from *R. apiculata. B. gymnorrhiza*, *C. bonduc* and *T. populnea* exhibited an unusual increase in absorption in the blue region (380-410 nm) of the absorption spectrum. The presence of high-absorbing (in the short-wave length, near-UV region) pigments appears to be closely associated with the thylakoids in *R. apiculata* and *T. populnea.* Our results, therefore, suggest a wide range of variation, not only in protein and pigment contents of photosynthetic tissues, but also in the spectral characteristics and composition of the pigments in mangrove species. An understanding of the nature of these pigments in mangroves and their associates, under their natural conditions and especially in relation to eco-physiological adaptations, is necessary, not only in relation to conservation, but also to allow propagation under different salinity conditions.

83. **Das, H.S., Panda, P.C. & Patnaik, S.N. 1994.** "A systematic account of the wetland plants of coastal Orissa". *J. Econ. Taxon. Bot.* 18(3): 562– 576.

Abstract: The paper presents a systematic account of wetland plants of eastern coast of Orissa. In the present study 159 species belonging to 109 genera and 58 families including 7 pteridophytes could be described for inland and coastal waterbodies of the study area, of which Poaceae and Cyperaceae are the dominant families being represented by 23 and 16 species, respectively. Rhizophoraceae with 9 species and Hydrocharitaceae with 6 species are next in order in species richness.

84. **Das, M.C. 1984.** "Land and forest resources of Orissa". *Proc. Seminar Resources Developm. & Env. Eastern Ghats (Waltair)*. pp. 35–41.

85. **Das, P., Basak, U.C. & Das, A.B. 1997.** "Restoration of the mangrove vegetation in the Mahanadi delta, Orissa, India". *Mangroves Salt Marshes* 1: 155–161.

Abstract: In India, mangroves occupy 6740 km^2, of which the Mahanadi delta and Bhitarkanika mangrove forests of Orissa cover 191.44 km^2, most of which has been severely overexploited. Worldwide concern to conserve mangroves necessitated propagation of mangroves to re-establish them on barren and swampy land along tidal creeks around Paradeep port of Orissa. *Avicennia officinalis, Aegiceras corniculatum*, *Bruguiera parviflora, B. sexangula, Ceriops decandra, Excoecaria agallocha, Heritiera fomes, Kandelia candel, Rhizophora mucronata and Sonneratia apetala* were vegetatively propagated and planted over 10 ha of degraded salt-marshy wetlands of Mahanadi delta in pure and mixed stands depending on the intensity and the frequency of tidal inundation at the experimental site. Survival was significantly higher (80%) in *S. apetala* followed by *A. officinalis, R. mucronata, K. candel* and *H. fomes* (70–75%). *Sonneratia apetala* recorded the maximum growth in height (3.0 m after 2 years), whereas *C. decandra* showed the minimum growth (0.5 m). Growth performance was better with plants in mixed stands than the plantation with single species. This gives us hope to propagate and re-establish mangroves for conservation in scientifically managed plantations in a physiologically arid environment.

86. **Das, P.K. 1991.** *Flora of North-East Koraput district*. Ph.D. Thesis, Berhampur University, Berhampur, Orissa (unpublished).

87. **Das, P.K. 2014.** "Exploration of trees of Koraput district of Odisha for biodiversity conservation". *J. Non-Timber Forest Prod.* 21: 105–108.

Abstract: Author has prepared a list of 80 plants species which are grown naturally in the forest have fulfilled the needs of local people. The plants provide renewable plant resources such as timber, fuel, gum, resin and food, and also helpful in the conservation of biodiversity, control of soil erosion, maintain humidity and regulate environmental pollution. This study was conducted with a view to protect biodiversity.

88. **Das, P.K. & Misra, M.K. 1990.** "The Flora of Bhanja Bihar and its neighbourhood". *Anusandhana* (*Berhampur Univ. J. Nat. Phys. Sci.*) 11: 1–46.

Abstract: The paper reports the angiospermic plants of Bhanja Bihar. There are 367 taxa under 282 genera which are described under 89 families. To each taxon a note indicating the habit and habitat of the taxa is appended.

89. **Das, P.K. & Misra, M.K. 2000.** "Vegetation and floristic studies on Koraput district of Orissa". In: Gupta, B.K. (ed.), *Higher Plants of Indian Subcontinent*. Vol. IX (*Indian J. Forest., Addit. Ser.* XI). Bishen Singh Mahendra Pal Singh, Dehra Dun. pp. 115–130.

Abstract: A total of 597 plant species belonging to 371 genera and 94 families, which have been recorded from Koraput district of Orissa are provided in the paper. The dicots are represented by 453 species belonging to 285 genera and 77 families, including 144 monocot 144 species belonging to 86 genera and 17 families.

90. Das, T.K., Swain, A., Dalai, A.K., Mishra, B.K. & Rath, S.P. 2008. "Some aspects of phytosociological studies on three forest blocks of Bhitarakanika mangrove ecosystem". *Pl. Sci. Res.* 30(1&2): 112–117.

Abstract: Species Evenness Index of Gupti showed greater value despite Dangmal forest block being species rich. Species richness depends on diverse nature of the floral assemblage in an area. The communities with higher species diversity are considered to be associated with effective evolutionary process and origin of species. The origin of species is influenced by the presence of adjacent diverse terrestrial flora which contributes better to the process of speciation in course of time. Rank-abundance curve of the three forest blocks indicate the difference, which is well-marked as steeper curve to the low level curve. The low level curve indicates many important species in comparison to the steeper curve with very few successful species. The rank-abundance curve of Kakranasi forest block was shown by much steeper curve with low species diversity and low species evenness. Lower slope curve indicates high species richness and greater species evenness.

91. Dash, P., Mohanty, R.C. & Rout, S.K. 2011. "Analysis of effect of steel plant effluents on structural composition and diversity of vegetation of Kalinga Nagar Industrial Area at Duburi of Jajpur district, Odisha". *Pl. Sci. Res.* 33(1&2): 78–88.

Abstract: The experiment has been designed to provide an overview of the impact of steel plant effluents on structural composition and diversity of vegetation of Kalinga Nagar Industrial Area at Duburi of Jajpur district. A change in composition of vegetation is presented in the form of change in frequency, density, abundance, relative frequency, relative density, relative dominance, importance value Index, alpha diversity and beta diversity of the natural vegetation existing in the industrial area and peripheral area of the study site. Tree species richness of the industrial area was found to be lower than that of the peripheral area as indicated by 'p diversity' values. Presence of more herbs and less trees in the steel plant area reflects the loss of biodiversity in the vegetation of Kalinga Nagar Industrial Area.

92. Dash, P.K. & Patro, S.N. 1990. Gandhamardan ecosystem development vis-à-vis environment. In: Patro, S.N. (ed.), *Environment and Sustainable Development*. Orissa Environmental Society, Bhubaneswar. pp. 37–67.

93. Dash, P.K., Mohapatra, P.P. & Rao, Y.G. 2009. "Diversity and distribution pattern of tree species in Niyamgiri hill ranges, Orissa, India". *Indian Forester* 135(7): 927–942.

Abstract: The Niyamgiri hills in the southeastern parts of Orissa are a unique forest ecosystem harbouring rich floristic composition and vast natural resources. As there is absolutely no published record on flora of the hill till date, the phytosociological characteristics, diversity and distribution of tree species at three proposed reserve forests

of the hill ranges between elevations from 400 to 1,306 m were studied. A total of 152 tree species were recorded from the study sites belonging to 114 genera and 41 families. Species diversity was found to be maximum at Khambesi Reserve Forest and minimum at Niyamgiri Reserve Forest. Significant correlation of species diversity with species evenness and species richness were observed while significant negative correlations were marked between species diversity, concentration of dominance, beta diversity and maturity index. At present the biodiversity of the hill is under threat due to the ongoing and upcoming mining activities. The results of this study might render a helping hand to the forest managers in preparing a conservation plan for the highly species diverse and threatened ecosystem of the hill ranges.

94. Dash, P.K., Panda, D., Dhal, N.K. & Rout, N.C. 2005. "Impact of salinity on mangroves of Bhitarakanika". *Pl. Sci. Res.* 27(1&2): 33-–37.

Abstract: Mangrove ecosystems are highly fragile and their sustenance mainly depends on a balanced fresh water influx from adjoining rivers and sea. A few sporadic reports are available on the vegetation patterns of mangroves with scant attention for studying the impact of salinity on the distributional pattern. The study analyses the effect of variation in salinity levels on mangrove vegetation of Bhitarakanika. The water and sediment samples were collected at different locations from upstream (Khola) to the Bay region (Habalikhati) of Brahmani and Baitarani river systems. Salinity index of water samples gradually increases from 3.2 to 28.8 g/l and the sediment salinity varied from 0.1 to 1.2% starting from Khola to Habalikhati region. The vegetation pattern showed that many important species were less abundant and restricted to a particular zone or often absent in some forest blocks. Species such as *Avicennia alba, A. marina, Bruguiera cylindrica, B. parviflora, Ceriops tagal, Lumnitzera racemosa. Rhizophora apiculata, R. mucronata* and *Sonneratia alba* were rarely encountered at Khola and Bhitarakanika regions, while *Cerbera manghas, Kandelia candel, Sapium indicum* and *Xylocarpus mekongenesis* were hardly observed at the Habalikhati regions. *Avicennia officinalis* was observed to be the dominant species within the sanctuary area followed by *Heritiera fomes* and *Excoecaria agallocha.* Variation in salinity levels of water and sediment appears to be one of the limiting factors for the existing vegetation pattern in Bhitarakanika sanctuary.

95. Dash, P.K., Panda, D., Dhal, N.K., Rout, N.C., Muduli, S.D. & Rao, K.S. 2007. "Quantitative assessment of true mangroves present at Bhitarkanika Wildlife Sanctuary, Orissa, India". *Int. J. Ecol. Environm. & Conservation* 13(2): 403–408.

Abstract: Quantitative structure of true mangroves of Bhitarkanika Wildlife Sanctuary, Orissa was studied in five forest blocks, viz., Khola, Dangamal, Bhitarkanika, Thakurdia and Habalikhati from January to July 2005. During the course of investigation 29 species

of true mangroves were found to be present in the sanctuary. Species such as *Avicennia alba, A. marina, Bruguiera cylindrica, B. parviflora, Ceriops tagal, Lumnitzera racemosa, Rhizophora apiculata, R. mucronata* and *Sonneratia alba* were rarely encountered at Khola, Dangamal and Bhitarkanika regions, while *Cerbera manghas, Kandelia candel, Sapium indicum* and *Xylocarpus mekongensis* were hardly observed at the Habalikhati and Thakurdia regions. *Avicennia officinalis* is observed to be most dominant species within the sanctuary area followed by *Heritiera fomes* and *Excoecaria agallocha*.

96. **Dash, S.S. 1997.** *Studies on floristics, biomass and energetic in tribal village ecosystems of Eastern Ghats of Orissa*. Ph.D. Thesis, Berhampur University, Berhampur (unpublished).

Abstract: A total of 249 species under 206 genera belonging to 67 families were recorded and described briefly in the work. Among the angiosperms, 206 species are dicotyledons and 43 species are monocotyledons.

97. **Dash, S.S. & Misra, M.K. 1999.** "Plant diversity and sustainable development in a tribal village eco-complex on the Eastern Ghats of Orissa". *J. Human Ecol.* 10(5&6): 415–419.

Abstract: The paper reports the plant diversity in and around three tribal village ecosystems of Phulbani district of Orissa and shows how the biodiversity resources essentially met the basic demands of the tribals for their sustenance. Of the total 249 plant species recorded in and around the villages, the tribals used 43 species for food, 16 for fuel, 61 for medicine, 18 for timber, 18 for other economic purpose, 3 as stimulants and 17 as sacred plants. Besides, 13 species served as fodder plants. It was felt that biodiversity is essential for the functioning of village ecosystems.

98. **Dash, S.S. & Misra, M.K. 2001.** "Studies on hill agro-ecosystems of three tribal villages on the Eastern Ghats of Orissa, India". *Agric., Ecosyst. Environm.* 86: 287–302.

Abstract: The sustainable indigenous agro-ecosystems of India, a majority of which are degraded or destroyed, need protection. The main objective of this study was to analyse the traditional agro-ecosystems from structural and functional point of view and their interactions with other biophysical and socio-economic characters with a view to offer possible solutions. Analysis of traditional agro-ecosystems of three tribal villages, inhabited by Kondhs of Eastern Ghats of Orissa, India, revealed that cultivated land occupied 66% of the total land area. This covered valley, shifting and home garden cultivation. Under valley, rice (*Oryza sativa* L.) showed the maximum productivity (2–4 Mg ha^{-1}) among the crops. Minor millets and red gram [*Cajanus cajan* (L.) Millsp.] were cultivated under shifting cultivation in one of the villages. Vegetables and spices were the main crop under home garden. In valley agriculture human and draught power were the major inputs of energy, while in shifting cultivation human labour was the only source.

Out of the total agricultural yield, 52.5, 90.6 and 75.9% were consumed in the villages of Rajikakhola, Nediguda and Badruguda, respectively. When agriculture, forest and animal husbandry sectors were taken together the average share of agricultural sector to the total consumption in the villages was 68.4%, the rest being contributed by forest, while the contribution of animal husbandry was almost negligible. Agricultural production can be stabilized through available rain water management, application of organic manure to agricultural fields and protection of the existing forests. Abandoned *Podu* (i.e., shifting cultivation) fields can be improved through agro-forestry practices.

99. Deo, B. 2004. "Heavy metal accumulation by plant species from a coal mining area in Orissa". *J. Environm. Biol.* 25(2): 163–166.

100. Deo, B. & Panda, P.C. 2005. "Vegetation and flora of an open cast coal mined area in South Bolanda, Talcher, Orissa". *J. Econ. Taxon. Bot.* 29(1): 22–30.

Abstract: The natural vegetation and flora of a unreclaimed open-cast coal mined land of south Bolanda, Talcher, Orissa after 40 years of abandonment was studied. Development of sparse vegetation cover with less diversified species composition and predominance of herbaceous taxa were the characteristics of the vegetation on mine wastes. A total of 185 species of angiospermic plants belonging to 144 genera and 48 families and 2 species of pteridophytes found to occur in the locality have been enumerated in the paper.

101. Deo, B., Panda, P.C. & Das, P. 2001. "Analysis of natural vegetation of an abandoned open cast coal mine in monsoon climate of Eastern India". *Proc. Natl. Acad. Sci. India* 71(B) I: 73–80.

Abstract: The quantitative analysis of the natural vegetation on overburdens of an abandoned unreclaimed coal mine in south Bolanda, Talcher, Orissa revealed that the plant communities occurring on coal mine wastes after 30 years of abandonment represent early stages of a slow primary succession and also that the succession has proceeded predominantly by species enrichment over the years, as evinced, by the general sparseness of plant and low plant cover.

102. Dey, A.N., Mohanty, T.L. & Patra, S.N. 2007. "Economic analysis of bamboo based agroforestry system in Eastern and South Eastern coastal plains of Orissa". *Indian J. Forest.* 30(3): 279–282.

Abstract: Bamboo is one of the fastest growing species amongst the number of multipurpose tree species. It is socially acceptable with broad adaptability because of its versatile and multifarious uses which contribute valuably towards the human economy providing variety of goods. Looking to the global scenario of the increasing demand and decrease supply of Bamboo for industrial as well as commercial purposes, cultivation

of bamboo through agroforestry practices seems to have high economic return. The paper focuses on economic analysis of agroforestry models of bamboo cultivation through flute methods. In the present study the NPV, BCR and IRR are obtained as Rs. 72,550, 2.93 and 47.85, respectively at 10% discounted rate of interest.

103. Dey, S.K., Dey, B.S. & Mohapatra, S. 2011. "Assessment of heavy metals in some selected vegetables from local market *of* Balasore, India: *A* preliminary report". *Pl. Sci. Res.* 33(1&2): 69–77.

Abstract: Eighteen different fresh vegetables were collected from the market of Balasore town of Odisha, India in two lots during the months of March and April in 2009 and were analysed for their heavy metal contents. Vegetables collected were beet, carrot, radish, potato, spinach, fenugreek, *Amaranthus viridis, A. oleraceus,* bitter gourd, pointed gourd, lady's finger, kovai fruit, brinjal, bean, capsicum, cucumber, country bean and cauliflower. The heavy metals such as Cr, Cd, Pb, Ni and As were analysed using atomic absorption spectrophotometer. In this preliminary study, Cr content was found within safe limit and leafy vegetables were found containing more Cr (i.e., 8.784 mg/kg DW in spinach). The Cd content of spinach (2.042 mg/kg DW), kovai fruit (1.628 mg/kg OW), brinjal (1.682 mg/ kg DW) and cauliflower (1.96 mg/kg DW) were found beyond the safe limit with reference to the Indian Standard, and following WHO/FAO Standard, except for country bean (in which Cd was not detected), Cd content of all other vegetables were beyond the permissible limit. Except for beet, *Amaranthus viridis* and bean, all other vegetables were found to contain Pb beyond the permissible limit and maximum was found in cauliflower (i.e., 12.54 mg/kg DW). The underground vegetables contained less Pb in comparison to aeril ones. Ni contamination was not a matter of concern since the level was found very low. Except kovai fruit, all other vegetables were found to contain as less than the food hygiene concentration limit of 1.0 mg/kg DW. This report is based on the study of samples collected in two lots and therefore, study on more samples collected randomly round the year is essential to ascertain their heavy metal contents.

104. Dikshit, N. 1994. "Genetic resources of Okra and their wild relatives in Orissa". *Pl. Sci. Res.* 16(1&2): 29–31.

Abstract: Three explorations were undertaken during 1989-91 from the entire Orissa for germplasm collection of Okra [*Abelmoschus esculentus* (L.) Moench] and a total of 78 accessions were collected. It includes *Abelmoschus esculentus* (73), *A. manihot* subsp. *manihot* (2), *A. crinitus* (2) and *A. ficulneus* (1). Wide range of variability in cultivated and wild relatives varying in height, number of branches, colour of leaf, degree of hairiness, number of ridges and seed characters was observed. The notes on variants collected, their distribution pattern and ethnobotanical notes are discussed.

105. Dikshit, N. & Aghora, T.S. 2004. "Diversity in cowpea and some *Vigna* species from Orissa, India". *J. Econ. Taxon. Bot.* 28(1): 1–5.

Abstract: A total of 130 accessions comprising *Vigna unguiculata* (L.) Walp. (99), *V. unguiculata* var. *sesquipedalis* (22), *V. umbellata* (7) and *Vigna* spp. (2) collected from Orissa during November 1994 are reported. The diversity and distribution pattern of each species have been highlighted. The variability among and within the species have been studied in detail.

106. Dikshit, N., Thomas, T.A. & Koppar, M.N. 1994. "Diversity and distribution of Eggplant and their wild relatives in Orissa". *Pl. Sci. Res.* **16(1&2): 22–25**.

Abstract: Data collected during three explorations for cultivated and wild relatives of eggplant during 1989-91 from Orissa are reported here. It includes *Solanum melongena* (182), *S. torvum* (3), *S. indicum* (1), *S. viarum* (2) and *S. xanthocarpum* (3). Ecology of the areas explored, diversity observed, specific pockets of variability observed for eggplant and danger of genetic erosion are discussed.

107. Dubey, A.C. & Panigrahi, G. 1986. "Nomenclatural notes on the orchids of Orissa". *J. Orissa Bot. Soc.* 8: 80–81.

108. Dubey, A.K. 1984. "Additions to the Poaceae of Orissa". *Proc. 71st Indian Sci. Cong.* Part III, p. 98.

109. Dubey, A.K. 1989. *Flora of Orissa State: Monocotyledons*. Ph.D. Thesis, Sambalpur University, Sambalpur, Orissa (unpublished).

110. Dubey, A.K. & Misra, S.C. 1982. "Aquatic and marshland vegetation of Bhadrak". *Proc. 7th Annual Conf. Orissa Bot. Soc. (Berhampur)*. p. 18.

Abstract: While studying the flora of Bhadrak, 62 species of aquatic and marshland plants were collected during 1969–1971 within the area extending between Badrak Railway station to Baudpur Railway Station and Kowpur Village to Chandan Bazar. The specimens were identified by the help of Central Circle, Botanical Survey of India (BSI), Allahabad and Central National Herbarium, BSI, Howrah. The analysis of the vegetation revealed that the hydrophytes constitute nearly 10% of the total vegetation of the area. The dicot and monocot species were formed in the ratio of 1.3:1. The collected plants were grouped under five ecological life forms, viz., free floating, attached-floating, attached-submerged, aquatic and/or amphibious and marshland. The ten dominant families were found to be Cyperaceae, Poaceae, Pontederiaceae, Lentibulariaceae, Scrophulariaceae, Asteraceae, Lythraceae, Fabaceae, Onagraceae and Convolvulaceae. The luxuriant growth of the hydrophytic vegetation was observed between September and February. This may probably be due to stagnant water and low temperature.

111. Dubey, A.K. & Panigrahi, G. 1983. "Additions to the Cyperaceae of Orissa". *Proc. 8th Annual Conf. Orissa Bot. Soc. (Rayagada).* p. 1.

Abstract: Rath & al. (1979), in consultation with Haines (1924), Mooney (1950) and all other subsequent publications on the subject, listed 112 taxa of the Cyperaceae for Orissa. Our critical studies of the specimens collected from Orissa and deposited in seven herbaria in India (ASSAM, BSD, BSIS, CAL, DD, MH and Ravenshaw College Herbarium, Cuttack) and consultation of relevant literature, have yielded eight species and one additional variety as new records for Orissa. We have followed Kern (1974) in order to avoid confusion arising from differing opinions in generic delimitation within the family. Specimens from Orissa held in different herbaria are cited as evidence. Correct nomenclature with important synonyms, typification, description, phenology, ecology, chromosome number, distribution and economic uses, wherever available, are worked out/furnished with critical notes wherever necessary in the full paper. The additional species are *Carex stramentitia* Boott ex Boeckeler, *Cyperus alopecuroides* Rottb., *C. amabilis* Vahl, *C. digitatus* Roxb. var. *auricomus* (Sieber ex Spreng.) Kük., *C. scariosus* R. Br., *Fimbristylis squarrosa* Vahl, *F. tristachya* R. Br., *Scirpus setaceus* L. and *Scleria psilorrhiza* C.B. Clarke.

112. Dubey, A.K. & Paul, D.S. 2003. "A contribution to the flora of Orissa". *Pl. Sci. Res.* 25(1&2): 66–67.

Abstract: While critically examining the herbarium specimens of indigenous and naturalized flora of Orissa deposited in different herbaria, 18 taxa of angiosperms have turned out to be new records for the state hitherto not reported by earlier workers. Taxa have been enumerated with their correct nomenclature and distribution. Critical notes have been provided in few cases.

113. Dunlop, W.W. 1844. "A list of plants in the garden of the branch Agri-Horticultural Society of Cuttack". *J. Agri-Hort. Soc. India* 3: 93–95.

114. Durani, P.K. & Rout, D.K. 1982. "Phytosociology and production ecology of Nandankanan Lake in Orissa". *Geobios (Jodhpur)* 9: 25–29.

115. Dutta, P.K., Saxena, H.O., Mishra, B.C., Paul, S.C. & Brahmam, M. 1985. "Cultivation and survey of essential oil bearing plants in Orissa region". *Indian Perfumer* 29(1&2): 63–66.

116. Fischer, C.E.C. 1904. "Notes on the flora of northern Ganjam". *J. Bombay Nat. Hist. Soc.* 15: 537–556.

Abstract: The paper lists 529 plant species, which were recorded from northern Ganjam.

117. Fischer, C.E.C. 1905. "Further notes on the flora of northern Ganjam". *J. Bombay Nat. Hist. Soc.* 16: 473–483.

Abstract: In the present paper a list 280 plant which was further recorded from northern Ganjam.

118. Girach, R.D. 2001. *Floristic and ethnobotanical studies of district Bhadrak, Orissa, India*. Ph. D. Thesis. Berhampur University, Orissa (unpublished).

Abstract: A total of 809 species were recorded and described briefly in the work, which includes 798 species of angiosperms, 2 species of gymnosperms and 9 species of pteridophytes. These vascular plants were distributed over 490 genera belonging to 126 families. Among the angiosperms, 391 species under 100 families are dicotyledons and 99 species under 26 families are monocotyledons.

119. Girach, R.D., Aminuddin & Khan, S.A. 1994. "*Andrographis paniculata* – A possible substitute for *Swertia chirata* in the south-eastern India". *Int. J. Pharmacogn.* 32(1): 95–97.

120. Girach, R.D., Brahmam, M. & Misra, M.K. 2006. "The aquatic and wetland flora of Bhadrak district, Orissa". *J. Econ. Taxon. Bot.* 30(4): 951–972.

Abstract: The paper presents a floristic account of aquatic and wetland plants of Bhadrak district, Orissa. A total of 169 species belonging to 125 genera and 60 families, including some mangrove species, have been described from marshland, fresh and coastal water bodies of the district. Poaceae and Cyperaceae are the dominant families being represented by 25 and 21 species, respectively.

121. Gupta, H.P. & Yadav, R.R. 1990. "History of mangrove vegetation in Paradip and Jammu Islands, Orissa, India for the past 500 years B.P.: A palynological assessment". *Palaeobotanist* 38: 359–369.

122. Haines, H.H. 1921–1925. *The Botany of Bihar and Orissa*. Adlard & Son and West Newman Ltd., London.

Abstract: This Flora gives an account of all the known indigenous plants of the province and of the most important or most commonly cultivated exotic ones with maps and introduction.

123. Howard, A.G.L.C. & Khan, A.R. 1922. "The wheats of Bihar and Orissa". *Mem. Dept. Agric. India, Bot. Ser.* 12: 1–20.

124. Jain, S.K. & Sastry, A.R.K. 1983. Similipal National Park, Mayurbhanj, Orissa. In: *Botany of some Tiger habitats in India*. Botanical Survey of India, Howrah.

125. Jain, S.K., Banerjee, D.K. & Pal, D.C. 1975. "Grasses of Bihar, Orissa and West Bengal". *J. Bombay Nat. Hist. Soc.* 72(3): 758–773.

Abstract: The paper lists 489 species and varieties belonging to 155 genera of grasses

occurring in Bihar, Orissa and West Bengal. The occurrence of these taxa in one or more of these three states is indicated. 32 taxa are reported as new distributional records for these states.

126. Jena, S. & Das, A.B. 2003. "Karyotype variation and genomic characterization in five monocolyledonous mangrove associate from Orissa coast". *Iran. J. Bot.* 10(1): 5–14.

Abstract: Chromosome number and karyotype analysis of five monocot mangrove associates from Dhamra and Paradeep coast of Orissa revealed 2n = 48 in *Porteresia coarctata*; 2n = 22 in *Crinum defixum* and *Cryptocoryne ciliata* and 2n = 20 in *Asparagus racemosus* var. *javanica* and *Cyperus cephalotes*. Total chromosome length varied from 42.44 µm in *A. racemosus* var. *javanica* to 93.86 µm in *C. defixum*. Significant variations of chromosome volumes were also recorded among the species. The 4C DNA content varied significantly from 47.15 pg in *C. defixum* to 6.31 pg in *C. cephalotes*. A positive significant correlation between the chromosome volume and 4C nuclear DNA content among five different species was revealed. The genome size was around 1,545 mbp in *C. cephalotes* to 4,074 mbp in *P. coarctata* with a highest size (11,551 mbp) in *C. defixum* that suggests the high repetitive DNA sequences in the *Crinum* with highest chromosome length and volume of this species.

127. Jena, S., Sahoo, P. & Das, A.B. 2003. "New reports of chromosome number and genome size in eight mangroves from coastal Orissa." *Caryologia* 56(3): 349–354.

Abstract: Detailed karyotype analysis and cytophotometric estimation of 4C DNA amount as well as inter-phase nuclear volume (INV) were carried out in eight mangrove associates found in Bhitarkanika mangrove forest of coastal Orissa. Somatic chromosome number of *Sarcolobus carinatus* (2n = 22), *Lumnitzera racemosa* (2n = 24), *Tylophora tenuis* (2n = 24), *Sphaeranthus indicus* (2n = 30), *Cerbera manghas* (2n = 40), *Sesuvium portulacastrum* (2n = 48), *Syzygium cumini* (2n = 66), and *Hibiscus tiliaceous* (2n = 86) were recorded for the first time. Karyotype analysis revealed numerical and structural alterations of somatic chromosome in different species. Significant variations of 4C DNA content was noted among the species ranged from 5.31 pg in *T. tenuis* to 27.83 pg in *C. manghas*. Genome size varied about five fold among the taxa of different families from 1301 Mbp in *T. tenuis* to 6818 Mbp in *C. manghas*. Chromosome length, volume and INV showed significant correlation between them. ANOVA analysis confirmed the variation in nuclear DNA content in the interspecific as well as intergeneric level.

128. Joshi, S.K. & Behera, N. 1991. "Qualitative analysis of vegetation from a mixed tropical forest of Orissa, India". *Indian Forester* 117: 200–206.

Abstract: The present study provided informations about species composition of tree species along with their frequency, density, abundance and IVI data in four sampling

sites from a forest patch of Barpahar adaptation was found to be dominant on the hill top which has either exposed rock layer or very thin soil layer. In the stiff south-western slope eight species were recorded with *Cleistanthus* as the dominant species. The foothill region having more soil and moisture supported more plant species with *Butea monosperma* as the dominant species. Further analysis of the plant species of four different sampling sites revealed inverse relationship between diversity and dominance.

129. Kandi, B., Sahu, S.C., Dhal, N.K. & Mohanty, R.C. 2011. "Species diversity of vascular plants of Sunabeda Wildlife Sanctuary, Odisha, India." *New York Sci. J.* 4(3): 63–69.

Abstract: Sunabeda Wildlife Sanctuary (20°24' to 20°44' latitude and 82°20'0" to 82°34' 42" longitude), one of the 18 Protected Areas of Odisha is situated in the north-west corner of Nuapada district. An extensive study has been carried out from 2008 to 2010 to assess the floristic diversity of the sanctuary. A total of 188 angiospermic plants and 2 gymnosperms were recorded from the sanctuary belonging to 157 genera and 59 families. Out of that 154 species belong to dicotyledons (128 genera and 52 families), 34 species belong to monocotyledons (27 genera and 5 families) and 2 species of gymnosperms (2 genera and 2 families). Habit-wise grouping shows 90 (47.36%) are trees followed by 18 (9.47%) shrubs, 36 (18.94%) herbs, 27 (14.21%) climbers and 19 (10%) grasses. Among the families of angiosperms, Poaceae with 22 species are the dominant family followed by Fabaceae, Euphorbiaceae, Asteraceae, Combretaceae, Anacardiaceae, Mimosaceae, Apocynaceae and Caesalpiniaceae. *Dioscorea* is dominant genus with 8 species followed by *Terminalia, Ficus, Acacia, Ziziphus, Butea, Anogeissus* and *Bauhinia*. Among the plants *Tectona grandis, Shorea robusta, Acacia nilotica, Anogeissus latifolia, Terminalia alata, Bauhinia vahlii* and *Ziziphus oenopolia* are predominant. The study provides the preliminary knowledge about floristic composition and phytodiversity of the area, which will be helpful for management and conservation of the sanctuary.

130. Kapoor, S.L. 1964. "A contribution to our knowledge of the flora of the Mahendragiri Hills of Orissa'. *J. Bombay Nat. Hist. Soc.* 61: 354–369.

Abstract: The paper gives a comprehensive list of the plants of the Mahendragiri hills. As many as 228 species have been reported as new to the locality. An addition, short notes on location, geology and climatic data have been inserted. It has been observed that the flora has a large number of south Indian representatives due to the geographical position of the Eastern Ghats. The occurrence of Himalayan species on the hills of Orissa has been briefly discussed.

131. Kar, A., Biswal, A.K. & Reddy, S.C. 2009. "Structure, composition and diversity of tree species in tropical deciduous forests of Keonjhar district, Orissa". *Pl. Sci. Res.* 31(1&2): 66–70.

Abstract: The floristic and structural analysis of tree diversity of Keonjhar district, Orissa was carried out based on phytosociological studies. A total of 154 woody species belonging to 43 families were recorded, of which 151 were tree species with = 15 cm girth at breast height. The forest is of tropical deciduous type with the dominance of *Shorea robusta* (Dipterocarpaceae). The Shannon-Weiner Index (H') of 5.12 infer high species diversity, however, only a few species had more number of individuals as compared to the other species. *Shorea robusta* is wide niched, which shows Importance Value Index of 71.76 followed by *Terminalia alata* (19.13), *Syzygiuni cumini* (12.01), *Anogeissus latifolia* (11.55). Stem density and species richness have consistently decreased with increasing girth class of tree species. The highest numbers of species are encountered in the low gbh classes (30–60 cm).

132. Kar, P.K. 2011. "Species diversity and dominance in a grassland community of Rangamatia in Mayurbhanj district of Odisha". *Pl. Sci. Res.* 33(1&2): 116–120**.**

Abstract: The plant species diversity and dominance patterns of a grassland community located *at* Rangamatia (21°56' N; 86°41' E) of Mayurbhanj district of Odisha were studied *during* December 2006 to December 2007. The floristic composition of the grassland community comprised of 36 species including 15 grass species and 21 non-grass species. Among *lie* grasses, species like *Cynodon dactylon, Digitaria abludens, Eleusine Indica* and *Vetiveria zizanioides* and among non-grasses *Phyllanthus fraternus* and *Sida cordifolia* were found dominant during the period of study. The density based diversity index showed highest diversity index value in the month of August (1.325) and lowest during April (0.661). *On* the other hand, the dominance index based on density vaiue showed an opposite trend compared to diversity index value. The dominance value was found maximum in the month of April (0.243) and minimum during August (0.066). This indicates a negative correlating between species diversity and dominance indices.

133. Kar, T., Mandal, K.K., Reddy, C.S. & Biswal, A.K. 2012. "*Tree* diversity in moist deciduous forests of Similipal Biosphere Reserve, Odisha, India". *Pl. Sci. Res.* 34(1&2): 60–64.

Abstract: The phytosociological study was conducted in moist deciduous forests of Similipal Biosphere Reserve of Mayurbhanj, Odisha to assess species structure, distribution, diversity and dominance of trees. Enumeration of all tree species > 30 cm GBH yielded a total of 3214 individuals belonging to 141 species, under 105 genera and 41 families. The most dominant families were Euphorbiaceae, Rubiaceae, Moraceae, Caesalpiniaceae and Fabaceae. Shanon-Weiner Index (H') was calculated as 3.46 with Simpson Index of dominance of 0.90. Analysis of population density of trees across the girth class interval showed that nearly 31.83% of individuals belong to 30–50 cm GBH. The result of the study renders a helping hand to the forest managers in preparing a conservation plan for the highly species diverse and threatened ecosystem of moist deciduous forests of Similipal Biosphere Reserve, Mayurbhanj, Odisha.

134. Krishna Raju, K.S.R. & Dey, U.N. 1984. "Some ecological observations on Bhitarkanika Sanctuary in Orissa". *Proc. Sem. Resou. Developm. & Environ. Eastern Ghats (Waltair)*. pp. 117–118.

135. Kulkarni, D.K., Barve, J.P., Jagdale, R.P. & Inamdar, A.C. 1993. "Floristics of a sacred forest patch from Sundergad district, Orissa state". *J. Econ. Taxon. Bot.* 17(2): 415–419.

Abstract: The paper gives floristic account of a sacred grove near Bijadihi village in Sundergad district, Orissa, which occupies an area of 0.5 ha. In a sharp contrast to surrounding area which contains rice fields, the sacred grove has rich, varied and storied vegetation. Altogether, 64 taxa belonging to 54 genera under 31 families are recorded from the sacred grove.

136. Kumar, C.S. & Manilal, K.S. 1992. "Epiphytic orchids of India". *Rheedea* 2: 80–100.

Abstract: Orchids constitute a major share of the epiphytic flora of India with 630 species in 85 genera occurring from 5 m to 500 m, covering all types of vegetation except the alpine zone in the Himalayas and representing a mixed conglomeration of various interesting elements. Pantropical genera are represented by *Bulbophyllum, Polystachya* and *Vanilla*; palaeotropic by *Acampe, Agrostophyllum, Oberonia* and *Taeniophyllum*; Indosrilankan by *Cottonia, Diplocentrum, Seidenfadeniella* and *Sirhookera* and endemic by *Jejosephia, Smithsonia* and *Xenikophyton*. The monotypic *Dickasonia* extends to Myanmar. *Rhinerrhiza* is found only in Assam and eastern Australia. Others are Indomalesian. *Polystachya concreta* is the only pantropical species. Pantropic species is represented by *Acampe rigida*. Thirty species are in common with Sri Lanka. *Aerides emericii* extends from Andamans to Cocos Islands. The rest of the species extend to neighbouring, Indochina and even Malesia. Genera-wise analysis is given with due emphasis on ecological data. Conservation efforts to save the rare taxa in Arunachal Pradesh, Meghalaya, Sikkim, West Bengal, Odisha, Tamil Nadu and Kerala are discussed.

137. Kumar, S. 1984. "Bihar, Orissa and Paschim Bangal Ki maidani Chhetra ke van aur vanaspati". In: Jain, S.K. & Mudgal, V. (eds.), *Bharat Ki Vanaspati*. (Hindi). Botanical Survey of India, Calcutta. pp. 43–49.

138. Kumar, S. & Dash, D. 2012. "Flora of Nandankanan Sanctuary: Medicinal plants with their role in health care". *Int. J. Pharm. & Life Sci.* 3(4): 1631–1642.

Abstract: The present study reflects the major medicinal flora of Nandankanan Sanctuary, a small Protected Area along the Kanjia Lake in the district of Cuttack, Odisha. The survey reveals that there are 61 plant species belonging to 40 different families. The details of these plants in terms of local name, family, plant part(s) used, chemicals present and their use in healthcare such as malnutrition, communicable diseases, metabolic disorder and other miscellaneous effects have been listed. The implication of this study

in terms of sustainable use by the local community, conservation and education has been discussed.

139. Lata, N. & Behera, P.K. 2004. "An evaluation of some common aquatic plants of Lake Chilika". *PI. Sci. Res.* 26(1&2): 53–55.

Abstract: Lake *Chilika* is dominated with many aquatic plants that play a major role in contributing to the biomass production and sustenance of the lake ecosystem. Very common aquatic plants of the lake such as *Potamogeton pectinatus, Najas foveolata, Lemna minor* and *Hydrilla verticillata* are evaluated for their biomass, plant pigment and protein content for economic utilization and bio-monitoring of the lake ecosystem. On average their biomass, plant pigment and protein content were 9.8, 1.5 and 1.4%, respectively which may be utilized as a potential source of protein and pigment production commercially as well help bio-monitoring the lake ecosystem from eutrophication.

140. Mahalik, G., Nayak, S.K., Mohapatra, A. & Satapathy, K.B. 2014. "Floristic composition and ethnobotanical observation in Angul-Talcher mining area, Odisha, India". *Int. J. Sci. Res.* 3(12): 890–893.

Abstract: An exhaustive study on floristic composition and ethnobotanical survey was conducted to collect information about the occurrence of medicinal plants and their uses by different tribes in Angul-Talcher mining area of Odisha. More than 300 angiospermic medicinal plant species were collected and identified from various locations of the study area. Out of these, 46 species have been found to be used very often by the local tribes or rural native populace for the treatment of various diseases. The results of the present study indicate that the tribal populations as well as the rural inhabitants of the Angul-Talcher mining areas largely depend on the native plant resource to meet their primary healthcare needs.

141. Mahapatra, D.K. & Sahoo, S.B. 2007. "*Economics* of production, collection and utilization of Kewda (*Pandanus fascicularis* Lam.) flowers in Ganjam district of Orissa, India". *PI. Sci. Res.* 29(1&2): 1–4.

Abstract: "Kewda" botanically known as *Pandanus fascicularis* Lam. belongs to the family Pandanaceae and grows wild in India along the sea coast and river banks. The most luxuriant growth is found throughout the coasts of India, Myanmar, Java, Malaysia, China and Indonesia. In India, it is widely distributed in the coastal districts of Orissa, Andhra Pradesh, Tamil Nadu, Kerala, Gujarat and some parts of Uttar Pradesh. Over 500 species of *Pandanus* are known in the world, of which 36 species have been recorded in India. The wild population of Kewda grows over 5000 ha of area and it is estimated that about 35 million (3500 tons) flowers are processed every season yielding essential oil worth Rs. 400 million annually. It is amazing

that as on today, about 200 remote villages of Rangeilunda, Chatrapur, Ganjam and Chikiti blocks of Ganjam district of Orissa supply 85–90% of country's Kewda essence. A huge number of flowers arise in the peak season, i.e., during July–September. The total annual utilization of the flower in stills is only 20%. It is observed that 60–65% flowers are processed during rainy season (July–September), 15% in the winter season (November–January) and rest during summer season (March–June). The male inflorescences are valued for the fragrance emitted by the tender white spadices covering the flowers and for the valuable attars obtained from them. The commercial exploitation of male spadices is centered mostly in and around Ganjam district of Orissa and some parts of Madras. The kewda oil, attar and water are used in the perfumery and flavour industry. It blends well in all types of perfumes to produce scenting clothes, bouquets, lotions, cosmetics, soaps, hair oils, tobacco and agarbati. The kewda water is used for flavoring various food materials, sweets, syrup and soft drinks. The present survey has been conducted for last 3 years in the context of flower production and its utilization, total area and cost benefit ratio of flower processing and production.

142. Mahapatra, H.S. & Rath, S.P. 2003. "Studies on vegetation and phytodiversity of Phulbani district, Orissa". *Phytotaxonomy* 3: 124–129.

Abstract: The erstwhile Phulbani district of Orissa is rich in floristic diversity with 936 angiospermic species occurring in extensive ranges with elevation from 300 to 900 m. The district has unique geographical position and topography with broken plateau girdled by mountain ranges intersected by streams which contribute significantly to rich diversity in flora. In the present paper, the vegetation and phytodiversity of the district comprising 936 angiospermic species belonging to 589 genera under 139 families are discussed.

143. Maiti, M.M., Misra, G. & Ghosh, R.B. 1984. "Studies on weeds in relation to rice crop". *J. Econ. Taxon. Bot.* 5: 17–38.

Abstract: In this paper systematic enumeration of 124 weed species over 78 genera under 29 families of rice fields located in the new command area of Hirakund Multipurpose Dam Project (Orissa) has been presented.

144. Mallick, S.N., Maharana, M.R. & Acharya, B.C. 2015. "Weed flora of Rourkela and adjoining areas of Sundargarh district, Odisha, India". *J. Econ. Taxon. Bot.* 39: 130–137.

Abstract: The present study focuses on the weed diversity of non-forest and crop fields of Rourkela and adjoining areas in the district of Sindargarh of Odisha state. A total of 174 weed species under 135 genera belonging to 10 monocot families, 43 dicot families and one pteridophytic family are reported in this investigation. Out of 54 families, the pre-dominance of weeds is shown by both the families Asteraceae and Poaceae each

with 21 species, followed by Amaranthaceae and Acanthaceae each having 8 and 9 species, respectively. Asteraceae and Poaceae are the most dominating families, species-wise as well as genera- wise. Euphorbiaceae, Amaranthaceae, Convolvulaceae, Fabaceae and Malvaceae are also quite rich in weed species in Rourkela and adjoining areas. *Cyanodon dactylon, Chromolaena odoratum, Achyranthes aspera, Parthenium hysterophorus, Sida acuta, S. cordifolia, Vernonia cinerea, Cyperus rotundus, C. triceps, Croton sparsiflorus* are the most frequently reported weed species found during the study.

145. Mandal, R.N., Saha, G.S., Das, K.M. & Choudhury, B.P. 2006. "Eco-floristic survey of aquatic macrophytes in CIFA farm – A case study". *J. Econ. Taxon. Bot.* 30(4): 776–782.

Abstract: A survey has been carried out to explore the aquatic flora pertaining to their ecology prevailing in Central Institute of Freshwater Aquaculture Farm, Bhubaneswar. About 500 man-made ponds are being utilized for fish culture in the 147 hectares area. The distant periphery of the farm area has natural shallow wetlands infested by aquatic macrophytes. Through this survey, the aquatic plants throughout the farm have been collected randomly during one year covering four major seasons, viz., winter, summer, mansoon and post-monsoon. Out of 400 specimens collected during present investigation, 52 species have been identified and listed belonging to 46 genera under 27 families. In addition, ecological notes of individual species have been prepared based on floral succession, diversity, association, phenology, propagation and their degree of infestation.

146. Meher-Homji, V.M. 1974. "Forest vegetation of the Khondmal hills, Orissa". *The Botanique* 5(1): 1–12.

147. Mishra, A.K. 2007. "An overview of wild floral and faunal bio-diversity status of Orissa". *E-planet* 5(1): 64–75.

Abstract: Orissa has rich wild floral and faunal diversity. Due to its strategic location in Indian subcontinent it is considered as a stepping-stone for having floral and faunal elements of northern and southern India. The state has some ecoregions and biological hot spots, viz., Similipal massif, Gandhamardhan, Deomali, Pradhanpat, Mahendragiri and Malyagiri. It has some excellent wet lands, viz., Bhitarkanika and Chilika. The state has a good network of Protected Areas having many threatened and endangered species. The ecological profile shows that Orissa forms part of the oriental zoo-geographic realm with faunal diversity belonging to mostly Deccan peninsular Biogeographic zone.

148. Mishra, B. 1963. "The agriculture system, diet and dietary habits of the Kondhs – A tribe of Orissa". *Vanyajati* 11(3): 135–142.

149. Mishra, R.C. & Das, P. 2003. "Wild poisonous seeds: Some notable species from Gandhamardan Hill ranges of Orissa". *J. Econ. Taxon. Bot.* 27: 513–518.

Abstract: The information on poisonous seeds of indigenous plant species is very much useful not only for promoting awareness among the people to avoid from harmful effects but also for judicious utilization of such seeds for control of insect-pests, bugs, mosquitoes and many injurious organisms. Very occasional references were made with regard to the poisonous nature of seeds of wild plants growing in the state or country. Therefore, attempts were made to identify the poisonous seeds of some selected plant species of Gandhamardan hill ranges of Orissa with their local name, locality of collection, distribution and notes on poisonous action.

150. Mishra, R.C., Sahoo, A.K., Mohapatra, A.K. & Reddy, R.N. 2011. "Addition to the flora of Similipal Biosphere Reserve, Orissa, India". *J. Bombay Nat. Hist. Soc.* 108(1): 69–71.

Abstract: A total of 118 species have been recorded has been recorded from Similipal Biospehere Reserve. These constitute 92 species of dicotyledons, 21 species of monocotyledons and 5 species from pteridophytes. A brief citation on the occurrence of species, their general distribution within the biosphere reserve and flowering and fruiting time has also been provided.

151. Mishra, R.K., Nanda, P.K., Patra, B.K., Dash, A. & Mohanty, R.C. 2014. "Population structure of dominant tree species in tropical deciduous forest covers of Chandaka Dampara wildlife sanctuary, Odisha, India". *Pl. Sci. Res.* 36(1&2): 17–26.

Abstract: Population structure based on girth at breast height (gbh) measurements of individuals of nine dominant tree species, viz., *Careya arborea* Roxb., *Shorea robusta* C.F. Gaertn., *Strychnos nux-vomica* L., *Tectona grandis* L.f., *Pterocarpus marsupium* Roxb., *Limonia acidissima* L., *Azadirachta indica* A. Juss., *Cassia fistula* L. and *Aegle marmelos* (L) Corrêa studied in disturbed and undisturbed forest stands of Chandaka Wildlife Sanctuary, Odisha. All the dominant species except *Careya arborea, Shorea robusta* and *Limonia acidissima* in undisturbed stand and, *Tectona grandis* and *Pterocarpus marsupium* in disturbed stand showed rotated sigmoid type of gbh-density curve. Concave type of gbh-density curve of *Shorea robusta* only in undisturbed forest stand and of *Careya arborea* was recorded both in disturbed and undisturbed forest stands of the sanctuary indicating their strong dominance. However, formation of plateaus and depressions in gbh-density curve of *Shorea robusta, Tectona grandis* and *Pterocarpus marsupium* at the disturbed stand reflect the gap phase type of regeneration with a resultant reduction in survival of individuals during respective stages. A low percentage of established seedlings compared to saplings of *Limonia acidissima* was observed in the undisturbed stand of the sanctuary. Cut stumps frequently occurred in the disturbed stands giving rise to more number of sprouters. However, due to frequent lopping of the coppices there was no substantial regeneration and establishment of trees in the disturbed

stand of the sanctuary. With continuance of such activities in the sanctuary, future populations of dominant tree species in the forest covers may be threatened, thus requiring conservation measures to protect these species.

152. **Mishra, S.C. & Panigrahi, G. 1983.** "Nomenclatural notes on sixteen species of *Desmodium* Desv. gen. cons. in Orissa". *Proc. 8th Annual Conf. Orissa Bot. Soc. (Rayagada)*. p. 4.

153. **Mishra, S.C. & Panigrahi, G. 1983.** "Taxonomic studies on the Capparaceae A.L. de Juss. in Orissa". *J. Orissa Bot. Soc.* 4(1): 9–17.

Abstract: The family Capparaceae Juss. is represented in Orissa by 3 genera and 14 species: *Cleome* (5 spp.), *Crateva* (2 spp.) and *Capparis* (7 spp.). Keys to their recognition are provided and the correct nomenclature, typification and distribution of the various taxa, both in Orissa and India, are presented. References to the specimens in the three herbaria in UK (K, BM, LINN), wherever cited, are based on records available in CAL.

154. **Misra, C.G. 1999.** Green forests of Orissa. In: A.N. Tiwari (ed.), *Reference Orissa*. Enterprising Publishers, Bhubaneswar. pp. 16–20.

155. **Misra, M.K. 1983.** "Ecological approach to afforestation with reference to Orissa". In: Patro, S.N. & Misra, M.K. (eds.), *Proceedings of Environmental Education Curricula and Environment and Natural Resources Management*. Orissa Environmental Society, Bhubaneswar. pp. 19–26.

Abstract: Official statistics on forest vegetation cover in Orissa is rather inaccurate and is decreasing day by day. With a view to improve the forestry in Orissa by conservation and generation of new forest areas the importance of ecological balance in the forest ecosystem was discussed in the light of certain structural and functional aspects such as mineral cycling, energy transfer, diversity and association of plants and niche differentiation. Ecological approach to afforestation was discussed with a few examples. The scientific approach to site selection considering the soil condition, history of the land and topography and type of plants to be planted before plantation programmes has been suggested. Besides, several suggestions for conservation, regeneration of secondary forests, development of mixed plantations, etc. have also been included in the paper.

156. **Misra, M.K. 1984.** "An ecological strategy for conservation of Similipal forest". In: Patro, S.N. & Misra, M.K. (eds.), *Proceedings of Workshop on Environmental Conservation.* Orissa Environmental Society, Berhampur. pp. 29–32.

Abstract: This paper deals with the ecological problems and aspects of the Similipal hills, covered with thick forest in the district of Mayurbhanj, Orissa. Suggestive measures are given for the problems existing in the area which threaten the very existence of the habitat. The ecological strategy is discussed in the light of deforestation, burning,

productivity, carrying capacity, introduction of exotic species, over exploitation, industrialization tourism, recreation, economic, research and education, etc. The paper concludes with some recommendations for conservation of Similipal forest. Further, a matrix of interrelationship of various aspects for the healthy management of Similipal Forest is developed.

157. Misra, M.K. 2001. "Environmental protection through wasteland management: A case study of coastal Orissa. In: Roy, A.K. & S.K. Varma (eds.), *Wasteland Management and Environment*. Scientific Publishers, Jodhpur. pp. 95–102.

Abstract: The present communication deals with various categories of wasteland available in Orissa state, causes of information and measures taken for the management of wastelands, particularly the coastal areas. The rehabilitate of coastal wasteland by Casuarina (*Casuarina equisetifolia*) and Cashew (*Anacardium occidentale*), Screwpine (*Pandanus fascicularis*) and coconut (*Cocos nucifera*) and the details of strategies are discussed in the present paper.

158. Misra, M.K. 2013. "Biodiversity, traditional knowledge and village ecosystem sustainability". *The Ecoscan* 3: 235–240.

Abstract: The paper reports the importance of biodiversity and traditional knowledge in the sustainable development of Indian village ecosystem. The aim of the paper is to emphasize the need for conservation of biodiversity and traditional knowledge available among the tribal and rural people, as most of the traditional knowledge is in oral form. Different types of villages such as marine based coastal villages, agriculture based villages are considered. The common property resources available within the village boundary help in smooth functioning of the village ecosystem, however, privatization of these resources hampered the functioning of the village ecosystems. In the rural areas of Odisha people still depend on the biodiversity resources for their live hood, which they prudently utilize.

159. Misra, M.K. & Dash, S.S. 2000. "Biomass and energetics of non-timber forest resources in a cluster of tribal villages of the Eastern Ghats of Orissa, India". *Biomass & Bioenergy* 18: 229–247.

Abstract: An empirical study on the non-timber forest products (NTFPs) in three tribal villages on the Eastern Ghats of India was made during 1994–1995. These village ecosystems Rajikakhola, Nediguda and Badruguda are situated in the Phulbani district of Orissa and are inhabited by the Kondh tribe. The average annual production of important non-timber forest products (NTFPs) was 1.87 t (26.78 GJ) of mohua flower, 2.96 t (54.41 GJ) of siali leaf, 6.73 t (107.06 GJ) of thatch grass, 4.2 t (8.01 GJ) of sago palm sap and 0.93 t (11.39 GJ) of tamarind pulp per village. Total production of

NTFPs was 253.55 GJ per village. Total consumption of NTFPs was 190.57 GJ per village. However, average household consumption was 9.60 GJ. Annual country liquor consumption was 2287 l per village, out of which a total of 762 l was prepared locally and the rest imported. Total annual export of NTFPs was 3.69 t (61.47 GJ) per village, maximum being by Rajikakhola. Among the exported products siali leaf ranked highest. Total human energy expended for collection of NTFP was 16.1 GJ per village, out of which men contributed 37.3%, women 53.8% and children 8.9% in these villages. The average input-output ratio of energy for NTFP was 16.56. For sustainable development of tribal villages, conservation and proper management of existing forests, minimisation of waste and increase of the value of products through efficient processing are highly essential.

160. Misra, M.K. & Misra, B.N. 1979. "Biological spectrum of a tropical grassland community at Berhampur". *Indian J. Forest.* 2(4): 313–315.

Abstract: The biological spectrum of a protected grassland community at Berhampur, Orissa is reported. The spectrum includes all the five life-form groups of Raunkiaer, viz., therophytes (48.6%), chamaephytes (25.7%), hemicryptophytes (14.3%), geophytes (5.7%) and phanerophytes (5.7%). The vegetation was termed as thero-chamaephytic.

161. Misra, M.K. & Misra, B.N. 1981. "Association and correlation of plant species in a tropical Grassland community". *Trop. Ecol.* 22(1): 88–98.

Abstract: This paper reports on the interspecific association for 22 species of a tropical grassland community of south Orissa and the correlation coefficients for a few species pairs, as determined during the active growth period of 1977. In the community out of 231 possible combinations only 42 combinations had significant association values; 25 of them showing positive and 17 negative associations. The Cole's Index revealed that the observed association between species pairs was not strong and most of them showed no association at all. The scatter diagram showed linear positive correlation for two species pairs while the other two species showed curvilinear inverse relationship.

162. Misra, M.K. & Misra, B.N. 1981. "Seasonal changes in leaf area index and chlorophyll in an Indian grassland". *J. Ecol.* 69: 797–805.

Abstract: Seasonal variation in the leaf area index in grassland at Berhampur, India, showed a minimum of 0.5 in March and a maximum of 5.0 in late September. For most species, the maximum occurred between July and November. There were seasonal changes in chlorophyll concentration, with maximum per unit dry weight of plant of 3.5 mg g^{-1} in late August and maximum per unit area of 1.2 g m^{-2} in late September.

163. Misra, M.K. & Misra, B.N. 1982. "*Species* diversity and dominance *in a* Tropical grassland community". *Folia Geobot. Phytotax., Praha* 16: 309–316.

Abstract: *Plant* species diversity and dominance patterns were studied in a tropical grassland community *at Berhampur,* Orissa during 1977–78. Diversity ($-\sum pi \ln pi$) and dominance [$\sum(ni/N)^2$] *indices were* calculated and compared with basic data as the number of individuals versus *basic data as* biomass units.

164. Misra, M.K. & Misra, B.N. 1985. "Spatial distribution pattern of certain species in an Indian grassland". In: Misra, K.C. (ed.), *Ecology and Resource Management in Tropics* Vol. I, Bhargava Book Depot, Varanasi. pp. 153–157.

Abstract: The distribution pattern of few species in a tropical grassland community at Berhampur, India were studied by variance against mean ratio, chi-square goodness of fit, and abundance against frequency ratio through density of species. The size of 50 randomly selected quadrats was 50 × 50 cm. Among the species *Heteropogon contortus, Eragrostis coarctata* and *Flacourtia indica* were randomly distributed as per the above three tests, while *Aristida setacea* and *Bothriochloa odorata* showed random distribution according to variance against mean and abundance against frequency ratio, but aggregate distribution as per the chi-square goodness of fit. Most of other species when tested by the above three tests or by variance against mean ratio only showed contagious distribution pattern.

165. Misra, M.K. & Misra, B.N. 1986. "Net primary production and diversity in the grasslands of Berhampur, Orissa". *Indian J. Forest.* 9(2): 146–150.

Abstract: The diversity in the six types of grasslands with varied biotic stress, situated at Berhampur (19°16' N, 84°53' E) ranged between 30 and 43. The net primary productivity of the grasslands ranged between 862 to 1287 gm^{-2}. Significant positive correlation was established between diversity and net production while net production and stability showed negative correlation.

166. Misra, M.K. & Misra, B.N. 1989. "Energy structure and dynamics in an Indian grassland". *Folia Geobot. Phytotax.*, *Praha* 24: 25–35.

Abstract: Energy structure and dynamics of the primary producers of a protected grassland situated at Berhampur, Orissa was investigated. Concentration and standing crop of energy during different months of the year showed a great variation. The system transfer function and efficiency of the grassland were estimated.

167. Misra, M.K. & Nisanka, S.K. 1992-93. "Vegeration of Coastal Orissa - An ecological approach". *Anusandhan* (*Berhampur Univ. J. Nat. Phys. Sci.*) 14: 27–34.

Abstract: The 482 km long coastline of Orissa along the Bay of Bengal forms an alluvial physiographic unit. Its vegetation is influenced largely by estuaries and creeks of many rivers. Taking the dominant angiospermic communities into account, the coastal vegetation

of Orissa has been divided into six broad types: (i) Mangroves, (ii) Beach-type, (iii) Screw-pine, (iv) Cashew, (v) *Casuarina* and (vi) Coconut vegetation. This paper describes the species structure, climatic and edaphic conditions and conditions and ecological importance of these vegetation types.

168. Misra, M.K. & Nisanka, S.K. 1997. "Litter fall, decomposition and nutrient release in *Casuarina equisetifolia* plantations on the sandy coast of Orissa, India". *Trop. Ecol.* 38(1): 109–119.

Abstract: Litter fall in an age sequence (4,6.8.10 and 12 years) of *Casuarina equisetifolia* plantations on sandy coast of Orissa showed a minimum of 37 g m^{-2} $month^{-1}$ and maximum of 460 g m^{-2} $month^{-1}$. Annual litter production ranged from 8.69 t ha^{-1} (4 year stand) to 29.62 t ha^{-1} (13 year stand). Litter consisted of dead phylloclades (75–96%), branches, inflorescences and fruits. Rate of litter decomposition in 8 year plantation varied seasonally with 87% loss in dry weight during 27 months of study. Decomposition coefficient (k) was -0.895 for 27 months' loss. Turnover times calculated to be 0.8 and 3.3 years for 50% and 95% losses respectively. There was a decrease in concentrations of sodium (0.26 to 0.08%), potassium (0.17 to 0.02%) and calcium (1.77 to 0.24%). Short periodical increases in nitrogen and phosphorus due to immobilization were observed. Decomposition constants (k) calculated for individual elements basing on one and two years data ranged from 0.85 (nitrogen) to 1.51 (potassium). Turnover time for 92% loss ($T_{0.95}$) ranged from 2.0 (potassium) to 3.5 (nitrogen) years and 2.2 (potassium) to 3.5 (nitrogen) years for one and two years, respectively.

169. Misra, M.K. & Nisanka, S.K. 2003. "Photosynthetic pigments and surface area in *Casurina equisetifolia* Linn. plantations of Orissa Coast". *J. Sci. & Technol. Sambalpur Univ.* XIV & XV (A): 10–20.

Abstract: Chlorophyll and carotenoid contents along with photosynthetic surface area were estimated for age series (4–13 years) *Casuarina equisetifolia* L. plantations on the sandy coastal belt of Orissa. Total chlorophyll and carotenoid contents were 3.21 to 19.52 kg ha-1 and 0.49 to 2.97 kg ha-1, respectively, with average chlorophyll a:b ratio of 0.852. Photosynthetic surface area was determined by volume displacement and direct measurement of phylloclade samples. Regression equations were developed correlating phylloclade dry weight and surface area. Photosynthetic Surface Area Index (PSAI) in the age series ranged from 2.40 to 14.58 by volume displacement method and there was no significant difference between the values obtained by the two methods.

170. Misra, M.K., Dash, S.S. & Das, P.K. 1999. "Additions to the flora of Orissa". *Rheedea* 9: 163–172.

Abstract: This paper reports 18 species of flowering plants from Koraput district, as new records for the state of Orissa.

171. Misra, M.K., Mahapatra, D.K. & Nisanka, S.K. 1997. "Comparative dimensional analysis of plantations of five pines at Kalinga hills of Orissa". *J. Hill Res.* 10(2): 113–120.

Abstract: The paper reports data on dimensions of trees of different ages and growth of five exotic pines, viz., *Pinus elliottii* Engl., *P. insularis* Endl., *P. kesiya* Royle ex Gordon, *P. oocarpa* Schiede ex Schltdl. and *P. patula* Schltdl. & Cham. at Kalinga hills of Orissa, a part of Eastern Ghats. Among the five species (13-year old) dimension parameters were measured highest (DBH 21.4 ch; height 15.5 m; basal area 373 cm^2 $plant^{1}$ and parabolic volume 299 × 10^3 cm^3 $plant^{1}$ in *P. oocarpa,* which also showed best growth performance. Significant correlations were found between dimension pairs for which regression equations (linear and exponential) were established.

172. Misra, M.K., Panda, A. & Sahu, D. 2011. "Wetland flora of Malkangiri district, Odisha, India". *J. Econ. Taxon. Bot.* 35(4): 798–808.

Abstract: Results of floristic survey of the wetlands of Malkangiri district of Odisha have been reported in this paper. The study was conducted during 2005–2008. The survey revealed altogether 108 species, representing 41% monocot and 59% dicot species under 83 genera and 35 families. Monocot families are represented by 29%. The predominant family is Cyperaceae.

173. Misra, M.K., Panda, A. & Sahu, D. 2012. "Survey of useful wetland plants of south Odisha, India". *Indian J. Tradit. Knowl.* 11(4): 658–666.

Abstract: The paper reports useful wetland plants (except medicinal plants) of south Odisha, a part of the Eastern Ghats region. The survey was conducted during 2005–2008 and the collected specimens were deposited in the Herbarium of the Botany Department, Berhampur University (BOTB). Ethnobotanical data were collected through interview with elderly people of the area. The result revealed that 61 wetland plants under 47 genera and 23 families were under use by the local inhabitants for food (25 species), fodder (23 species), mat and basket weaving (7 species), thatching material (5 species), fuel (2 species) and other miscellaneous uses (16 species). Out of the total taxa, 38 species are dicotyledons under 30 genera and 8 families, and 21 species are monocotyledons under 15 genera and 13 families. Two species belong to pteridophytes. Conservation of wetland and wetland plants is suggested.

174. Misra, M.K., Panda, A. & Sahu, D. 2014. "Wetland flora of Kandhamal district, Odisha, India". *J. Econ. Taxon. Bot.* 38: 190–202.

Abstract: Results of floristic survey of the wetlands of Kandhamal district of Odisha have been reported in this paper. The study was conducted during 2005–2008. The survey revealed altogether 130 species representing 45% monocot and 55% dicot species belonging to 92 genera in 38 families. Monocot families are represented by 34%. The predominant family is Poaceae.

175. Misra, N. & Misra, M.K. 1983. "Further addition to the flora of Parlakhemundi (Orissa)". *J. Orissa Bot. Soc.* 5(1): 24–40.

Abstract: The paper reports an enumerative account of 220 species as additions to the flora of Parlakhemundi.

176. Misra, N. & Misra, M.K. 1984. "Weeds of paddy fields and water bodies of Ganjam district (Orissa)". *Res. J. Berhampur Univ.* 4(4): 15–20.

Abstract: Survey of the aquatic weeds of Ganjam district revealed 42 species of angiosperms belonging to 36 genus and 24 families. Three pteridophytic species were also reported.

177. Misra, R.C. 1994. *Studies on the flora and remote sensing of natural resources of Nrusinghanath-Harishankar complex, Orissa*. Ph.D. Thesis, Berhampur University, Orissa (unpublished).

Abstract: A total of 919 species were recorded and described briefly in the work, which include 888 species of angiosperms and 31 species of pteridophytes. These vascular plants were distributed over 577 genera belonging to 140 families. Among the angiosperms, 672 species are dicotyledons and 216 species are monocotyledons.

178. Misra, R.C. & Behera, G. 1998. "Vegetation type mapping using remote sensing technique – A case study of Korapur district". *J. Econ. Taxon. Bot.* 22(1): 65–77.

Abstract: Koraput district possesses diversified vegetation resources and rich floristic composition owing to its range of physical features that prevail on account of topographical and altitudinal gradient. The vegetation of the district falls under the category of tropical deciduous type, which is further divided unto seven sub-categories depending upon local micro-climate, species composition and degree of deforestation. The vegetation exhibits a distinct zonation pattern which is evidently marked in six botanical belts according to the abundance of plant composition with respect to landform characteristics and biotic influences. Attempt has also been made to study the forest density stratification along with man-made plantations/groves and their spatial extent block-wise basing on grey tone variations and vegetation pattern by visual analysis of Indian Remote Sensing Satellite I – ALISS II data.

179. Misra, R.C. & Behera, G. 1998. Ecological status of Gandhamardan forests using remote sensing technique. In: Patra, H.K. (ed.), *Biodiversity Conservation*: *Problems and Prospects*. Orissa Environmental Society, Bhubaneswar. pp. 75–80.

180. Misra, R.C. & Das, P. 1998. "Phytogeographical affinities of plants of Gandhamardan hill ranges of Orissa with major Indian mountains". *J. Econ. Taxon. Bot.* 22(1): 207–210.

Abstract: From botanical point of view, the Gandhamardan hill range in Orissa is unique

in the regard that it represents the transitional flora between the Himalayas and southern peninsula. Many plants occurring on the hill-top are of phytogeographical importance that the hill harbours both Himalayan/north Indian and Nilgiris/south Indian elements and a few show affinities towards the flora of central India. Thus, the hill range acts as a bridge for the migration of Himalayan flora for finding their way to the highlands of the peninsula or in some cases the vice versa.

181. Misra, R.C. & Das, P. 1998. "Vegetation status of Nrusinghanath-Harishankar complex, Orissa". *J. Econ. Taxon. Bot.* 22(3): 547–554.

Abstract: The Nrusinghanath-Harishankar complex is an unique ecosystem and a place of uncommon natural beauty harbouring rich floristic composition and vast natural wealth. The diverse vegetation resources, hilly topography with lofty lateritic plateau and excellent water system make the region wealthy and notable. However, the forests of the area is under threats of intense biotic pressure of which over-exploitation, forest-fire and wasteful practice of shifting cultivation played a major role in modifying and altering the vegetation of the region. In this paper, the existing status of vegetation, effect of biotic and edaphic factors and changing pattern of vegetation in Nrusinghanath-Harishankar complex have been highlighted.

182. Misra, R.C. & Das, P. 2004. "Vegetation stratification of Gandhamardan hill range, Orissa using remote sensing technique". *J. Econ. Taxon. Bot.* 28(2): 429–438.

Abstract: The Gandhamardan hill range is a unique forest ecosystem, harbours diversified vegetation resources and rich floristic composition on account of its hilly topography with lofty plateau and abundant perennial springs and waterfalls. In the present study, the satellite images of the region are analysed visually to assess the distribution of forest types, density and their spatial extent. The vegetation of the region falls under the category of tropical deciduous type which is further subdivided into nine subcategories based on the species composition, crown density, degree of deforestation and overall spectral signature of the images. Attempts have also been made to assess the present ecological status for identifying the sensitive and fragile zones of the region.

183. Misra, R.C. & Pani, D.R. 2014. "Note on *Calopogonium mucunoides* Desv. (Fabaceae): A new species record for Eastern and Central India". *Proc. Natl. Acad. Sci. India, B* 86(1): 211–216.

Abstract: *Calopogonium mucunoides* Desv. (Fabaceae), alien to the Indian flora, was discovered from two locations of the east coastal plains of agro-ecological zone of Odisha state. After critical review of published literature on the distribution, its natural occurrence in Odisha was found to be a new record for the eastern and central India. The present report deals with its taxonomic description, ecology and potentiality of the species for further economic utilization.

184. Misra, R.C. & Sahu, D. 2009. "A contribution to the flora of Niyamgiri hills, Orissa, India". *J. Econ. Taxon. Bot.* 33(2): 259–276.

Abstract: Niyamgiri hills, the abode of primitive Dongria Kandha tribe in southwest Orissa, is a unique forest ecosystem harbouring rich floristic composition and vast natural resources. The undulating topography with lofty peak and lateritic plateau, magnificent streams and diverse vegetation resources make the region worthy and resourceful. However, there is absolutely no detailed floristic record on this hill range. Realizing the fact, a floristic survey has been made which reveals the occurrence of 663 species of vascular plants comprising of 480 species of dicotyledons, 147 species of monocotyledons and 34 species of pteridophytes.

185. Misra, R.C., Sahoo, H.K., Mahapatra, A.K. & Reddy, R.N. 2011. "Additions to the flora of Similipal Biosphere Reserve, Orissa, India". *J. Bombay Nat. Hist. Soc.* 108(1): 69–76.

Abstract: A total of 118 species have been reported as additions to the flora of Similipal Biosphere Reserve, of which 92 species are dicotyledons and 21 are monocotyledons. A brief citation on the occurrence of species, their general distribution within the biosphere reserve and flowering and fruiting time has also been provided.

186. Misra, S. 1977. "Orchid exploration in Orissa". *Proc. 64th Indian Sci. Congr. Pt. III*. p. 48.

187. Misra, S. 1980. "Additions to the Orchidaceous flora of Orissa". *Bull. Bot. Surv. India* 22(1–4): 147–156.

Abstract: The paper records 9 genera, 56 species/varieties of orchids as new records of taxa for the state of Orissa. The enumeration provides correct names of taxa dealt with, the basionym and relevant synonyms, if any, and is followed by citation of specimens collected during the last thirteen years. Notes on ecology and phenology are followed by records of distribution. *Bulbobhyllum micranthum* Hook.f., *Nervilia punctata* (Blume), *Luisia filiformis* Hook.f., *L. primulina* Par. & Rchb.f. form new records of species for India. The distributional range of 110 taxa of orchids reported to-date from Orissa supports Gamble (1892) that Orissa is the meeting ground for the Himalayan and south Indian elements of the Indian flora.

188. Misra, S. 1982. "Additions to the orchidaceous flora of Orissa – II". *J. Orissa Bot. Soc.* 4(1): 23–32.

Abstract: This paper records new distributional data in respect of 45 species belonging to 20 genera of the Orchidaceae growing wild in the hill forests of Orissa.

189. Misra, S. 1983. "Orchidaceous flora of the Mahendragiri and Singaraj hills of Orissa". *Indian J. Forest.* 6(4): 309–313.

Abstract: The paper records 34 taxa of orchids from Mahendragiri-Singaraj hills complex. The expedition adds 18 species to the Mahendragiri flora not recorded earlier; one of these *Habenaria panigrahiana* S. Misra formed a new species. Besides, 4 species from Mahendragiri represented in MH but not reported earlier have been included in this paper. The Singaraj hill is botanically mapped for the first time bringing to light 28 species of orchids growing in the area.

190. **Misra, S. 1984.** "Orchid genera of Orissa. *Goodyera* R. Br., *Odontochilus* Bl., *Zeuxine* Lindl., *Spiranthes* L.C. Rich. and *Tropidia* Lindl.". *Proc. 71st Indian Sci. Congr. Pt. III*, p. 97.

191. **Misra, S. 1984.** "Orchid genera of Orissa. *Nervilia* Comm. ex Gaud." *Proc. 71st Indian Sci. Congr.* Pt. III. p. 100.

192. **Misra, S. 1985.** "Orchid genera of Orissa. *Cymbidium* Sw., *Geodorum* Jacks. and *Polystachya* Hook. (Subtribe: Cymbidieae)". *Proc. 72nd Indian Sci. Congr.* Pt. III. p. 33.

193. **Misra, S. 1985.** "Orchid genera of Orissa. *Eulophia* R. Br. ex Lindl. (Subtribe: Eulophieae)". *Proc. 72nd Indian Sci. Congr.* Pt. III. p. 33.

194. **Misra, S. 1985.** "Orchidaceous Flora of the Similipal hills in Orissa". *Proc. Nat. Conf. Biosphere Res. Simlipal, Orissa.* pp. 165–179.

Abstract: The Similipal hills in the Mayurbhanj district of Orissa (20°17'–22°34' N and 85°4' 87°10' E) is a single compact block of composite forest formation. Its hot humid climate with a moderately high rainfall has been suitable for the growth of a rich orchid flora. A total of 66 species are enumerated in this paper out of which 16 species were collected recently unreported earlier from Similipal. The forests harbor certain Himalayan species too. Protection of Similipal forest terrains is suggested for *in situ* conservation of rare and threatened species.

195. **Misra, S. 1986.** Notes on *Chiloschista lunifera* (Reichb.f.) J.J. Sm. from Orissa. In: Vij, S.P. (ed.), *Biology, Conservation and Culture of Orchids*. East-West Press Pvt. Ltd., Bhubaneswar. pp. 315–318.

Abstract: *Chiloschista* Lindl. is represented by only a single species, *C. lunifera* in Orissa. The present collections from the semi-evergreen forests of Sundargarh, Mayurbhanj and Keonjhar districts possess small inconspicuous stem and caduceus leaves. These generally flower in a leafless condition during May–June. The species has become scarce in its habitats and needs conservation.

196. **Misra, S. 1987.** "Additions to the Orchidaceous Flora of Orissa – III". *J. Orissa Bot. Soc.* 9(1): 32–37.

Abstract: Seventeen species of orchids belonging to ten genera collected from Orissa forming additions to the orchid Flora of the state, and are enumerated in the paper. *Diploprora* Hook.f. and *Phaius* Lour. are new generic records to Orissa state.

197. **Misra, S. 1989.** "An enumeration of the orchids of Similipal hills in Orissa, India". *Pl. Sci. Res.* 11(2): 73–85.

Abstract: This paper lists 92 species under 36 genera of orchids collected by the author from the Similipal hills of which 10 species are new records to the flora of Orissa. *Goodyera thailandica* Seid. and *Malaxis purpurea* (Lindl.) Kuntze are now record for India while *Eria meghasaniensis* (S. Misra) S. Misra is new to science. Distribution of *Bulbophyllum panigrahianum* S. Misra has been extended from the type locality. *Micropera* Lindl. and *Staurochilus* Ridl. ex Pfitz. formed generic records for Orissa.

198. **Misra, S. 1989.** "Orchid flora of Orissa". *J. Orchid Soc. India* 3(1-2): 61–72.

Abstract: The paper lists 123 orchid taxa including 4 new combinations in 42 genera, collected from Orissa during the past 2 decades and provides information about their habitat, distribution (range and frequency), flowering period and behaviours in culture. The endemic and ornamental taxa have been identified and measures suggested for the conservation of endangered ones. Recent nomenclatural changes have been incorporated and discussed. *Malaxis purpurea* (Lindl.) Kuntze collected from Bhanjabas, Similipal forest, represents a new record for India, earlier known from Sri Lanka, Philippines, Vietnam, Laos and Thailand.

199. **Misra, S. 1989.** "The proposed orchidarium at Similipal, Orissa: A report". *Orchid News* 4(1, 2): 3–4.

200. **Misra, S. 1993.** "Additions to the orchidaceous flora of Orissa – IV". *J. Orchid Soc. India* 7 (1&2): 37–47.

Abstract: The paper enumerates 23 species of orchids from Orissa, 14 of which represent new records for this state, 3 are new to science, and one new to India. *Micropera* Lindl. and *Staurochilus* Ridl. ex Pfitz. are new generic records for the state. The orchid species of Orissa which have undergone nomenclatural changes, in the recent years, are also listed and the taxonomic status of 9 of them has been discussed.

201. **Misra, S. 1994.** "Orchid of the Similipal forest, Orissa – Status and strategies)". *Proc. 18th Annual Conf. Orissa Bot. Soc. (Bhubaneswar).* p. 171.

202. **Misra, S. 1994.** "Phenology of flowering of the Orissa orchids". *J. Orchid Soc. India* 8(1&2): 25–33.

Abstract: The paper reports an account of the season and duration of flowering of 126 orchid species belonging to 42 genera in Orissa.

203. **Misra, S. 1995.** "Ecology of Orissa orchids". *J. Orchid Soc. India* 9(1&2): 23–28.

Abstract: The paper briefly reports the habitat preferences and distribution pattern of orchids in Orissa.

204. **Misra, S. 1997.** "*Bulbophyllum* and allied genera in Orissa, India: Taxonomic review". *J. Orchid Soc. India* 11(1&2): 51–59.

Abstract: Ten species of *Bulbophyllum* reported so far from Orissa are rearranged into three different genera, viz., *Mastigion, Cirrhopetalum* and *Bulbophyllum* following Garay & al. (1994). A new combination, viz., *Cirrhopetalum panigrahianum* is proposed. Besides the identification key to the genera and species, detailed information on phenology, habitat and distribution is provided for the species.

205. **Misra, S. 1997.** "Notes on *Cottonia peduncularis*: The bee orchid from India and Sri Lanka". *Orchid News* 13(1&2): 16–18.

Abstract: *Cottonia peduncularis* has been reported for the first time from Orissa from Koraput district, earlier it is reported from Peninsular India and Sri Lanka.

206. **Misra, S. 1997.** *Orchids of the Similipal forest.* In: Tripathy, P.C. & Patro, S.N. (eds.), *Similipal: A natural habitat of unique biodiversity*. Orissa Environmental Society, Bhubaneswar. pp. 73–91.

Abstract: The paper gives a brief account of habitat types of Similipal showing therein the distribution of 93 species or orchids. It includes two endemic species, one representative of the Indian flora and a good number of rare/phytogeographically interesting species. Measures for conservation of the orchid flora have been suggested.

207. **Misra, S. 1998.** Biodiversity of the Orissa orchids and its conservation. In: Patra, H.K. (ed.), *Biodiversity Conservation: Problems & Prospects*. Orissa Environmental Society. pp. 91–100.

Abstract: Orissa due to its tropical location and geographical diversity, the state has a moderately rich and diverse orchid flora with 127 species under 47 genera. This paper identifies the rare and endemic elements and briefly reports of the distribution pattern with habitat preferences of the orchids of Orissa. The *in situ* conservation measures in botanical reserves have been discussed and justification for establishment of an orchid sanctuary in Similipal forest of the Myurbhanj district has been made. The *ex situ* conservation measures in botanic gardens and tourist-resorts have been suggested for better understanding and culture of orchids for propagation helps conservation.

208. **Misra, S. 2000.** The Orchids. In: *Untamed Orissa: A journey into the wilds of Orissa*. Wild Orissa, Bhubaneswar. pp. 12–27.

Abstract: A total of 128 taxa in 47 genera of orchids have so far been recorded from Orissa. Of which, 61 are terrestrial and 67 are epiphytic. About 50 per cent of the genera are known by a single species in each. *Dendrobioum* and *Habenaria* are dominant among the epiphytic and terrestrial orchids, and are represented by 12 and 16 species, respectively.

209. Misra, S. 2001. "Morphological Diversity in the orchids of Orissa". In: Pathak, P., Sehgal, R.N., Shekhar, N., Sharma, M. & Sood, A. (eds.), *Orchids: Science and Commerce*. Bishen Singh Mahendra Pal Singh, Dehra Dun. pp. 67–80.

Abstract: Orchids show a remarkable diversity in plant structure. Their widely varying habit has been evolved to accommodate an extensive range of habitats in which they are globally distributed. Orissa due to its tropical location and geographical diversity has 127 species under 47 genera of monandrous orchids of varying habits, many of which are of phytogeographical interest. No saprophytic orchid has yet been recorded from the State. The paper briefly discusses the morphological features of the orchid of Orissa.

210. Misra, S. 2004. *Orchids of Orissa*. Bishen Singh Mahendra Pal Singh, Dehra Dun.

Abstract: The book aims at dealing with the subject through several chapters such as the geography, the ecology, the survey works, life form and morphology of the Orissa orchids. The flowering behavior observed through seasonal field visits has been recorded in the chapter phenology of flowering. The enumeration of 130 taxa in 48 genera has been given. Brief generic description has been provided for every genus. Keys have been provided for identification of the species for all such genera represented in Orissa by more than one species.

211. Misra, S. 2014. *Orchids of Odisha – A Handbook*. Bishen Singh Mahendra Pal Singh, Dehra Dun.

Abstract: This book contains information of the lifeform, growth habits and morphology of the 137 orchids of Odisha. A large number of figures have been provided to explain this as also to show the diversity in their forms. Orchid habitats in Odisha and their flowering behaviours have been provided. The status of orchids in the state and their conservation measures are briefly discussed.

212. Misra, S. & Choudhury, B.P. 1996. "Rice field flora of Bhubaneswar". *Bio-Sci. Res. Bull.* 12(2): 99–112.

213. Misra, S. & Misra, M.K. 2013. "Leafy vegetable plants of south Odisha, India". *Int. J. Agric. Food Sci.* 3(4): 131–137.

Abstract: The paper reports the leafy vegetable plant species of south Odisha. A total of 106 leafy vegetable plant species belonging to 88 genera and 49 families are reported. Various ethnic groups and rural people consume 78 wild plants as unconventional source of food while 28 plants are under cultivation. The taxa include 97 dicots, 7 monocots and 2 species of pteridophytes. The leafy vegetable plants include 79 herbs, 16 shrubs and 11 tree species. Suggestion has been made for improvement and cultivation of wild leafy vegetables.

214. Misra, S. & Misra, M.K. 2014. "Nutritional evaluation of some edible underground plant parts used by the tribal people of south Odisha, India". *Nelumbo* 56: 225–233.

Abstract: The paper deals with the nutrient analysis of eleven underground plant parts of south Odisha, India, most of which are used by the tribal/rural people at the time of food scarcity. The nutritive value such as crude protein, total sugar, total lipid, vitamins B and C content of the selected edible underground plant parts were analysed. The plants with edible underground parts collected for nutritional analysis are *Amorphophallus paeoniifolius* (Dennst.) Nicolson, *Colocasia esculenta* (L.) Schott, *Curcuma angustifolia* Roxb., *Dioscorea alata* L., *D. oppositifolia* L., *D. wallichii* Hook.f. (bulbils and rhizomes), *Musa x paradisiaca* L., *Nelumbo nucifera* Gaertn., *Nymphaea nouchali* Burm.f., *Raphanus raphanistrum* subsp. *sativus* (L.) Domin.

215. Misra, S. & Misra, M.K. 2014. "Nutritional evaluation of some leafy vegetable used by the tribal and rural people of south Odisha, India". *J. Nat. Prod. Pl. Resources* 4(1): 23–28.

Abstract: Leafy vegetables are good source of nutrients. The paper deals with the nutrient analyses of 27 leafy vegetables of south Odisha, and most of which are less used or used at the time of food scarcity. The nutritive value such as crude protein, total sugar, total lipid, vitamins B_1 and C of the selected leafy vegetables were analysed. Among the less consumed leafy vegetables *Murraya koenigii, Tamarindus indicus, Cleome viscosa, Alternanthera sessilis,* and *Senna tora* showed nearly 5% or more protein content. *Murraya koenigii* (18.7%) showed the highest total sugar content followed by the *Tamarindus indicus* (18.1%), *Corchorus aestuans* (15%) while *Tamarindus indicus* showed the highest fat content (0.002%). Out of the selected leafy vegetables eighteen plant species showed no vitamin B_1 content and eight showed no vitamin C content. *Tamarindus indicus* contains the highest vitamin B_1 content followed by *Bambusa bambos* while *Moringa oleifera* showed the highest vitamin C content followed by *Cleome viscosa*. Some of these underutilized leaves may be useful as food and medicine that are required in small quantities to cure some of the diseases the tribal and rural poor suffer from.

216. Misra, S. & Misra, R. 1985. "Excursion orchid flora of the Malayagiri hills in Orissa". *J. Environm. Sci.* 1(2): 79–85.

Abstract: A total of 21 species in 15 genera of orchids collected during a trip to the Malayagiri hills of Orissa are enumerated in this paper. Suggestions have been made for *in situ* conservation of a rare terrestrial orchid, *Tainia hookeriana* growing on the hills.

217. Misra, S., Panda, S.P. & Sahu, D. 2004. "Orchid flora of Similipal, Orissa, India: Some observations". *J. Orchid Soc. India* 18(1&2): 117–121.

Abstract: The Similipal montane forest, one of the Biosphere Reserves of India is renowned for its unique geographical features and rich and diverse flora. It is a grand repository of orchids in the Eastern Ghats. Habitat destruction coupled with other factors appeared to disturb the ecological balance in Similipal as it has been observed from the regenerative behaviour of several orchid species. Addition of two species and deletion of one species to the flora of Similipal has been made in this paper.

218. Misra, S., Sahu, D. & Panda, S.P. 2006. "Orchidaceous flora of the Niyamgiri hills, Orissa, India". *J. Orchid Soc. India* 20(1&2): 45–51.

Abstract: This paper deals with 36 orchid species collected from Niyamgiri hill ranges in Orissa. Out of these, 23 are of epiphytic and 13 are terrestrial. Correct nomenclature, locality, ecology and flowering period of the species have been given along with some conservation strategies and present status of the orchids of Niyamgiri hills.

219. Misra, S.C. 1981. "The genus *Capparis* L. in Orissa". *Proc. 5th Annual Conf. Orissa Bot. Soc.* pp. 31–32.

220. Misra, S.C. & Panigrahi, G. 1987. "Studies on the mangrove flora of Orissa with particular reference to the Rhizophoraceae R. Br." *J. Econ. Taxon. Bot.* 11: 121–132.

Abstract: An analysis of 57 species belonging to 28 families of angiosperms which occur in the five sectors of the mangrove forests of India is made. A systematic treatment of the family Rhizophoraceae in Orissa, comprising 6 genera and 10 species with keys and citation of types, is presented; the specimens collected from the deltas of the rivers in Orissa and deposited in CAL, DD, ASSAM or those reported by earlier workers from the area, are cited.

221. Mohanta, K. & Mahata, M.C. 2009. "Freshwater weeds of Rourkela steel city, Sundargarh, Orissa". *Biospectra* 4(1): 181–184.

Abstract: This paper is a preliminary one and deals with the aquatic weeds found in and around of the Rourkela steel city (22.34° N and 84.20°E), approximately at an elevation of 219 m with maximum summer temperature of 45.3°C and minimum winter temperature of 7° C). During the survey from February 1982 to January 1983, a total of 45 species of aquatic weeds belonging to 31 families are recorded from the city, of which, 8 are emergent, 13 are marginal, 9 are submerged and 15 are floating species of aquatic weeds. Their occurrences are more in lentic water in contrast to lotic water. The lotic waters have only 5 marginal, 2 submerged and 6 floating types of weeds, whereas the lentic waters have 8 emergent, 10 marginal, 9 submerged, and 14 floating types of weeds. The *Aeschynomene asper* L. and *Riccia* sp. are exclusively found in lotic water only.

222. Mohanty, A.P. 1959. "Bamboo resources of Orissa". *Indian Forester* 85(2): 115–18.

Abstract: A survey was carried out recently in Orissa, to get a reasonable accurate estimate of surplus quantity of bamboos that will be available for paper making. The method adopted for the survey and the results obtained have been described briefly in this note.

223. Mohanty, B.N., Patnaik, S.N. & Choudhury, B.P. 2001. "A preliminary study of vegetation and mines in the Iron ore Belt of Keonjhar and Sudargarh districts of Orissa'. *Pl. Sci. Res.* 23(1&2): 46–52.

Abstract: Tropical forests play a great role in maintaining the quality of the environment. Large scale mining of iron and manganese ores occurring underneath these forests in the Keonjhar and Sundargarh districts of Orissa is a cause of concern for everybody. It is a vital requirement to rehabilitate the degraded forests, and restore the diverse floristic element/restore simultaneously with and/or at the closure of such mining operations. For a long time, the rehabilitation of forest species in the mined-out area is posing to be very difficult meeting little success in the field. It is also a fact that all the forest species are not equally tolerant to the impacts of mining and related anthropogenic pressures. This study attempts to probe the nature of change *of* vegetation composition due to the impacts of mining by choosing suitable sites subjected to varying degrees of stresses. In the preliminary study it has been brought to light that the area where mining is being undertaken originally supported dense sal forest with many associate species in the pre-mining days. But in course of time, due to clearance of canopy, the germination of sal seeds received a severe jolt and| many other species invaded the area. Along with them, some of the exotic species such as *Chromolaena odorata* and *Lantana camara* colonize the area and started dominating the post-mining scenario. All these facts are to be taken into consideration before preparing any suitable reclamation/rehabilitation plan.

224. Mohanty, D. & Adhikary, S.P. 2013. "Assessment of changes in the algal diversity of Chilika lagoon after opening of new mouth to Bay of Bengal". *J. Water Resource & Protect.* 5: 611–623.

Abstract: A total of 81 algal taxa comprising of 24 species of Cyanophyta, 2 Rhodophyta, 19 Chlorophyta, 6 Euglenophyta and 30 Bacillariophyceae under Heterokontophyta were recorded in Chilika lagoon in different seasons during 2010–2011 in a survey after opening of new mouth to Bay of Bengal. Of these *Cyanobacterium diachlloros*, *Aphanocapsa marina*, *Microsystis aeruginosa*, *M. wesenbergii*, *Pseudanabena limnetica*, *Arthospira ambiguum*, *Oscillatoria perornata*, *O. proteus*, *O. simplicissima* under Cyanophyta, *Scenedesmus bijugatus*, *Urenema elongatum* under Chlorophyata, *Trachelomonas abrupt*, *T. hispida* under Euglenopyta and *Coscinodiscus subtilis*, *Navicula*

amphirhynchus, *N. major*, *Gomphonema micropus*, *G. olivaceu*, *G. sphaerophorum*, *Cyclotella meneghiniana*, *Pinnularia subsimilis*, *Pleurosigma javanicum*, *Stephanophyxis turris*, *Synendra tabulata*, *Stauroneis pusilla* and *Cymbella affinis* under Bacillariophyceae of Heterokontophyta recorded in the survey have not been reported in the lake before opening of the mouth. Maximum number of algal species was observed in winter followed by summer and post monsoon seasons. Northern sector showed maximum algal diversity followed by Central, Southern and Outer channel sectors. The Cyanophytes followed by Chlorophytes were rich in Northern, Central and Southern sectors where as the diatoms were abundant in Outer channel sector and Northern sector. The agarophyte *Gracilaria verrucosa* recorded in the Outer channel sector of the lagoon for the first time showing extended distribution of the species due to increase in salinity coupled with consistent wave action in the lagoon after opening of the new mouth.

225. Mohanty, M. & Choudhury, B.P. 1983. "Addition to hydrophytes of Cuttack". *Proc. 8th Annual Conf. Orissa Bot. Soc. (Rayagada)*. pp. 31–32.

Abstract: Pattnaik & Patnaik (1956) reported 33 aquatic taxa including 1 pteridophytic member from Cuttack city. Thereafter no attempt has been made to keep a complete record of hydrophytes of this township. Through these years quite a large number of ponds, ditches and low laying areas which are the main centres of hydrophytic elements have been silted up for erection/expansion of various architectural complexes connected with the growth of the city. As a result of which the rich aquatic vegetation is considerably affected/destroyed. Therefore, an extensive as well as intensive floristic survey of the aquatic members has been undertaken to prepare a compendium of angiospermic taxa peculiar to aquatic habitats. Over and above, this survey work is planned to encompass, the total area under Cuttack district, which has got a significant bearing of the floristic study of this district. Through exhaustive collection 22 angiospermic taxa, excluding two aquatic pteridophytes, namely *Ceratopteris thalictroides* Brongn., and *Azolla pinnata* R. Br. under 20 genera belonging to 12 families have been catalogued. These fall under distinct categories: (a) Truly aquatic weeds (2 species), (b) Bank-weeds (6 species), (c) Shoreline weeds (11 species), (d) Marsh land and swamp weeds (3 species), according to the classification proposed by Gupta (1979). Species under various families have been arranged alphabetically and correct nomenclature, full citation along with pertinent synonyms, diagnostic feature, phytology, sociability, field number of collection and notes on abundance/rarity have been provided. The local names wherever available have also been appended within parentheses after citation. All these specimens are housed in the herbarium of P.G. Botany Department, Utkal University, Bhubaneswar.

226. Mohanty, M. & Choudhury, B.P. 1984. "Addition to hydrophytes of Cuttack". *Bull. Environm. Sci.* 1: 9–12.

227. Mohanty, R.B. & Tripathy, B.K. 2011. "Toponymy of villages in Jajpur district of Odisha: An ethnobotanical treatise". *Ethnobotany* 23: 27–32.

Abstract: Toponymy or study of names of localities was conducted in Jajpur district of Odisha during 2008–2009. The villages named after plants and vegetation were sorted out and recorded. Out of 1575 inhabited villages in the district, 183 are named after plant names. Moreover, out of the ten blocks in the district 'Sukinda' block with the highest forest cover has the maximum number (25%) of villages that are named after plants. The village with a particular plant name is observed to have higher abundance of that species in its surroundings, indicating the suitability of that habitat for plantation and growth of that particular species in that locality. Apart from showing the plant geography of the region, the findings can be helpful in the selection of plant species for afforestation and social forestry programmes in the concerned locality.

228. Mohapatra, A.K. 1991. "Protection through participation – Orissa's experiment with reserve forests, problems & prospects". *Indian J. Forest.* 14(2): 113–118.

Abstract: Protecting forest from biotic interference, in country as India still remain a major challenge to the forestry management and administration. Various methods and schemes have been tried in past to secure people's participation in forest resource management. The emphasis till now was on raising plantation and improvement of degraded forest with people's support. But protecting Reserve Forest, the sanctum-sanctorum of forest management with people's cooperation, is first attempted in Orissa in 1988. The article analysis some issues involved in such an innovative approach, its problem and prospects.

229. Mohapatra, D.K., Rout, P.K., Panda, P.K. & Sahoo, S. 2008. "Kewda (*Pandanus fascicularis* Lam.): A potential economic plant of Ganjam district of Orissa". *J. Non-Timber Forest Prod.* 15(2): 79–82.

Abstract: Kewda (*Pandanus fascicularis* Lam.) belongs to the family Pandanaceae, of which *Pandanus* Parkinson is the largest genus. This species has a tropical distribution with densely luxuriant growth in Ganjam district of Orissa state. The Kewda products are of various industrial applications. In Ganjam district, the Kewda production occupies about 5000 hectares of area and it is estimated that about 35 million (3500 tons) male flowers are processed every season yielding essential oil worth of Rs. 400 million annually. Ganjam district of Orissa supplies 85–90% of country's Kewda essence with estimated annual turnover of Rs. 40 crores. The major components of the Kewda oil estimated are PEME, terpinen-4-ol, P-cymene, á-pinene, â-pinene, ã-terpinene and á-perpineol. This paper gives a detailed account of Kewda botany and agro-technology GC-MS analysis of Kewda essential oil, and importance and economics of Kewda in Ganjam district.

230. Mohapatra, D.K., Rout, P.K., Sahoo, S. & Panda, P.K. 2006. "Kewda (*Pandanus odoratissimus* L.f.): A potential economic plant of Ganjam (Orissa), India and its role in flavor industry". *J. Econ. Taxon. Bot.* 30(Suppl.): 197–202.

Abstract: Kewda belongs to the family Pandanaceae, of which *Pandanus* Parkinson is the largest genus. In India, there are 15 species (Karthikeyan & al., 1989), of which *P. odoratissimus* L.f. (= *P. fascicularis* Lam.) is the most common one. This species has a tropical distribution and found all over India, but luxuriant growth is concentrated in Ganjam district of Orissa state. The Kewda products are of various industrial applications. In Ganjam district the Kewda population occupies about 5000 hectares of area and it is estimated that about 35 million (3500 tons) flowers are processed every season yielding essential oil worth of Rs. 400 million annually. Ganjam district of Orissa supplies 85–90% of country's Kewda essence with estimated annual turnover of Rs. 40 crores. Today, more than 100 distilleries are established in 200 villages/hamlets of this district. The major components of the Kewda oil estimated are PEME, terpinen-4-ol, P-cymene, á-pinene, â-pinene, ã-terpinene and á-perpineol. This paper gives a detailed account of Kewda vegetation biology, agro-technology, processing of Kewda flowers and economic status of the local people.

231. Mohapatra, H.K. & Behera, L.M. 2013. "Study of vegetation in Deogarh forest range of Deogarh district in Odisha". *Advances Pl. Sci.* 26: 401–405.

Abstract: The study reveals the occurrence of 64 trees, 25 shrubs, 9 herbs, and 18 climbers, epiphytes and parasites. The increased human activities at various places are causing disturbances to this valuable vegetation. In this paper an attempt has been made to highlight the present status of vegetation at four different forest sections of Deogarh Forest Range.

232. Mohapatra, H.K. & Behera, L.M. 2014. "Angiosperms affected with *Dendrophthoe falcata* (L. f.) Ettisngsh. in Deogarh district in Odisha". *Advances Pl. Sci.* 27: 115–117.

Abstract: The paper deals with the angiosperms affected with the partial stem parasite, *Dendrophthoe falcata* (L.f.) Ettingsh. collected during the year 2011–2012 and describes an account of the survey of the dicotyledonous plants affected by Madang (local name) found in Deogarh district of Odisha. Deogarh district is comprised of Barkote range, Deogarh range and Reamal range. The paper includes 29 dicot species belonging to 29 genera and 20 families affected by Madang.

233. Mohapatra, H.S. 1993. *Flora of Phulbani district*. Ph. D. Thesis, Utkal University, Bhubaneswar (unpublished).

234. Mohapatra, S.C. 2003. "Dinanath grass (*Pennisetum pedicellatum* L.) in association with six popular tree species of western Orissa". *Indian J. Forest.* 26(2): 147–149.

Abstract: An experiment on silvipastoral system was conducted for three consecutive years (1996 to 1998) in slightly slopey, red lateritic culturable wasteland. Six popular tree species (viz., *Eucalyptus tereticornis, Acacia auriculiformis, A. nilotica, Dalbergia sissoo, Samanea saman* and *Albizia lebbeck*) differed significantly on growth of plant height (PH), and Girth at shoulder height (GSH). *Eucalyptus tereticornis* showed maximum growth of PH and GSH followed by *Acacia auriculiformis*. Fodder yield of Dinanath grass in two cuts was highest under the tree canopy of *Dalbergia sissoo* followed by *Samanea saman* and lowest in the interspaces of *Eucalyptus tereticornis*.

235. Mohapatra, S.P. & Sahoo, H.P. 2009. "The status and use of tree biomass in the tribal village ecosystem of Bolangir district, Orissa". *Advances Pl. Sci.* 22: 541–545.

Abstract: The status of tree biomass resource was investigated in three tribal villages (Chikalbahal, Kudasingha and Bhutiyarbahal) of Bolangir district of western Orissa. There were 57 tree species with 12 tree capita^{-1} and 35 trees ha^{-1}. Multiple benefits yielding local tree species dominated the village ecosystem, while fuel only or single end use trees accounted for a small proportion of trees. The standing tree biomass is adequate to meet the requirements of the biomass fuel for cooking only for five years. Village tree biomass is presently being depleted largely for export to urban areas. So it is the high time to conserve the village tree diversity by proposing some programmes which will reduce the urban pressure and demand for tree biomass.

236. Moharana, S.C. & Mohanty, P.R. 1993. "Mangrove of Orissa – A remote sensing approach". *Proc. 17th Annual Conf. Orissa Bot. Soc.* pp. 15–16.

237. Molla, H.A. & Pal, D.C. 1995. "Observation on *Eulaliopsis binata* (Retz.) C.E. Hubb. (Sabai grass)". *J. Econ. Taxon. Bot.* 19(2): 443–445.

Abstract: Observation on the habit, habitat and uses of *Eulaliopsis binata* (Retz.) C.E. Hubb. based on the material collected in the forest of Bihar, Orissa and West Bengal and those lodged in the Central National Herbarium, Howrah (CAL) are given. Certain uses attributed to this plant by the tribal people of Bihar, Orissa and West Bengal does not seem to be so far well-known.

238. Mondal, P. 1990. *Flora of Keonjhar district, Orissa.* Ph.D. Thesis, University of Calcutta, Calcutta (unpublished).

239. Mondal, P., Manna, M.K. & Mukherjee, P.K. 1987. "A bibliography to the systematic botany of Orissa". *J. Econ. Taxon. Bot.* 11: 397–406.

Abstract: The present bibliography is presented to fill-up to the study of the systematic botany of Orissa. The main thrust being on the flowering plants, though few references on ferns and algae are included.

240. Mooney, H.F. 1933. "The forests of Orissa state". *Indian Forester* 59: 200–221.

Abstract: A brief sketch of the forest flora gives only a general idea of the salient types with a short reference to the dominant plant association. This area may be conveniently divided into three main regional types: (i) the humid coastal region of the south-east within which two main types of forest may be recognized, namely (a) the damp type sal forest with evergreen species and (b) the semi-evergreen forest on sandstone and lateritic with *Kydia* and *Strychnos* as typical trees. *Bambusa arundinacea* is found throughout this region and constitutes a dominant consociation in many places; (ii) the sal region, represented by type of sal forest. This is typical formation of our area, is essentially tropophilous, and covers the bulk of the Orissa Agency and (iii) the dry deciduous mixed region, which is met with mainly in the extreme west, in Patna and Kalahandi states.

241. Mooney, H.F. 1941. "A short account of the geology and flora of the hill zamindaries in Kalahandi states". *Indian Forest Rec., Bot.* 3: 131–143.

242. Mooney, H.F. 1941. "Some additions to the Botany of Bihar and Orissa". *Indian Forest Rec., Bot.* 3: 63–119.

243. Mooney, H.F. 1947. "A note on Southern limit of Sal (*Shorea robusta*) in Orissa and Bastar state". *Indian Ecol.* 20: 27–31.

244. Mooney, H.F. 1947. "The occurrence of some indigenous species of Rosaceae in Bihar, Orissa and neighbouring states". *J. Indian Bot. Soc.* 26: 75–83.

Abstract: Thirteen species of the family Rosaceae occur naturally in the area covered in this paper. These fall in seven genera, viz., *Pygeum* (3 spp.), *Rubus* (3 spp.), *Potentilla* (3 spp.), *Fragaria* (1 sp.), *Rosa* (1 sp.), *Pyrus* (1 sp.) and *Crataegus* (1 sp.).

245. Mooney, H.F. 1950. *Supplement to the Botany of Bihar and Orissa*. Catholic Press, Ranchi.

246. Mukherjee, A.K. 1968. "The chemical composition of some dune slack waters of Puri, Orissa". *Bull. Bot. Surv. India* 10(3&4): 327–329.

Abstract: Analyses of pH, total dissolved solids, $CO^{=}$, HCO^{-}_{3}, CL, $SO^{=}_{4}$, Ca^{++}, Mg^{++}, Na^{+} & K^{+} are presented for dune slack water samples of Puri, Orissa. From these analyses sodium percentage, residual sodium carbonate and sodium-adsorption-ratio are calculated. It is found from these data that alkali or salinity hazard is low in these waters, which can therefore be utilized for irrigation purposes.

247. Mukherjee, D.B. 1935. "Notes on a collection of plants from Mahendragiri". *J. Indian Bot. Soc.* 14: 305–311.

Abstract: A total of 60 taxa belonging to 28 families have been collected from this region, of which 17 families have one species each, the rest are represented by more than one.

248. Muni, M. & Mohanty, R.C. 1985. "Phytoplankton biomass and primary productivity of Vani Vihar Lake". *J. Orissa Bot. Soc.* 7(1): 14–17.

Abstract: Phytoplankton biomass and primary productivity were studied at three different stations in Vani Vihar Lake. The high rate of production (-0.48 to 6.8 and 0.14 to 8.24 g C/m^2/day for net and gross primary productivity respectively) and high standing crops (ranging from 20 to 72.2 mg/l) indicate extreme eutrophy. During rainy season when the lake water became muddy it was, however, not possible to estimate the biomass which accompanied negative or very low values of productivity. In-flow of various types of pollutants by the city's natural drainage system coupled with constant algal growth in the lake makes the water alkaline throughout the year. The relationship between plankton biomass and carbon assimilation are discussed.

249. Murthy, K.S.R. & Pullaiah, T. 1998. "The genus *Crotalaria* L. in Eastern Ghats, India". *Pl. Sci. Res.* 20: 46–53.

Abstract: The genus *Crotalaria* L. is represented by 49 species in the Eastern Ghats of India lies between 76º56'–86º30' E and 11º30'–22º N. Out of these, 6 taxa are endemic, 3 taxa are endangered to Eastern Ghats. In the systematic enumeration, these 49 species are dealt with in alphabetical sequence. The enumeration includes citation, habit, distribution and specimens examined.

250. Murty, K.S. 1984. "Mangrove of Orissa". *NWCSO Newslett.* 2(3&4): 6–8.

251. Murty, K.S., Dhal, N.K. & Rout, N.C. 2003. "Floristic diversity of Berbera reserve forest in Orissa – I". *J. Econ. Taxon. Bot.* 27(Suppl.): 1210–1217.

Abstract: This paper gives an account of the floristic composition of Berbera Reserve Forest, in Khurda district covering a total forest area of 15,240.98 ha. The paper enumerates 63 species of trees, 31 shrubs and 47 herbs and climbers in a ratio 12:9:6 belonging to 58 families and 123 genera. The ground herbaceous flora is rich during rainy season. The luxuriant *Shorea robusta* population is unlikely of typical coastal vegetation, which provides scope for the eco-distributional studies of the species. Orchids, normally coast-shy taxa have been recorded from Berbera. The taxa have been arranged according to the Bentham & Hooker's system of classification along with their correct nomenclature and author citation.

252. Naidu, S.J. & Misra, M.K. 1998. "Production and consumption of wild date palm sap and country liquor in two tribal village ecosystems of Eastern Ghats of Orissa, India". *Bioresource Technol.* 63: 267–273.

Abstract: Wild date palm sap and traditional liquor production and consumption in Bidyadharpur and Arakhapada tribal village ecosystems on Eastern Ghats of Orissa

were intensively studied. Daily palm sap productivity was 656 and 92 ml tree^{-1} while the total annual production was 22,902 and 106 litre in Arakhapada and Bidyadharpur, respectively. Country liquor was mainly prepared from molasses and mohua flowers. Traditional liquor production technology is described. In Arakhapada annual molasses liquor production was 14,706 litre, while mohua liquor production was 160 litre. In Bidyadharpur no liquor production was observed. Consumption of wild date palm sap and country liquor was more in Arakhapada than that of Bidyadharpur. Consumption of liquor by tribal women is a peculiar feature. Input-output analysis of molasses liquor preparation revealed no monetary benefit.

253. Nair, K.N.R. 1944. "A sin-ecological study of the forests of Mayurbhanj". *Indian Forester* 70: 257–259.

Abstract: The three conclusion have been reached by a close study of the locality factors and general conditions in Mayurbhanj: (i) Sal seems to grow well in a heavy but well-drained soil derived from the acid rocks. Iron is definitely beneficial as the purest sal crops are invariably found in places where iron ore predominates. The best development of sal is seen in such places especially if water is available at the spot, (ii) sal totally avoids epidiorite with a shallow soil covering particularly on the drier south and southeast aspects and (iii) regeneration of sal is very easy provided the required locality factors are favourable and fire checked until the seedling reach the sapling stage.

254. Naithani, H.B. & Raizada, M.B. 1977. "New record of some Cyperaceae taxa in India". *Indian Forester* 103(6): 411–424.

Abstract: The paper presents a new combination, i.e., *Fimbristylis falcata* (Vahl) Kunth var. *latifolia* (Kunth) Naithani & Raizada and new records of 13 taxa of sedges (Cyperaceae) in India, viz., *Cyperus sanguinolentus* Vahl subsp. *melanocephalus* (Miq.) A. Kern., *Fimbristylis falcata* Kunth var. *latifolia* (Kunth) Naithani & Raizada, comb. nov., *Scleria corymbosa* Roxb. for North India; *Cyperus unioloides* R. Br., *Fimbristylis salbundia* (Nees) Kunth, *F. stolonifera* C.B. Clarke for central India; *Scleria biflora* Roxb. for Madhya Pradesh; *Cyperus melanospermus* (Nees) Valck.Sur., *Fimbristylis pierotii* Miq., *Scleria rugosa* R. Br. for Orissa; *Cyperus pulchellus* R. Br. for Orissa and Gujarat; *Fimbristylis sieberiana* Kunth for northern and southern India and *F. velata* R. Br. for Karnataka. Notes on synonymy, short description, distribution and distinction from allied species are provided. Species are arranged alphabetically. All quoted specimens are deposited at DD.

255. Narayanaswami, V. & Carter, H.G. 1922. "Systematic list of the plants of Barkuda". *Mem. Asiat. Soc. Bengal* 7(4): 289–319.

256. Nayak, R.K. 2005. "Conservation and regeneration of mangroves in Paradeep and its adjoining regions in the East coast of India". *Geobios (Jodhpur)* 32(2&3): 219–220.

Abstract: In the present investigation, 26 species of mangroves and their associates have been reported from Paradeep and its adjoining regions. The depletion of mangroves in and around Paradeep have been intensified the rate of various environmental hazards such as oceanic cyclones, unusual fllod, soil erosion and encroachment of sea towards land. Mangrove species and their associates such as *Rhizophora apiculata, R. mucronata, Kandelia candel, Tamarix troupii, Hibiscus tiliaceus* and *Phoenix paludosa*, which are better adapted in this region may be planted in large scale in the coastal areas for the protection of environment.

257. Nayak, R.K. & Choudhury, B.P. 2001. "Mangroves of Mahanadi delta and their conservation". *Pl. Sci. Res.* 23(1&2): 21–24.

Abstract: Mangroves of Mahanadi delta was much rich in remote past. In course of time, this vegetation has been depleted at an alarming rate due to the operation of various biotic factors such as, the establishment of Paradeep Port, Paradeep Phosphates Ltd., piscicultures and settlement of immigrants. As a result, the present vegetation is extant in most denuded condition which needs an urgent attention for conservation.

258. Nayak, R.K., Choudhury, B.P., Panda, S.P. & Subudhi, H.N. 2002. "Conservation and judicious exploitation of mangroves of the Mahanadi delta". In: Sahoo, S., Ramesh, D.B., Panda, P.K. & Misra, V.N. (eds.), *Proceedings of the National Seminar on Plant Resources Utilization for Backward Area Development.* Allied Publishers Pvt. Ltd., New Delhi. pp. 79–82.

Abstract: An exhaustive idea has been given about the distribution and present status of some potential mangroves and their associate species in the paper. The species have been enlisted alphabetically, nomenclature of each species updated and medicinal uses.

259. Nayak, S.K. & Satapathy, K.B. 2015. "Diversity, uses and origin of invasive alien plants in Dhenkanal district of Odisha, India." *Int. Res. J. Biol. Sci.* 4(2): 21–27.

Abstract: An exhaustive floristic survey was carried out during 2013–2014 in the Dhenkanal district of Odisha state to assess the diversity, nativity and uses of invasive alien plants. From the study it was found that 131 species with 97 genera and under 39 different families were invasive alien plants. Analysis of life-forms revealed that the herbs were dominant with 114 species (87.65%) followed by shrubs (12), trees (2) and climbers (3). And the dominant family was Asteraceae with 25 (19.13%) species followed by Amaranthaceae (8), Euphorbiaceae (8), Caesalpiniaceae (7), Convolvulaceae (7), Fabaceae (6), Mimosaceae (5), Poaceae (5), Solanaceae (5), Asclepiadaceae (4), Cleomaceae (4), Tiliaceae (4), Cyperaceae (3), Lamiaceae (3). These families included most invasive species such as *Chromolaena odorata, Lantana camara, Hyptis suaveolens, Ageratum conyzoides, Parthenium hysterophorus, Eichhornia crassipes, Alternanthera*

philoxeroides and others. The dominance of Asteraceae species among all IAPS found in this region was resulted due to higher potential for adaptability and rapid growth. It was found from the literature that different native places of IAPS of Dhenkanal district were Tropical America (83), Tropical Africa (12), Tropical South America (9), Europe (4) Brazil (3), Tropical North America (3), West Indies (3), Mediterranean (3), tropical Central South America (2), Tropical Central America (1), Tropical East Africa (1), Peru (1), Mascarene Islands (1), Mexico (1), Temperate South America (1), Madagascar (1), West Asia (1), Afghanistan (1) and tropical West Asia (1). From the interaction with local people and literature survey it was found that IAPS were used as medicine (70), fuel (3), ornamental (6), rope making (2) and leafy vegetable (4).

260. Nisanka, S.K., Misra, M.K. & Sahu, N.C. 1992. "Economics of fuel energy in an Indian village ecosystem". *Bioresource Technol. 39:* 249–261.

Abstract: Fuel energy consumption pattern and its associated socio-economic factors have been intensively studied in the Bhabinarayanpur village ecosystem, Orissa, located on the east coast of India. About 21% of the gross annual income of the village is devoted to the fuels. Biomass, which is mostly collected free from the environment**,** is the major source of fuel energy. It constitutes 94.1% of the total fuel consumption. Family size and consumption of cereals and legumes significantly influence fuel use. However, there is no significant correlation between fuel consumption and other variables such as farm size, income and number of earning members in the family. The efficiency of the traditional stove is low in respect of all the biomass fuels for which more than three-quarters of the total energy is lost in the village. There is scope for improving the efficiency of fuel consumption and for ensuring a continuous supply of fuel energy to the village, for which suggestions have been made.

261. Osmaston, F.C. 1934. "Sal regeneration at Raigoda, Angul". *Indian Forester* 60: 748–752.

Abstract: The article provides details of methods adopted to control the large thorny bamboo species, *Bambusa arundinacea* and the details of technique that was proving successful and not too expensive in coaxing sal (*Shorea robusta*) regeneration to a healthy sapling stage in Raigoda Block of the Angul Division in Orissa. It also discusses the periodic regeneration felling of clumps of bamboos and other trees and weeds in the area.

262. Paitnaik, B.K. 2012. "Chilika in Peril". *Emerg. Sci.* 4(7): 36–38.

Abstract: Chilika is internationally famous for its rich bio-diversity and eco-tourism. It is the largest lagoon of Asia exhibiting a natural jugalbandi of marine brackish water and freshwater ecosystem with amazing biodiversity. It witnesses the largest congregation

of aquatic birds, particularly in winter. It has a large stock of flora and fauna. Irrawaddy dolphins add to its tourist's importance besides scenic beauty of hilly forests, bird sanctuary, picturesque islands and many more. Further, it provides livelihood to over one million of people. But with advancement of time and technology, this masterpiece of nature is in peril due to exponential declining of its environment arising out of overexploitation of its natural resources and inadequate knowledge in caring the environment. In the name of development we simply cannot destroy the environment. Even we cannot stop development just because it has adverse impact on the environment. Consequently, it diverts our attention towards a strategic environment management. To get back the ecological balance of Chilika there is an urgent and immediate need of judicious management of its environment.

263. Pal, D.C. 1971. "The identity and distribution of certain taxa in Bihar and Orissa". *Indian Forester* 97: 264–265.

Abstract: The identity and distribution of three grass species namely *Brachiaria miliiformis* (J. Presl) Chase from Bihar and Orissa, *Digitaria preslii* (Kunth) Henrard from Bihar and *Trachys muricata* (L.) Pers. from Orissa are discussed in the paper.

264. Panda, A., Sahu, D. & Misra, M.K. 2011. "Plant biodiversity and ecology of selected aquatic vegetation of Odisha, India". *Proc. Natl. Acad. Sci. India*, *B* 81(1): 134–147.

Abstract: Floral composition and structural parameters of 15 perennial water bodies (sites) on the east coast of India situated in Ganjam district of Odisha were investigated. Fifty quadrats, each 50 × 50 cm in size, were randomly placed at each site for vegetation analysis. A total of 61 species under 49 genera and 30 families were recorded in the water bodies. Out of the total species, 55 species belong to angiosperms, 2 species to Pteridophytes, and 4 species to algae. The floristic composition differed from site to site; the maximum degree of similarity index between the sites was 50. *Nymphoides hydrophylla* (Lour.) Kuntze and *Scirpus articulatus* L. occurred in most of the sites (13 sites). *Azolla pinnata* exhibited the highest number of individuals (172.8 ind. m^{-2}) on one site followed by *Utricularia aurea* Lour (86.9 ind. m^{-2}) on the other. *Utricularia aurea* was predominant in two sites exhibiting the highest Importance value index followed by *Alternanthera philoxeroides* (Mart.) Griseb. in one site. The other dominant species were *Ipomoea carnea* Jacq., *Lemna polyrrhiza* L., *Nelumbo nucifera* Gaertn. and *Nymphoides hydrophylla*. The Shannon diversity index (H') varied between 0.73 and 1.26 and the Simpson's dominance index (C) between 0.07 and 0.31.

265. Panda, K.K., Das, A.B. & Panda, B.B. 2009. "Use and variation of *Pandanus tectorius* Parkinson (*P. fascicularis* Lam.) along the coastline of Orissa, India". *Genet. Resources Crop Evol.* 56: 629.

Abstract: *Pandanus tectorius* Parkinson (*P. fascicularis* Lam.) of the family Pandanaceae constitutes one of the major bioresources of Ganjam coast, Orissa; used mainly in small scale perfume industry for aromatic compound extracted from the male inflorescences. In order to establish genetic diversity, if any related to perfume yield, samples of *P. tectorius* representing male populations from seven locations representing populations I–VII along the coastline of Orissa, India, were analysed for somatic chromosome number, 4C genomic DNA content, randomly amplified polymorphic DNA (RAPD) as well as phytochemicals. The somatic chromosome number in all the populations I–VII was 2n = 60. The chromosomes were of minute size without showing any remarkable structural variation. Likewise the average 4C DNA content was 5.09 pg (% 4,912 Mbp) that showed no intra- or inter-population differences. Out of 54 decamer primers tested, a total of 1,260 amplicons were obtained from 34 primers accounting 43.49% polymorphism. Molecular phylogenetic analysis of the seven populations revealed two distinct branches, with populations II and III in one and the rest populations in the other branch of the phylogenetic tree. It was important to note that the unique populations II and III confined to the Ganjam coast of Orissa having RAPD markers: OPA 09-940 bp, OPA 09-705 bp, OPC 14-1,500 bp, OPC 14-700 bp, OPC 20-1,475 bp, OPC 20-1,350 bp, OPC 20-920 bp and OPC 20-700 bp, were distinguished form the rest of the populations. The aforesaid populations (II and III) are well known to produce aroma of high quality and yield, composed of primarily phenyl ethyl methyl ether (66.8–83%) and terpinen-4-ol (5–12%) along with a number of other phyto-chemical compounds that support the flourishing perfume industry and livelihood of the local people in the region. The findings underscored the possible role of local ecogeography in contributing to the micro-evolution of unique high perfume yielding genotypes of *P. tectorius* that represented populations II and III at Ganjam coast, which were genetically distinct from the rest of the populations revealed by RAPD analysis.

266. Panda, K.K., Mohapatra, S., Das, L.N., Misra, M.K. & Panda, B.B. 2000. "Optimal utilization of Kewda *Pandanus fascicularis* to ameliorate economy and ecology of coastal India". *J. Med. Aromat. Pl. Sci.* 22(4A): 679–682.

Abstract: Kewda (*Pandanus fascicularis* Lam.) is a dominant species in the coastal vegetation of India. The plant is growing abundantly in the coast of Ganjam district, Orissa. The plant constitutes the back-bone of the local economy by way of providing the raw material, male inflorescence, for the perfume industry. Presently about 130 distillation units are spread over 4 Blocks comprising of 44 Gram Panchayats and 230 villages with a population of about 0.3 million people. The plant is also known for its use in traditional medicine as well as in cottage industry. Ecologically the plant is important. Root system of *P. fascicularis* binds soil and checks soil erosion. The plants grow well on sand along the seacoast forming sand dunes, which act as bulwark against encroachment

of the sea and protect human settlements along the coast line. Owing to the benefits that the people derive, the plant is being conserved and propagated (as a cash crop) in large scale. It is however, to be seen why the conservation, propagation and utilization of *P. fascicularis* is restricted only to the aforesaid Ganjam coast and not to the other regions of the coastline. The aromatic principle extracted from the inflorescence of the plant populations of Ganjam coast reportedly is of higher quality than from other regions of the country. The present study calls for an in-depth research to identify the edaphic and/or genetic factors underlying the flower yield and perfume quality of *P. fascicularis*.

267. Panda, P.C. 1986. "A sketch on the flora of Puri district". *Parijatak* 16: 14–16.

268. Panda, P.C. 1987. "A note on the occurrence of *Hedyotis erecta* Manilal *et* Sivarajan in India". *Geobios, New Rep.* 6: 186–187.

Abstract: *Hedyotis erecta* Manilal & Sivar. has been recorded for the first time for the flora of Odisha from Puri district. Earlier this species was reported from Kerala.

269. Panda, P.C. 1987. "Floristics in Orissa: Past, present and future". *Orissa Rev.* 43(2): 29–32.

270. Panda, P.C. 1987. "Mangrove forests in Orissa: An overview". *Orissa Rev.* 43(9): 41–44.

271. Panda, P.C. 1992. *Flora of Puri district*. Ph.D. Thesis, Utkal University, Bhubaneswar (unpublished).

272. Panda, P.C. 1996. "A taxonomic study of the genus *Spermacoce* Linn. (Rubiaceae) in Orissa". *J. Econ. Taxon. Bot.* 20(3): 639–644.

Abstract: A systematic account of 6 wild species of *Spermacoce* (Rubiaceae) occurring in the state of Orissa is presented in this paper. Besides general discussion on the taxonomy of the genus and artificial key to identification of species; for each taxon correct nomenclature, brief botanical description, phenology, citation of specimens studied, notes on ecology and distribution have been provided. Of these, *S. latifolia* Aubl. and *S. mauritiana* Gideon turned out to be new distributional records for the state of Orissa.

273. Panda, P.C. 1996. "Some common poisonous plants of Orissa". *Orissa Rev.* 52(7): 14–17.

274. Panda, P.C. & Choudhury, B.P. 1984. "A preliminary survey of the grass flora of Cuttack district". *Bull. Environm. Sci.* 1(2): 34–41.

Abstract: This paper presents an account of 75 species belonging to 49 genera of the family Poaceae (excluding Bambuseae) occurring in the district of Cuttack. Of these, 4

species and 5 varieties turn out as new records for the state of Orissa. Five species are found in cultivation. Arrangement of these taxa is in accordance with Bor's (1960) system of classification. Pertinent synonyms, ecological and nomenclatural notes, sociability, and field numbers with locality of collection have been provided. References to standard illustrations/and local Oriya names wherever available have also been given.

275. **Panda, P.C. & Choudhury, B.P. 1985.** "Plant resource of Orissa: An assessment". *Orissa Rev.* 42(4&5): 53–55.

276. **Panda, P.C. & Das, P. 1997.** "Addition to the bibliography of systematic botany in Orissa". *J. Econ. Taxon. Bot.* 21(1): 129–142.

Abstract: The paper presents a compilation of additional 224 references to the bibliography of systematic botany in Orissa (Mondal & al., 1987).

277. **Panda, P.C. & Das, P. 1997.** "Identity, nomenclature and distribution of some rare flowering plants of Orissa and its adjoining states in India". *Rheedea* 7(1): 57–63.

Abstract: Nomenclature and distribution of *Aglaia haslettiana* Haines, *Weihea ceylanica* (Gardner) Baill., *Indochloa clarkei* (Hack.) Bor, *Lasiococca comberi* Haines, *Mucuna minima* Haines, *Tragia gagei* Haines, *Pomatocalpa decipiens* (Lindl.) J.J. Sm., *Cedrela brevipetiolulata* Haines and *Uvaria eucincta* Bedd. *ex* Dunn, which are rare and so far considered as endemic to Orissa and the adjoining states of Andhra Pradesh, Madhya Pradesh and Bihar have been discussed.

278. **Panda, P.C. & Patnaik, S.N. 1983.** "Flora of Puri district". *Proc. 8th Annual Conf. Orissa Bot. Soc. (Rayagada)*. pp. 30–31.

279. **Panda, P.C. & Patnaik, S.N. 1988.** A contribution to the flora and vegetation of Chilika Wildlife Sanctuary, Orissa. In: S.N. Patro (ed.), *Chilka, the pride of our wetland heritage*. Orissa Environmental Society, Bhubaneswar. pp. 81–85.

280. **Panda, P.C. & Patnaik, S.N. 1993.** "Flora of Puri district – I: Forest vegetation". *Pl. Sci. Res.* 15(1&2): 7–17.

Abstract: The forest vegetation of the erstwhile Puri district has been classified and described under two major types with four groups, seven subgroups, four climatic types and many edaphic and seral types as per Champion & Seth's (1968) revised system of vegetation classification. The occurrence, characteristics and composition of each forest type in the district has been dealt with in this paper.

281. **Panda, P.C. & Patnaik, S.N. 1994.** "Flora of Puri district (Orissa) – III: Synoptic Analysis". *Pl. Sci. Res.* 16(1&2): 32–40.

Abstract: Due to peculiar geographical location and a wide range of physical features, the flora of erstwhile Puri district of Orissa is quite rich and much varied.

The district, except that of Bhubaneswar and its adjoining regions, remained underexplored prior to the present work. Through an exhaustive floristic survey of the area from 1983 to 1991, 1245 species of angiosperms belonging to 704 genera and representing 156 families were collected besides some 24 species of pteridophytes and 2 gymnospermous taxa. The paper deals with the general information about the area, past and present botanical work, vegetation, statistical analysis of the flora, new distributional records, endemic and rare plants, wild relatives of crop plants in the district and notes on phytogeography.

282. Panda, P.C. & Patnaik, S.N. 1996. "Flora of Puri district – II: Family Poaceae". *J. Econ. Taxon. Bot.* 20(3): 547–579.

Abstract: A taxonomic account of 146 species of Poaceae (Gramineae) under 80 genera occurring in the erstwhile Puri district of Orissa has been given here against the recorded occurrence of 102 genera and about 300 species in the whole of the state. Artificial dichotomous keys to genera within the family and species within a genus have been provided for easy identification. In the enumeration, for each species, correct name has been cited followed by synonym(s) and basionym (if applicable), local name, flowering and fruiting time, locality of collection, ecological and nomenclatural notes etc. Of these, 7 species namely, *Avena ludoviciana* Durieu, *Cyrtococcum accrescens* (Trin.) Stapf, *Dinebra retroflexa* (Vahl) Panzer, *Euclasta clarkei* (Hack.) Cope, *Isachne globosa* (Thunb.) Kuntze, *Phalaris minor* Retz. and *Sporobolus coromandelianus* (Retz.) Kunth turned out to be new records for the state of Orissa. Some 13 species of grasses have been identified as wild relatives of cultivated cereals and millets and are of considerable importance in crop improvement studies.

283. Panda, P.C. & Patnaik, S.N. 2002. "An enumeration of the flowering plants of Chilika lagoon and its immediate neighbourhood". *Proc. Int. Workshop on Sustain. Develop. Chilika Lagoon***.** Chilika Development Authority, Bhubaneswar. pp. 122–141.

Abstract: An enumeration of 546 species of angiospermic plants belonging to 379 genera and 107 families collected from Chilika lagoon and its adjoining regions has been presented in this paper. The history of plant exploration and vegetation composition of different habitats has also been discussed.

284. Panda, P.C., Acharya, P.K. & Debata, A.K. 2011. "Orchid flora of the north-eastern part of Eastern Ghats of India". *J. Econ. Taxon. Bot.* 35(2): 378–395.

Abstract: The orchid flora of northeastern part of the Eastern Ghats spreading over nine districts of Orissa has been studied during the period 2005–2009. The paper enumerates 55 species of terrestrial, epiphytic and saprophytic orchids belonging to 28 genera collected from the study area. The correct botanical name, synonym(s), short botanical description, phenology, ecology and other field observations in respect of

each species have been provided in this paper. Species such as *Odisha cleistantha, Pomatocalpa decipiens, Seidenforchis mackinnonii, Pecteilis gigantea, Didymoplexis pallens* and *Nervilia crociformis* were found to have narrow range of distribution and considered as rare species necessitating special conservation action.

285. Panda, P.C., Misra, R.C. & Das, P. 1988. "Three additional legumes for the flora of Orissa". *J. Econ. Taxon. Bot.* 12: 371–372.

Abstract: Three legumes, viz., *Alysicarpus gamblei* Schindl., *Crotalaria clarkei* Gamble and *C. humifusa* J. Graham ex Benth. have been reported for the first time for the flora of Orissa.

286. Panda, P.C., Mukherjee, A.K. & Acharya, L.K. 2005. "A taxonomic study of the genus *Typhonium* Schott (Araceae) in Orissa". *J. Econ. Taxon. Bot.* 29(1): 18–21.

Abstract: The paper deals with the taxonomic account of four species of the genus *Typhonium* Schott (Araceae) occurring in Orissa. The diversity and distribution of the genus in India, diagnostic generic characters and artificial key to identification of species have been provided. For each species, correct botanical name with citations, basionym, synonym(s), local name (wherever available), diagnostic characters, ecology, locality of collection, phenology, distribution, local uses etc. have been cited. Occurrence of *T. roxburghii* Schott in Orissa is a new distributional record for the state.

287. Panda, P.C., Pattanaik, A.K. & Patnaik, S.N. 2005. "Flora of Puri district (Orissa) – IV: Aquatic, semi-aquatic and marshland plants". *J. Econ. Econ. Taxon. Bot.* 29(1): 70–101.

Abstract: A taxonomic account of 223 species of aquatic, semi-aquatic and marshland plants belonging to 144 genera under 66 families occurring in the erstwhile Puri district of Orissa is presented in this paper. For each species, correct name, basionym (if any), synonym as appearing in the "Botany of Bihar and Orissa" (1921–1924) or its "Supplement" (Mooney, 1950), notes on phenology, ecology and locality of collection/ occurrence have been provided in the enumeration of taxa. The families Poaceae, Cyperaceae, Scrophulariaceae and Fabaceae with 34, 27, 12 and 10 species, respectively dominate the aquatic vegetation of the district. Occurrence of three species of seagrass namely, *Halodule pinifolia*, *H. uninervis* and *Halophila ovata* turned out to be new distributional record for the state of Orissa. Besides, general information about the district, review of past and present botanical work, classification of the hydrophytes of the district taking into consideration their relation to water, air and soil have been provided.

288. Panda, P.C., Mahapatra, A.K., Acharya, P.K. & Debata, A.K. 2013. "Plant diversity in tropical deciduous forests of Eastern Ghats, India: A landscape level assessment". *Int. J. Biodivers. & Conservation* 5(10): 625–639.

Abstract: A landscape level plant diversity and population inventory was made in northern portion of Eastern Ghat region of India comprising mostly dry deciduous and moist deciduous forests. A total of 444 transects of 0.5 ha (5 × 1000 m) area each was used for enumerating trees. Diversity and density of herbs, shrubs, lianas and regeneration of tree species were assessed from 5 × 5 m size plots within transects. A total of 882 species belonging to 532 genera and 129 families were recorded comprising of 263 tree species, 78 species of shrubs, 138 species of climbers/twinners and 403 species of herbs. *Shorea robusta, Lannea coromandelica, Madhuca indica* and *Diospyros melanoxylon* were the predominant tree species where members of Euphorbiaceae, Rubiaceae, Fabaceae and Combretaceae contributed to maximum species richness, stand density and basal area. The stand density ranged from 268 to 655 stems ha^{-1} while basal area varied from 6.65 to 22.28 m^2 ha^{-1}. The tree density and species richness decreased with increasing girth class; highest number of species and maximum density was recorded for 30 to 60 cm girth class. Shannon-Weiner Index and Simpson Index varied in the range of 1.85–2.05 and 0.013–0.018, respectively. Regeneration of many tree species was observed to be poor.

289. Panda, P.C., Pattanaik, A.K., Rath, J. & Patnaik, S.N. 2002. "Flora of Chilika Lake and its immediate neighbourhood: A check list". *J. Econ. Taxon. Bot.* 26(1): 1–20.

Abstract: Survey of angiospermic plants of Chilika Lake, its islands, shore lines and immediate neighbourhood revealed the occurrence of 711 species of plants belonging to 492 genera under 119 families as collected by the present authors till date and those reported by earlier workers. An enumeration of these has been presented here. The families have been arranged according to modified Bentham & Hooker's system of classification and the genera under a family and species under a genus follow an alphabetic sequence. For each species, correct botanical name with author citation and important synonym, if any, have been cited. Occurrence of *Potamogeton crispus* in Chilika Lake is a new distributional record for the state of Orissa.

290. Panda, S. 2001. "Leguminosae of Sambalpur district, Orissa: A systematic account". *J. Econ. Taxon. Bot.* 25(3): 645–661.

Abstract: The leguminous species play an important role in upgrading the quality of soil in terms of productivity especially when the soil is degraded. As many as 94 members of this family had been collected from Sambalpur district where the soil is of highly indifferent character. A systematic account for the leguminous members growing in this area is provided in this paper. The possible reclamation of wastelands and nutrient deficient soil by the cultivation/propagation of selected nodule forming leguminous species is discussed.

291. Panda, S. 2002. "A systematic account and notes on the Asteracean members growing in Sambalpur district, Orissa". *J. Econ. Taxon. Bot.* 26(1): 203–215.

Abstract: A systematic account of the Asteracean members growing in Sambalpur district is deals with in this article. Indented keys for easy identification of the genera and species, flowering and fruiting, exsiccatus, frequency, distribution and annotations in appropriate cases are provided. The rare, endemic and exotic elements of the flora are discussed. The phytogeographical importance as well as affinity of this flora with that of Himalayan/northern India, Nilgiri/southern Indian and central Indian elements are treated with. Thirty-nine Asteracean species are reported from the survey.

292. Panda, S. & Das, A.P. 1990. *Angiospermic flora of Sambalpur district, Orissa (India).* Vol. I & II. Ph.D. Thesis, University of Calcutta, Calcutta (unpublished).

293. Panda, S. & Das, A.P. 1995. "Contributions to the study of sedges and grasses of Sambalpur district, Orissa (India)". *J. Econ. Taxon. Bot.* 19(2): 343–356.

Abstract: The paper deals with systematic account of the sedges (Cyperaceae) and grasses (Poaceae) of Sambalpur district, Orissa. A total of 36 species of sedges covering 10 genera and 63 species of grasses covering 42 genera have been enumerated. Relevant information on the habit, habitat, flowering and fruiting, occurrence, representative specimens, local names (if available), uses (where applicable) and notes, if any, have been added. The collection of *Eragrostis minor* Host from Sambalpur district forms a new record for the flora of Orissa.

294. Panda, S. & Das, A.P. 1995. "Wetland and aquatic angiosperms of Sambalpur district, Orissa (India)". *J. Econ. Taxon. Bot.* 19(3): 691–701.

Abstract: Altogether 87 dicotyledonous and 85 monocotyledonous species of hydrophytic angiosperms have been collected from the Sambalpur district of Orissa, though its topography is not suitable for the development of such vegetation. While only 24.04% species were found growing in all the seven sub-divisions, 96.15% species were recorded in Sambalpur sub-division alone. Distribution, occurrence, frequency, phenology, microhabitat and habit of the relevant taxa are dealt with.

295. Panda, S. & Das, A.P. 1998. "Additions to the floristic history of Orissa (India)". *J. Bombay. Nat. Hist. Soc.* 95(3): 531–534.

Abstract: Nine species, viz., *Alternanthera paronychioides* A. St.-Hil., *A. pungens* Kunth (Amaranthaceae), *Leucas biflora* (Vahl) R. Br. (Lamiaceae), *Nesaea brevipes* Koehne (Lythraceae), *Synedrella nodiflora* (L.) Gaertn. (Asteraceae), *Torenia asiatica* L. (Scrophulariaceae), *Trichodesma indicum* var. *amplexicaule* (Roth) T. Cooke, *T. indicum* var. *sunsessilis* C.B. Clarke (Boraginaceae) and *Typhonium diversifolium* Wall. ex Schott

(Araceae) are new distributional record for the state of Orissa from Sambalpur district along with their exsiccatus, flowering and fruiting time, frequency, distribution, ecology and uses.

296. Panda, S., Das, A.P. & Chanda, S. 1992. "Flowering calendar of angiosperms in Sambalpur district, Orissa (India)". *Indian J. Aerobiol.* Spl. Vol.: 67–88.

297. Panda, S.K., Bastia, A.K. & Sahoo, G. 2014. "Process characteristics and nutritional evaluation of *Handia* – A cereal based ethnic fermented food from Odisha". *Indian J. Tradit. Knowl.* 13(1): 149–156.

Abstract: Rice beer, popularly known as Handia, is a fashionable drink among the tribals of northern Odisha. It influences their social, cultural and economic life. It is prepared in almost every third house following traditional knowledge. Different parts of 20 plant species are utilized for the preparation of ranu or bakhar tablets which act as starter cultures for preparing handia. De-husked rice after boiling is fermented with required amounts of bakhar tablets for a specific period for handia production. Lactic acid bacteria and yeasts are predominant microorganisms in the fermentation process. The beverage has acidic pH (4.44 ± 0.97). The lower nutrient quality (protein and carbohydrate content) is compensated by the cost factor (Rs. 7/- per L) which matters much for the poor tribals. Its lower alcoholic content (1.21 ± 0.98%) does not make the consumer alcoholic even after repeated consumption. It compensates the water loss of the body during heavy physical labour particularly in summer months.

298. Panda, S.P., Sahu, D. & Misra, S. 2007. "Orchid Wealth of Mahendragiri Hill Range, Orissa". In: Patro, S.N. et al. (eds.), *Mahendragiri*. Orissa Environmental Society, Bhubaneswar. pp. 139–149.

Abstract: The Mahendragiri hills on the Eastern Ghats of India are quite interesting from botanical point of view as they harbour both the Himalayan and south Indian elements. During a recent survey, several orchid species were collected. Including the earlier reports, a total 37 species are now known from this hill range. Two species turned out to be new records for the flora of Mahendragiri. The paper enumerates species, and discusses the status and conservational measures of species.

299. Panda, S.P., Subudhi, H.N. & Patra, H.K. 2010. "A peep into the vegetation of Chilika Lake (Orissa), India". *J. Econ. Taxon. Bot.* 34(4): 788–792.

Abstract: Chilika, the largest brackish water lake of Asia, dwells in the east coast of Orissa of the Indian subcontinent. In the past the lake was endowed with diverse type of flora and fauna as well, which includes many rare and interesting species. This lagoon had plentiful of littoral and tidal scrub forests also, consisting of the major mangrove species like *Rhizophora apiculata, R. mucronata, Sonneratia apetala* and *Avicennia*

officinalis. But in the pass of time, the major mangrove species have been replaced by the semi-mangals and mangrove associates in Chilika sporadically. The disappearance of the typical mangrove taxa is mainly due to severe biotic pressure in addition to other ecological factors. Realizing the significance of the coastal vegetation in general and the vegetation of the Chilika in particular, the present paper deals with the vegetation of this Asia's largest brackish water lake. Concurrently some conservational measures have also been suggested in order to restore the present floristic wealth of the lake from the verge of extinction.

300. Panda, S.P., Subudhi, H.N. & Patra, H.K. 2013. "Mangrove forests of river estuaries of Odisha, India". *Int. J. Biodivers. & Conservation* 5(8): 446–454.

Abstract: A clear and current picture of the mangrove forests extant in different river estuaries of the Odisha state of the Indian subcontinent have been provided in this communication. Apart from their role in upgrading the state's economy, the other features exploited by the local inhabitants have been highlighted in brief. Effective measures for the conservation of these rare and unique ecosystems have also been suggested.

301. Panda, S.P., Mardaraj, P., Subudhi, H.N. & Sahu, A.K. 2013. "Biodiversity and conservation of mangroves of Devi river estuary (Odisha), India". *Int. J. Curr. Res.* 5(10): 2751–2758.

Abstract: Devi estuary lying between 86°04'–86°20' E and 19°45'–19°57' N harbours a moderately rich and diverse flora of mangroves. But in the past the species diversity was remarkably high as indicated by Ravishankar & al. (2004). A total of 15 exclusive mangrove species (true mangroves) have been reported from this mangrove chunk of Odisha prior to the recent survey. In course of time there is tangible shrinkage of habitat as well as population of mangroves. Some species have already been wiped out, a few are on the verge of extinction and many species have shown very restricted distribution putting them in threatened/valuable/rare category (Nayar & Sastry, 1987). The depletion of the species is mainly due to severe biotic pressure coupled with other coastal dynamic changes and ecological changes. Mangrove forests are composed of several species having great economic potentialities, which inspire the people to exploit the mangrove forests in an unplanned manner to meet their needs. This causes depletion of species. So, immediate conservation of the mangrove forests are need of the hour. Realizing this, the Government of India now emphasizes over the conservation of mangrove vegetation in all the states, where it is present. This aims at the interventions, such as restoration, rehabilitation and conservation of the unique and priceless estuarine ecosystems of the coastal regions. Due to the incessant efforts of the Forest Departments of Odisha in general and Mangrove Forest Division (WL), Rajnagar, Kendrapara in particular under the Integrated Coastal Zone Management Project the rate of depletion

has significantly decreased in the Mahanadi delta and Bhitarkanika National Park through large scale mangrove plantations. If these measures will be implemented in the Devi estuary then the depletion of the mangroves can be checked to a large extent. Taking these facts and the un- or under-exploration of mangrove flora into account, this communication emphasizes on the floristic composition and conservation of the mangroves.

302. Panda, S.P., Subudhi, H.N., Giri, S.K. & Patra, H.K. 2012. "Contribution to the flora of Orissa". *J. Econ. Taxon. Bot.* 36(3): 643–644.

Abstract: The paper deals with the three species, viz., *Alternanthera philoxeroides* (Mart.) Griseb. (Amaranthaceae), *Ipomoea triloba* L. (Convolvulaceae) and *Solanum sisymbrifolium* Lam. (Solanaceae) as new records for the state of Orissa.

303. Panda, S.P., Subudhi, H.N., Patra, H.K., Giri, S.K. & Acharya, B.C. 2010. "Mangroves in Orissa coast and its conservation". *Biohelica* 1(2): 36–41.

Abstract: Orissa had rich mangrove forest in remote past. However, as in other states of India, it has been devastated largely due to biotic interferences. Naturally there is considerable shrinkage in the mangrove areas of Orissa. This plant community has been degraded in the estuaries of river Mahanadi, Devi, Rusikulya Subarnarakha, Budhabalanga and Chilika Lake but very luxuriant in the estuaries of Brahmani and Baitarani due to adequate protection given to this community. The paper deals with floristic study of mangroves in Orissa coast and their distributional pattern, sociability and rarity. Conservation strategies of rare/vulnerable/threatened species have been suggested.

304. Panda, S.P., Subudhi, H.N., Pradhan, M. & Choudhury, B.P. 2006. "A glimpse of the vegetation of Ansupa Lake, Orissa". *Pl. Sci. Res.* 28(1&2): 15–17.

Abstract: An account of the aquatic, semi-aquatic and marshland plants of Ansupa Lake of Orissa has been presented in the paper. The flora of this wetland is represented by 150 angiospermic plant species under 105 genera and 46 families. The dominant families are Poaceae (29) followed by Cyperaceae (17), Scrophulariaceae (11) and Asteraceae (8). The dicot and monocot ratio is 1:1. The conservation strategies and restoration of the lake have been discussed in brief.

305. Panda, S.P., Sahoo H.K., Subudhi H.N., Sahu A.K. & Misra, P. 2016. "Eco-floristic diversity of Ansupa Lake, Odisha (India) with special reference to aquatic macrophytes". *J. Biodivers.* 116: *537–552.*

Abstract: Ansupa, the so called sister lake of Chilika as well as the largest freshwater lake of Odisha lies in the Cuttack district. This lake has its own reputation and included in the list of important wetlands of the state. The scenic beauty accomplished with colourful flowers and birds have attracted the nature lovers in the recent past. The peculiarity in

the geographic location coupled with micro-climatic conditions enables the lake for the growth and development of different life forms. Out of these, the aquatic macrophytes need special mention being very vital and reproductive component of the fresh water ecosystem of the lake. The lake is an abode for about 44 species of phytoplanktons, 32 species of zooplanktons and fishes of 30 species (Patra & Patra, 2007). But in the due course of time the aquatic vegetation of the lake came to a very miserable state owing to the rapid depletion of microclimatic conditions. The process of the dwindling of the species is mainly due to the interferences of different agencies. So, in this process many species became rare and some are on the verge of extinction. The lean population of a wild relative of rice [*Hygroryza aristata* (Retz.) Nees ex Wight & Arn.] recorded from this lake forms an example, whereas the lake is the only habitat in the state for this species. Hence, there is an urgent need to develop strategies on priority basis to conserve the lake in general and to conserve its natural rich biodiversity in particular. Realizing this, survey and enlisting of the aquatic flowering plants of the lake and its immediate neighbourhood has been carried out along with some ecological observations, which are provided in this communication.

306. Panda, S.P., Subudhi, H.N., Sahu, A.K., Swain, K.K. & Biswal, M. 2014. "*Vanda tessellata* (Roxb.) Hook. ex G. Don (Orchidaceae) an addition to the flora of Bhitarkanika National Park, Odisha, India". *Int. J. Innov. & Appl. Res.* 2(5): 1–5.

Abstract: Exhaustive field survey was conducted in the aegis of ICZM Project to enumerate, recording of information and sample collection of plants of Bhitarkanika. Bhitarkanika has acquired a special position all around the globe for its rich biodiversity especially the mangroves. Its peculiar geographic location coupled with varied micro climatic conditions enables to harbor one of the richest diversity of mangroves; first in India and second in the world next to Papua New Guinea. But however there was no record of any orchid species from any mangrove forests of the state where as a healthy orchid diversity was reported from the tidal and littoral forests of Andaman and Nicobar Islands. This striking factor provides the preliminary platform to undertake any survey programme for prevalence of orchids, which resulted in addition of an epiphytic orchid, i.e., *Vanda tessellata*, which was not reported earlier from Bhitarkanika National Park, Odisha. So the present communication deals with the detailed nomenclature, phytogeography, phenology of flowering, ecology, and concurrently some useful aspects of this taxon have also been outlined.

307. Panda, S.S., Minz, A.P. & Dhal, N.K. 2014. "Floristic studies of Lajkura coal mines area, Jharsuguda, Odisha: An overview". *Int. J. Sci. Res. Publ.* 4(12): 1–11.

Abstract: The opencast mining has resulted to destruction of habitats which is essential for maintaining ecological balance. Attempts have been made to assess the floristic

composition and biomass accumulation of ground flora during the study. The study revealed that the number of tree species was low in all the mining sites. The present study designed to explore the floristic composition of the Lajkura coal mining area, Jharsuguda and to analyze the impact of coal mining on plant diversity. The record of plant species was organized on the source of field trips conducted in winter, summer and monsoon during the year 2013–2014. A total of 144 plant species (36 tree, 36 herbs, 34 shrubs, 17 small tree, 11 climber, 8 grasses and 2 rhizomes) were documented. Dominant families were Apocynaceae, Fabaceae, Moraceae, Poaceae, Euphorbiaceae, Asteraceae and Lamiaceae.

308. Panda, S.S., Dhal, N.K., Dash, A. & Panda, S.C. 2014. "Floristic diversity of Khandapara forest ranges of Nayagarh district, Odisha, India". *Indian J. Pl. Sci.* 3(1): 1–10.

Abstract: The paper aimed to study the floristic diversity of Khandapara forest ranges of Nayagarh district of Odisha. A total of 101 species (36 trees, 19 herbs , 17 shrubs, 16 small trees, 9 climbers, 2 twiners, 1 undershrub and grass) belonging to 51 families were recorded. Dominant families are Fabaceae (10 spp.), Euphorbiaceae (6 spp.), Poaceae (6 spp.) and Combretaceae (5 spp.). This is a preliminary observation however, it is recommended to initiate the activities, such as inventory of useful species, habitat characteristics, identification of potential species for various economic uses and formulation and implementation of plan of action taking consideration of the needs of people and sustainable management of protected forest.

309. Panda, T., Panigrahi, S.K. & Padhy, R.N. 2005. "A sustainable use of phytodiversity by the Kandha tribe of Orissa". *Indian J. Tradit. Knowl.* 4(2): 173–178.

Abstract: The plants used by the Kandha tribe in the Mantriguda valley, surrounded by seven hills are described in the paper. For the housing purpose, tribals use nine different species of plants. They cultivate thirteen plant species of millets, pulses, oil seeds and paddy and collect wild edible fruits, tubers, leaves, roots, mushrooms and youngling shoots of bamboo, to supplement their diet. They use thirteen plant species for making agricultural implements and home appliances. The tribals collect only dry plant parts for their fuel wood, irrespective of the plant species, without cutting them. A few plants such as neem, banyan, peepal, sacred basil and mango are worshipped by them. For medicines, these tribals fully depend on the indigenous flora and fauna.

310. Panda, T., Tripathy, B.K., Mishra, N. & Mohanty, R.B. 2015. Traditional use of palm leaf as writing and etching medium in Odisha. *ENVIS Newslett.* 20(2): 6–8.

Abstract: This paper outlines the usage of palm leaves for writing and etching by some specific people in ancient Odisha. The methods involved in processing the leaves, tools and natural colours used and preservation are explained.

311. Panigrahi, G. 1963. "Gandhamardan Parbat, Orissa – A potential source of important indigenous drugs". *Bull. Reg. Res. Lab.* 1: 111–116.

312. Panigrahi, G. 1988. Vegetation and flora of Chilika lagoon. In: Patro, S.N. (ed.), *Chilka, the pride of our wetland heritage*. Orissa Environmental Society, Bhubaneswar. pp. 63–80.

313. Panigrahi, G. & Dubey, A.K. 1987. "A modern system of classification of the genera of the Poaceae Barnhart occurring in and reported from Orissa". *J. Orissa Bot. Soc.* 9(1): 38–41.

Abstract: A total of 102 genera of the Poaceae reported from Orissa are set out in a modern system of phylogenetic classification, which recognizes 6 subfamilies, 40 tribes and a large number of subtribes. Three genera, *Oryza* L., *Leersia* Sw. and *Hygroryza* Nees are shifted from the subfamily Panicoideae A. Br. to the subfamily Bambusoideae Asch. & Graeb. On the basis of anatomy and embryological evidence. A total of 11 genera of the family as recognized by Haines (1924) are treated as congeneric synonyms of nine genera, either on the basis of priority of publication date(s) or on taxonomic considerations.

314. Panigrahi, G. & Dubey, A.K. 1988. "The family Orchidaceae Juss. in Orissa – the infrafamiliar classification of the 41 genera reported to date". *Pl. Sci. Res.* 10(1): 30–35.

315. Panigrahi, G. & Mishra, S.C. 1988. "Systematics of the family Meliaceae Juss. in Orissa". *Indian J. Forest.* 11(2): 131–142.

Abstract: Systematics of the family Meliaceae Juss., comprising 11 genera, 17 species and 5 additional varieties in Orissa are dealt with correct nomenclature, typification and critical nomenclatural comments. The 11 genera are set out in a modern system of classification which divides the family into 2 subfamilies and 5 tribes.

316. Panigrahi, G., Chowdhury, S., Raju, D.C.S. & Deka, G.K. 1964. "A contribution to the botany of Orissa". *Bull. Bot. Surv. India* 6: 237–266.

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 and 1959 is appended. It includes 34 species and 10 genera found as new records for Bihar and Orissa and 60 species found as new records for Orissa only.

317. Panigrahi, S., Acharya, B.C., Panigrahy, R.C., Nayak, B.K., Banerjee, K. & Sarkar, S.K. 2007. "Anthropogenic impact on water quality of Chilika lagoon RAMSAR site: A statistical approach". *Wetlands Ecol. Managem.* 15: 113–126.

Abstract: This paper investigated the spatio-temporal variability of water quality parameters (transparency, salinity, dissolved oxygen, nutrients, total nitrogen, total phosphorus and chlorophyll-a) in Chilika lagoon during 2001–2003 in order to better understand its ecological characteristics. Northern sector of the lagoon is more affected by the anthropogenic stress from the catchments than the southern sector. Addition of nitrogen and phosphorus compounds to the lagoon mainly occurred through the drainage from agricultural lands and river run off during early months of paddy cultivation season.

318. Pathak, A.K. & Misra, M.K. 2015. "Phytodiversity of six regerating forest stands protected by Joint Forest Management in Koraput region of Odisha, India". *Indian Forester* 141(2): 189–197.

Abstract: The paper reports the results of the analysis of floral composition and similarity index of six recovering dry tropical forest stands, protected by the local community, for 4-, 6-, 8-, 10-, 12- and 20-year periods in the Koraput region of Odisha, India. A minimum of 67 plant species was recorded in 6-year recovering forest stand, while 4-year stand exhibited 72 plant species. Total number of plant species increased from 6- to 20-year stand exhibiting the highest number of 91 species in 20-year stand. The pooled number of all plant species in all the stands was 173 under 151 genera and 57 families. Total number of herbaceous species declined from 34 in 2-year stand to 24 in 20-year stand.

319. Patnaik, A.P. & Das, M.K. 2005. "Floristic Survey of Motijharan hill, Sambalpur, Orissa". *Pl. Sci. Res.* 27(1&2): 38–45.

Abstract: An exhaustive floristic survey of Motijharan hill of Sambalpur was carried out during January to December, 2004. During the present survey, a total of 69 angiospermic species belonging to 64 genera and 38 families have been reported. The approximate ratio of monocotyledons and dicotyledons is 1:4.3. So, it indicates that the dicotyledons are represented by four times more than monocotyledons in Motijharan hill of Sambalpur. Among the dicots, Rubiaceae are the dominant family, followed by Acanthaceae, Verbenaceae and Euphorbiaceae, while among the monocots, Poaceae represent the dominant flora, followed by Zingiberaceae and Commelinaceae. The decline in vegetation may be assigned to various anthropological activities in this area. Hence, general awareness regarding socio-economic aspects of the plants having economic value should be generated among the common people so as to check further genetic erosion.

320. Patnaik, C., Panda, P.C., Mallick, U.C. & Das, P. 1993. "Flora and vegetation of an abandoned open cast manganese mine site at Joda, Keonjhar district (Orissa) with notes on some anomalous plant morphological features". *J. Econ. Taxon. Bot.* 17(3): 573–579.

Abstract: The paper gives an account of the flora and vegetation of an open case manganese mine site at Joda, Keonjhar district, Orissa and its environs. Observation on peculiar morphological features in some plant species growing on mine spoils has been recorded and the possible causes of such anomalies discussed. An enumeration of 155 species of angiosperms belonging to 125 genera and 52 families collected from this region has also been given.

321. Patnaik, S. 1973. "A study of the aquatic plants of Chilka Lake". *Proc. Natl. Acad. Sci. India* 43(B): 53–65.

322. Patra, A.K., Nayak, L. & Patnaik, E. 1984. "Seasonal primary production of river Mahanadi at Sambalpur in Orissa". *Trop. Ecol.* 25(2): 153–157.

323. Patra, B.C. 1990. *Flora of Dhenkanal district* (Vol. I & II). Ph.D. Thesis, Utkal University, Bhubaneswar (unpublished).

324. Patra, B.C. & Choudhury, B.P. 1986. "Vegetation of the Kapilas hill in Dhenkanal district, Orissa". *J. Bombay Nat. Hist. Soc.* 83(3): 680–682.

Abstract: The paper reports 30 species of trees, 65 shrubs and 92 herbs from Kapilas hill in Dhenkanal district, Orissa.

325. Patra, B.C. & Choudhury, B.P. 1988. "Flora of Dhenkanal district, Orissa". *Pl. Sci. Res.* 10: 53–65.

326. Patra, B.C. & Choudhury, B.P. 1989. "Forest cover of Malaygiri hills in the state of Orissa". *J. Econ. Taxon. Bot.* 13: 315–319.

Abstract: The paper gives a floristic account of Malaygiri hills, one of the highest elevations of the state. The vegetation analysis along with cataloguing of some interesting, rare and endangered plant species has been discussed.

327. Patra, B.C. & Choudhury, B.P. 1989–1991. "Studies on the flora of Dhenkanal district and distributional notes on certain rare and interesting plant species". *Bull. Pure Appl. Sci.* 8–10B (1&2): 11–19.

Abstract: Dhenkanal district in spite of its rich and varied floristic composition falls under the category "Under-explored" region and therefore, floristic studies have been initiated since 1984. Some aspects regarding compilation of district flora along with geographical location, physiognomy and brief report on previous botanical works are provided in

this paper. Biotic interferences caused by the tribal/aboriginal people and the establishment of several industrial complexes leading to urbanisation have been described. Suggestions for conservation of endangered vulnerable taxa both *in situ* and *ex situ* have also been proposed. Vegetation analysis with enumeration of dominant elements, the chief associates and the distribution of different plant communities have been presented. This is appended with a critical observational note on phytogeography of some angiospermic species growing in higher elevations of the district. Besides, additional distributional note of some interesting plants, new records for the states are the other facets of this paper.

328. Patra, B.C. & Choudhury, B.P. 1990. "A systematic enumeration of plants from the Kapilas hill ranges in the Dhenkanal district, Orissa". *Bull. Environm. Sci.* 6: 21–33.

329. Patra, B.C. & Choudhury, B.P. 1992. "A contribution to the vegetation of Satkosia Wildlife Sanctuary in Tikarpara (Orissa)". *J. Econ. Taxon. Bot.* 16(3): 695–699.

Abstract: Satkosia Gorge Tikarpara is one of the declared wildlife sanctuaries of Orissa, which embraces a wonderful repository of natural heritage in it. The gorge in the river Mahanadi is famous for the breeding of both Gharials and Muggers wherein a germplasm bank of the life-forms has been established. Physiognomy and analysis on the vegetation of the area have been discussed. The vegetation is mostly dry deciduous type with patches of semi-evergreen forests. Bamboo-brakes are very conspicuous. Teak plantation programme has almost covered the bottom of the hillocks, which has considerably affected the existing plant communities. The conservational aspect of the threatened elements both plants and animals has also been highlighted.

330. Patra, B.C. & Dhua, S.R. 1996. "Genetic diversity in *Porterasia coarctata* collected from Bhitarkanika mangrove forest, Orissa". *J. Econ. Taxon. Bot.* 20(1): 241–244.

Abstract: Ecology, taxonomy and nomenclature, phenology, characterisation and conservation of *Porterasia coarctata*, a grass species and a weedy race of cultivated rice species found as a pioneer stand on the slushy mud under high salinity and silt deposition of Bhitarkanika mangrove forest in Orissa have been discussed in this paper.

331. Patra, B. 2015. "Labanyagada: The protected red sandal forest of Gajapati district, Odisha, India". *Int. J. Herbal Med.* 3(4): 35–40.

Abstract: The paper reports 94 plant species belonging to 83 genera and 44 families, of which 34 are dicots, 7 monocots and 3 pteridophytes. The plant species constitute 34 herbs, 10 shrubs, 9 climbers and 41 tree species. No gymnosperm species found in the forest. The forests are of dry deciduous type and dominated by Rakta Chandan (*Pterocarpus santalinus* L.). In this forest 737 red sandal trees were present.

332. Patra, G.K. 1971. "Survey of major distribution of weed flora in four field crops at Bhubaneswar area". *Indian J. Weed Sci.* 3: 104–111.

333. Patro, S.N. & Panda, G.K. 1994. *Eastern Ghats in Orissa – Environment, resources and development*. Orissa Environmental Society, Bhubaneswar.

Abstract: The Eastern Ghats of Orissa is a geographical entity of wonderful hill ecosystem. Its environment, biodiversity resources, archaeological wealth, history and people are unique. The book is a humble presentation of the present geographical and environmental status of the Eastern Ghats of Orissa with a view to arousing mass awareness towards the need for protection, regeneration and conservation of its resources for posterity.

334. Pattanaik, C., Reddy, C.S. & Biswal, A.K. 2007. "Life forms and biological spectrum of Bhitarkanika National Park, Orissa, India". *Indian J. Forest.* 30(3): 307–313.

Abstract: Life-form analysis of the vegetation in Bhitarkanika National Park was carried out based on the data collected from field studies. Of the five life-forms, phanerophytes (47.31%) were dominant followed by therophytes (19.89%), cryptophytes (13.44%), chamaephytes (12.37%) and hemicryptophytes (6.99%). The number of therophytes was observed to be higher in littoral scrub and fringe areas of the park due to anthropogenic pressure. Biological spectrum of the study area has been compared with Raunkiaer's normal spectrum to know the phytoclimate of that region.

335. Pattanaik, C., Reddy, C.S., Dhal, N.K. & Das, R. 2008. "Utilisation of mangrove forests in Bhitarkanika wildlife sanctuary, Orissa". *Indian J. Tradit. Knowl.* 7(4): 598–603.

Abstract: A total of 51 mangrove plant species and mangrove associates were collected from Bhitarkanika Wildlife Sanctuary, Kendrapara district, Orissa. Among those plants, Rhizophoraceae members were recorded maximum in number (9 species) followed by Meliaceae (4), and Caesalpiniaceae (4). The inhabitants of the surrounding areas depend on the mangrove forests for their daily needs such as food, timber, fuelwood, medicine and other traditional products. The paper provides field information on traditional products and medicinal uses of 51 taxa of mangrove plants recorded through interviews of local people of the sanctuary areas. Species are arranged alphabetically providing plant name, family, local name, parts used, habitat and uses.

336. Pattanaik, M.M., Mohanty, M., Patra, H.K. & Misra, A.K. 2005. "Study on vegetational pattern and environmental quality of Sukinda chromite mines area". *Pl. Sci. Res.* 27(1&2): 24–32.

Abstract: An assessment of vegetation pattern and environmental quality of Sukinda chromite mines areas, south Kaliapani, Orissa was done using quadrat method along with analysis of physico-chemical properties of soil and water (pH, EC, water holding

capacity, organic C, available N and P, Ca, Mg) and microbial activity (general bacteria, total fungi, *Rhizobium, Nitrosomonas*, and *Nitrobacter).* Analyses of soil quality of chromium contaminated effluent water and nearby areas were alkaline showing low EC value along with low N, P and organic C content along with poor microbial diversity. All these factors can be correlated to thin vegetation pattern of that area. However, soil contaminated with chromium water harboured a wide variety of plant species though with less frequency, where *Vernonia cinerea* and *Diectomis fastigiata* constituted the dominant species. On the other hand, a swampy land flooded with chemically treated effluent water showed luxuriant ground vegetation dominated by *Evolvulus nummularius* and *Kyllinga monocephala* with abundant occurrence may be due to high nutrient content (organic C, available N and P), microflora, EC and water holding capacity. This site though contain luxuriant vegetation, it showed low plant diversity with high frequency and establishment of dominant species. In the present work environmental quality analysis of another uncultivated land indicated a rich microbial population, which was correlated with rich nutrient content and a moderate pH range (7.2). But the population of *Rhizobium* was very less and the soil was mostly dominated by drought resistant species such as *Tephrosia purpurea, Cassia tora* and *Croton sparsiflorus*, may be due to low water holding capacity.

337. Pattnaik, A.K. 2003. *Phytodiversity of Chilika Lake.* Ph.D. Thesis, Utkal University, Bhubaneswar (unpublished).

338. Pattnaik, A.K., Panda, P.C & Patnaik, S.N. 2003. "Flora and vegetation of Chilika lagoon, Orissa: A synoptic analysis". *Pl. Sci. Res.* 25(1&2): 1–12.

Abstract: An exhaustive floristic survey in Chilika lagoon and its immediate neighbourhood including its islands, sand bars and shore lines for about four years (1998–2001) supplemented with perusal of published literature has revealed the occurrence of 726 species of angiospermic plants belonging to 496 genera in 120 families. This represents about one-fourth of the total plant species in the flora of Orissa, which is estimated to be 2,900. Occurrence of *Potamogeton octandrus*, *Halodule uninervis, H. pinifolia* and *Halophila ovata* from Chilika lagoon turned out to be new distributional records for the state of Orissa. This paper deals with the general information about the area, past and present floristic work, analysis of vegetation, statistical analysis of flora, notes on endemic and rare plants, wild relatives of crop plants, useful species, plants of special habitats and interesting taxa of botanical and conservation interest.

339. Pattnaik, A.K., Panda, P.C. & Patnaik, S.N. 2008. "The diversity, distribution and taxonomy of sea grasses of Chilika lagoon, Orissa – The largest brackish water lagoon of India". *J. Econ. Taxon. Bot.* 32(2): 381–392.

Abstract: The diversity, pattern of distribution and spread of five seagrass species in Chilika lagoon, Orissa, one of the largest brackish water lagoons of Asia and a Ramsar site, have been discussed in relation to nature of substratum, depth and salinity of water and other ecological parameters. Approximately, a 4-fold (389%) increase in the coverage of sea grass meadows was observed during the period 2000–2004 as assessed by remote sensing techniques and this could be attributed to the hydrological intervention for restoration of the lagoon. The taxonomy of five species of seagrasses is given in the paper, the occurrence of *Halodule uninervis* (Forssk.) Boiss. in Chilika lagoon is a new distributional record for the east coast of India and is of considerable phytogeographical importance. Besides, *Halophila ovata* Gaudich., *Halodule pinifolia* (Miki) Hartog and *Halodule uninervis* (Forssk.) Boiss. are reported from the lagoon for the first time.

340. Pattnaik, H. 1956. "Some useful weed in and around Cuttack". *J. Bombay Nat. Hist. Soc.* 54: 140–152.

Abstract: A total of 74 useful weed species have been recorded in and around Cuttack along with local names, habit, flowering period and uses.

341. Pattnaik, H. & Patnaik, N.K.C. 1956. "Hydrophytes of Cuttack". *J. Indian Bot. Soc.* 35: 167–170.

Abstract: A systematic list of 35 taxa belonging to 29 genera in 20 families is given along with their flowering seasons and habits. It has found that number of aquatic monocotyledons is greater than that of the aquatic dicotyledons and families such as Hydrocharitaceae, Cyperaceae, Gramineae and Pontederiaceae are dominating.

342. Pattnaik, S.K., Panda, P.C. & Patra, H.K. 2010. "Current vegetation status of mangroves and their associates of Bhitarkanika National Park, India"**.** *Pl. Sci. Res.* 32(1&2): 127–137.

Abstract: The up-to-date status of flora of Bhitarkanika mangrove ecosystem of Odisha was assessed in the study. The true mangroves, mangrove associates and other plants of the sanctuary were surveyed with special emphasis on flora of more diversified localities such as Gupti, Khola, Dangamala, Kalibhanjadia Island, Bhitarakanika and Ekakula. A total of 168 angiospermic plant species belonging to 131 genera in 66 families have been collected during the study besides 3 pteridophytes. Out of these, 25 species belong to true mangrove category, 19 are mangrove associates and 18 plant species are classified under back mangroves. Included in these are 2 plant species characteristic of coastal sand-dunes and 107 non-mangrove taxa. The rare and endangered plant species occurring in Bhitarkanika mangrove forests have been identified and their conservation measures suggested. The enumeration of all the species collected from different localities has been provided in this paper.

343. Pattnaik, S.K., Panda, P.C. & Patra, H.K. 2012. "Analysis of physico-chemical parameters and impact of abiotic stress on vegetation of Bhitarkanika Wildlife Sanctuary". In: Patra H.K., (ed.). In: *Proceedings of National Seminar on Plants and Stress Management*. UGC-DRS (SAP–II), Utkal University, Bhubaneswar. pp. 38–46.

Abstract: Bhitarkanika Wildlife Sanctuary is in the major regions of delta such as Brahmani and Baitarani (Bhitarkanika) river mouths of Odisha. Geographically, Bhitarkanika Wildlife Sanctuary lies between 20°4'–20°8' N and 86°45'–87°5' E in the district of Kendrapara. Among the mangroves, Bhitarkanika is the second largest viable mangrove ecosystem in India after Sunderbans. The mangroves are able to strive in environment with extreme conditions of salinity. They can withstand a salinity range of 30 to 90 ppt. Salt resistance of mangroves may also be due to the presence of viviparous germination and succulent nature of leaves. Recent survey has been carried out to analyse the physico-chemical parameters of soil and water samples of different localities such as Gupti, Dangamal, Khola, Kalibhanjadiya and Ekakula at Bhitarkanika. The correlation has also been made to assess the impact such abiotic parameters on mangroves of Bhitarkanika.

344. Pattnayak, P.K. & Misra, M.K. 2003. "Energetic and economies of traditional gur preparation: a case study in Ganjam district of Orissa, India". *Biomass & Bioenergy* 26: 78–88.

Abstract: Traditional gur making is one of the important cottage industries in India, which is still continuing, need protection and improvement. The main objective of this study was to analyse technical know-how used in gur preparation and its ecological and economical implications taking a case study in the Ganjam district of Orissa with a view to offer suggestions for possible improvement. The traditional technology involved for extraction of juice, furnace and gur preparation are described in detail. The total sugarcane production was 62.5 Mg ha-1 of crop. One kilogram of cane yielded 421 ml of juice which came to 26.44 × 103 1 ha-1. The total gur yield was 6.35 Mg ha-1 of crop, which was stored in earthen pots. Total energy input into sugarcane crop was 41.4 GJ ha-1, while total energy input for gur preparation was 4.1 GJ for the cane yielded per hectare of crop. Total monetary input for gur preparation was Rs. 64,920 while the output was Rs 63, 550 with an output-input ration of 0.98 indicating monetary loss in gur preparation.

345. Paul, S.R. & Kharbanda, A.L. 1975. "Revision of the *Polygala* from India (Polygalaceae). 1. The species of Bihar and Orissa". *Bangladesh J. Bot.* 4: 49–58.

346. Paul, S.R., Balapure, K.M. & Rizvi, S.A.R. 1980. "Additional notes on the flora of Orissa". *Indian J. Forest.* 3(3): 275–276.

Abstract: Additional significant notes on the distribution of nineteen vascular plants from Orissa are provided in this paper.

347. Pradhan, G.B. & Dash, M.C. 1984. "Seasonal variation in plant biomass and net primary production of a savanna type hill ecosystem of Sambalpur district". *Trop. Ecol.* 25(2): 172–178.

348. Pradhan, K.C. & Das, S.N. 1990. "Further observation on nematodes associated with high altitude plants, forest and medicinal plants of Phulbani district (Orissa)". *Indian Forester* 116(2): 163–167.

Abstract: A total of 17 forest plants species harboured as many as 25 nematode species. Association of 22 phytoparasitic nematode species were noticed on 35 different medicinal plants. *Rotylenchulus reniformis* and *Helicotylenchus dihystera* were found to be present in large numbers and were associated with most of the plant species examined. As many as seven types of plant feeding nematode species were associated with *Asparagus racemosus*, five different nematode species were recovered from *Cinnamomum camphora, Curcuma longa, Erythrina variegata, Tylophora indica*, and four nematode types were noticed on each of *Achyranthes aspera, Camellia chinensis, Curcuma longa* (wild), *Coffea robusta, Ficus carica, Heritiera minor* and in *Piper nigrum* and three nematode species were isolated from each of *Adhatoda vasica, Cymbopogon flexuosa, Zingiber officinale, Vitis quadrangularis, Stephania hernandifolia, Sida cordifolia* and *Piper longum*.

349. Pradhan, N., Pradhan, R., Sahu, P. & Sen, S.K. 2015. *Flora of Bargarh district*. Navaratna Publication.

350. Pradhan, R.N., Chorghe, A. & Nayak, A.K. 2015. Study on elephant feeding habit of Satkosia Tiger Reserve, Odisha, India. *Nat. Resources Conservation* 3(3): 45–49.

Abstract: The Asian elephant's (*Elephas maximus*) feeding behaviour with food preference was studied in Satkosia Tiger Reserve area between 2011 and 2014. The major objective of the present study is to document the fodder plant species consumption by elephants. Though the study area houses a good number of plant species only 110 species were identified as elephant fodder plants. The food trail of elephant was observed as branch breaking, bark peeling, twig breaking, flower plucking and stem twisting uprooting in different regions of study area during different seasons. Alteration of predominantly browsing strategy with that of grazing around the year was related to seasonal variation of food plants. Consumption of grass species (55%) was highest as compared to trees (37%), shrubs (5%), and herbs (3%). The elephants extensively fed on the plant species such as *Aegle marmelos, Careya arborea, Bauhinia racemosa, Kydia calycina, Bauhinia vahlii, Asparagus racemosus, Helicteres isora, Mallotus philippinensis, Madhuca indica, Ziziphus mauritiana, Mimosa pudica, Smilax zeylanica* and *Dioscorea* species. They were

fond fruits of *Mangifera indica* in summer. A high degree of variation in dicot-monocot ratio (47:63) was marked during identification of elephant fodder plant by direct observation. Microscopic analysis of dung showing a high degree of variation in average dicot-monocot ratio suggested that the food plant selection of elephant was highly opportunistic and seasonal.

351. Prasad, V.P. & Simpson, D.A. 2013. "*Pycreus flavidus* (Cyperaceae) – A highly variable species in India". *Rheedea* 23(1): 7–9.

Abstract: Different varieties of *Pycreus flavidus* (Retz.) T. Koyama reported from India were all found to be based on continuous variations of morphological characters. Hence all are treated here as *P. flavidus*.

352. Prusty, G.B. & Sahoo, H.P. 2013. "Biomass energy flow in a village ecosystem – A case study of Baliparbat area of Keonjhar district, Odisha". *Advances Pl. Sci.* 26: 163–166.

Abstract: The study shows the biomass fuel utilization pattern in a tribal village eco-complex of Baliparbat area of Keonjhar district in a degraded environment of Daitari range of hills of Odisha. Tender trunk wood, branches and twigs and charcoal constitute important sources of household fuel for cooking and heating. The trunk wood contributes 72.48% to the total fuel energy requirement of the domestic sector followed by branches and twigs 17.28% and charcoal 10.24%, respectively. The average use of fuelwood is about 8.46 kg per household per day. The study reveals that the local forest is under tremendous pressure as the trunkwood constitutes more than 72% of the total biomass fuel wood in the village ecosystem.

353. Raizada, M.B. 1948. "Some interesting plants from Orissa". *J. Bombay Nat. Hist. Soc.* 48: 667–680.

Abstract: A total of 87 species of interesting plants belonging to 67 genera under 33 families have been enumerated in the paper.

354. Raju, D.C.S. 1960. "Vegetation pattern of Gandhamardan hills". *Bull. Int. Soc. Trop. Ecol.* 1: 21–22.

355. Raju, D.C.S. 1964. "Botanical observations in the Balimela Project Area, Orissa". *Bull. Bot. Surv. India* 6(2–4): 287–294.

Abstract: This paper deals with an account of the vegetation and flora of Balimela Dam project area in Koraput district of Orissa. In all a total of about 200 species of flowering plants occurring in the submerging sites are enumerated.

356. Raju, D.C.S. 1970. "Ecological notes on *Nervilia crispata* (Bl.) Schltr. (Orchidaceae)". *Indian Forester* 96: 452.

Abstract: *Nervilia crispata* (Blume) Schltr. has been reported for the first time for Orissa from Umerkote in Koraput district. Previously it was reported from Sikkim, Manipur and Karnataka. It grows in soils having a pH value of 5.6–6.

357. Raju, D.C.S., Ahmedullah, M. & Nayar, M.P. 1987. "Genetic potential in the flora of Eastern Ghats of India". *J. Econ. Taxon. Bot.* 9: 133–138.

Abstract: The Eastern Gahts of India harbours a rich and varied flora, comprising about 2000 species of vascular plants. This diversity and heterogeneity of plant life is naturally manifested with a high degree of genetic potential which can be tapped for the improvement of cultivars through genetic engineering of their wild relatives. The genetic resources of Eastern Ghats find wide ranging application; many of the less known plants can be used by the way of food, forage, medicine and timber. Some of these plants are strictly endemic to the Eastern Ghats. Conservation and prudent management of the limited genetic stocks such as *Atylosia cajanifolia, Caralluma indica, Cycas circinalis, Luffa acutangula* var. *amara, Musa balbisiana, Oryza jeyporensis, O. officinalis* subsp. *malampuzhaensis* and *Pterocarpus santalinus, Shorea tumbaggaia* is urgently called for. It is forewarned that unless *in situ* conservation methods are practiced at the potential germplasm sites in species richness areas such as Ganjam-Koraput, Araku, Nallamalais, Tirupati and Shevaroys, the gradual erosion of valuable genotype is imminent.

358. Rani, S.R.M.S. & Balakrishnan, N.P. 1998. "Notes on *Trewia nudiflora* L. (Euphorbiaceae) and its varieties". *J. Econ. Taxon. Bot.* 22: 345–355.

Abstract: The specimens of the genus *Trewia* L. (Euphorbiaceae) in India have been studied in detail. It is found that *T. polycarpa* Benth. should be treated only as a variety of *T. nudiflora* L. Two more new varieties, var. *dentata* from from Maharashtra and var. *tomentosa* from Andhra Pradesh, Gujarat, Maharashtra, Orissa, Sikkim and Tripura were discovered and described. Thus the genus in India consists of 1 species and 4 varieties.

359. Rao, P.U., Brahmam, M. & Saxena, H.O. 1985. "Phytochemical survey of Mayurbhanj, Ganjam and Puri districts (Orissa) for tannins, saponins, flavonoids and alkaloids". *Indian Drugs* 22: 503–507.

Abstract: Phytochemical screening was carried out in 73 plant samples representing 64 species of vascular plants collected from Mayurbhanj, Ganjam and Puri districts of Orissa. Tannins are found to be present in 25 samples, saponins in 1, flavonoids in 24 and alkaloids in 16 samples. Five new alkaloid containing species and three new alkaloid containing genera, viz., *Aeschynanthus* Jack, *Gomphostemma* Wall. and *Uvaria* L. are reported. The tannin content of 4 species is found to be between 1.1 and 8.8 per cent.

360. Rao, T.A. & Banerjee, L.K. 1984. "Tidal mangrove of the Mahanadi delta, Utkal coast India". *Proc. Sem. Resources Developm. & Environm. Eastern Ghats (Waltair)*. pp. 219–226.

361. Rao, T.A. & Mukherjee, A.K. 1972. "Ecological aspects along the shores of Burabaland tidal estuary, Balasore district, Orissa state". *Proc. Indian Acad. Sci.* 76: 201–206.

362. Rao, T.A. & Mukherjee, A.K. 1975. "An ecological study of the strand vegetation of Orissa coast". *Indian Forester* 101: 692–702.

Abstract: The vegetation pattern and corresponding analytical data on soils along with sandy shores of Orissa coast have been studied. The study shows that this area is visible into three apparent zones. Furthermore, it is certain, that each zone exhibits gradation in the substratum which is reflected in the variations of its floristic composition.

363. Rao, T.A. & Sastry, A.R.K. 1972. "An ecological approach towards classification of coastal vegetation of India – I. Strand vegetation". *Indian Forester* 98(10): 594–607.

Abstract: The ecology of the Indian coastal vegetation which is not only the great theoretical but also of practical interest has hitherto been insufficiently known. Champion & Seth (1968) dealt this vegetation type in a concise manner under the group, 'Littoral and Tidal swamp forest of India'. During the last 12 years. Extensive data have been collected on the physiographic, floristic and edaphic aspects, and based on these an attempt is now made to analyse and to reclassify the Indian coastal vegetation in greater detail, but adhering to the original frame work given by Champion & Seth in 1968. In the paper, the coastal vegetation type has been further sub-divided into three types: Sand Strand, Rock Strand and Coral Strand. Under each type, the salient features such as distribution, topography, floristics and edaphic characters pertinent to each type have been discussed at length with suitable summary diagrams based on relative cover value of plants from quadrats and the analytical data.

364. Rao, T.A. & Sastry, A.R.K. 1974. "An ecological approach towards classification of coastal vegetation of India – II. Estuarine border vegetation". *Indian Forester* 100: 438–452.

Abstract: Studies on the Indian estuarine border vegetation have gained a steady importance in the recent years and considerable valuable data have been gathered especially with regard to floristic edaphic and ecological aspects by various workers and in particular by the Ecology Unit in the Botanical Survey of India, which is engaged in ecological studies on Indian coastal vegetation for the last 13 years. Based on this knowledge, an attempt is now made to analyse and reclassify the Tidal swamp forest in greater detail but adhering to the original framework of Champion & Seth (1968). In the present paper, this vegetation type has been sub-divided into two types: Estuarine and Pro-estuarine; and the pro-estuarine complex type has been further sub-divided into three subtypes: Tidal mangrove, euhyaline and prohyaline. Under each type and their subtypes the salient features such as plant grouping, topography, indicator plants and edaphic characteristics have been discussed.

365. Rao, T.A. & Sastry, A.R.K. 1974. "An outline of the coastal vegetation of India". *Bull. Bot. Surv. India* 16: 101–115.

Abstract: In this paper, the coastal vegetation of India is described in detail with regard to its subtype, the taxa components in each and also its phytogeographical affinities.

366. Rao, Y.R. 2000. "Kewda (*Pandanus fascicularis* Lam.) an economical important aromatic shrub in Ganjam district, Orissa, India". *J. Med. Aromat. Pl. Sci.* 22: 377–395.

367. Rastogi, K., Paul, S.R. & Kapoor, S.L. 1987. "Material for a flora of Koraput district (Orissa state)". *J. Econ. Taxon. Bot.* 9: 413–432.

Abstract: The paper presents an account of floristics of Koraput district, Orissa based mainly on herbarium specimens collected by survey parties of National Botanical Research Institute, Lucknow. A total of 412 species under 302 genera and 79 families have been recorded from Korapur district of Orissa.

368. Rath, B., Pradhan, P.C., Behera, B.D. & Sahu, D. 1997. "Efficacy of planting methods and establishment of *Cassia siamea* in slopy and red lateritic soil belt of Orissa". *Indian J. Forest*. 20(2): 187–89.

Abstract: Field studies involving planting methods were made during 1993 to 1995 at Sidingi and Nabaguba village of Phulbani district of Orissa for establishment of fuel-wood species *Cassia siamea*. Continuous contour V-ditch proved most efficient *in situ* moisture conservation practice and enhanced average soil moisture status by 31.5%, 29.6% and 21.4% in 0–15 cm, 15–30 cm and 30–45 cm layers over normal pit method. If favoured tree growth to the maximum extent and caused maximum increase (75%) in plant height during observation in November' 1995 compared to control.

369. Rath, P., Biswal, P.K. & Misra, M.K. 2014. "Effect of sugar factory distillery spent wash (DSW) on the growth, pigment, biochemical content of rice (*Oryza sativa* L.) in the Aska area of Ganjam district, Odisha". *Int. J. Sci. Innov. & Disc.* 4(3): 131–149.

Abstract: A field experiment was conducted with different doses (5%, 10%, 15%, 20%, 30%, 50% and 100%) of sugar factory distillery spent wash (DSW) using rice (*Oryza sativa* L.) as test crop. The experiment was formulated with eight treatments with five replicates laid out in factorial randomized block design. The finding of the work reports the impact of different concentration of DSW on the growth, pigment content, different biochemical parameters, yield of rice and the soil properties of the experimental field. The growth germination percentage was highest (98.4%) at 15% concentration of distillery spent wash. The maximum root length (12.4 cm), shoot length (83.2 cm), number of leaves (9.6 cm), leaf length (84.3 cm), leaf breadth (1.62 cm), fresh weight (8.23 g

plant^{-1}) and dry weight (2.65 g plant^{-1}) was found to be highest at 15% concentration and lowest at 100% concentration. The chlorophyll content was found to be maximum (1.54 mg g^{-1} FW) at 15% concentration on 90 days and minimum (0.38 mg g^{-1} FW) at 100% concentration on 30 days. The maximum pheophytin content (1.36 mg g^{-1} FW) was observed in 15% on 90 days and minimum (0.36 mg g^{-1} FW) at 100% concentration on 30 days. The maximum and minimum carotenoid content (0.036 mg g^{-1} FW) and (0.006 mg g^{-1} FW) were observed in 15% and 100% concentration respectively. The DNA content of the rice plant was found to be maximum (0.052 mg ml^{-1}) at 15% concentration on 90 days and minimum (0.022 mg ml^{-1}) at 100% concentration on 30 days. The RNA content was maximum (0.077 mg ml^{-1}) at 15% concentration on 60 days and minimum (0.031 mg ml^{-1}) at 100% concentration on 120 days. The protein content was found to be maximum (3.66 mg ml^{-1}) at 15% concentration on 90 days and minimum (1.16 mg ml^{-1}) at 100% concentration on 30 days. After the application of distillery spent wash the pH of the soil gradually increased from 7.10 to 7.59 in different concentration and exposure period. The organic carbon content was maximum (6.8%) at 15% distillery spent washes concentration. Total nitrogen and phosphorous content was increased gradually with increase in concentration and exposure period. The highest nitrogen content (29 mg g^{-1} DW) was observed at 100% concentration and lowest (0.013 mg g^{-1} DW) at control. Similarly the phosphorus content was highest (36 mg g^{-1} DW) at 100% concentration and lowest (12 mg g^{-1} DW) at 5% concentration.

370. Rath, R.N., Sahoo, S.L. & Rath, S.P. 2013. "Plant diversity in the coastal region of Odisha with special reference to the medicinal plants". *Pl. Sci. Res.* 35(1&2): 20–23.

Abstract: India is a country of great diversity in its tradition, culture, language, geography, climate and vegetation. The peninsular India is having a coast line of 5,690 km, of which 482 km long Odisha coast experiences the sub-humid climate showing strand and estuary vegetation due to the major rivers like; the Subarnarekha, the Budhabalanga, the Baitarani, the Brahmani, the Mahanadi, the Devi and the Rushikulya contributing to the coastal plain of Odisha and making it the "Rice Bowl" of the State. The floristic account in the deltaic region of the coast line comprising of four erstwhile major districts of the state like Baleswar, Cuttack, Puri and Ganjam have revealed 332 species belonging to 200 genera and 82 families. Plants of different habits and habitats and plant parts such as stem, root, leaf, flower, bud, fruit and twig were also recorded. The role of the local healers, ayurvedic practitioners, experienced men and women making traditional healthcare were also noted. The importance of the medicinal plants used by the rural and tribal people has also been highlighted during the present investigation.

371. Rath, S.P. & Misra, B.N. 1980. "Effect of grazing of the floristic compostion and life form of species in the grassland of Berhampur". *Indian J. Forest*. 3(4): 336–339.

Abstract: The results pertaining to the effect of grazing on the floristic composition and the life-form of species in the grassland were recorded. The results showed that the vegetation comprised thero-chamaephytes in all the sites. Over-grazing reduced the number of species and moderate grazing caused increase in the number of species. Grazing in general increased the number of therophytes. The biological spectra of these sites were compared with the Raunkiaer's (1934) normal spectrum and other available reports and it was found that the number of Therophytes and Chamaephytes seemed to be identical with those of other tropical grasslands but showed a higher value than the Raunkiaer's normal spectrum.

372. Rath, S.P., Choudhury, B.P. & Patnaik, S.N. 1979. "Cyperaceae of Orissa". *Bull. Bot. Surv. India* 21(1–4): 156–162.

Abstract: As a part of the programme of study of the flora of Orissa, Cyperaceae, one of the dominant families in this region eas taken up first. Through an exhaustive collection of Cyperaceae along with others for about 7 years and survey of specimens and literature at Central National Herbarium, Sibpore, 112 species belonging to 19 different genera of this family were found to occur in the state. In the present collection of 81 species of the family from various parts of Orissa, 11 species proved to be new reports for the state. The enumeration of the species with latest nomenclature and localities of collection are presented here. The collected specimens are deposited in the herbarium of Botany Department of Utkal University.

373. Ray, J.C. 1955. "Utility of the forest products of Orissa in the fisheries of the Chilika Lake". *J. Bombay Nat. Hist. Soc.* 53: 292–294.

Abstract: The fishery trade of the Chilika Lake is well-balanced in this respect, drawing all its raw materials from the hills and jungles spreading on the western shore of this lake. These products have helped to develop cottage industries, such as boat making, mat and basket weaving, and leaf stitching, in addition to providing livelihood for hundreds of villagers who collect barks, plants and leaves. A list of 13 plants made use of in the fisheries trade is given in this paper.

374. Reddy, C.S. & Pattanaik, C. 2009. "An assessment of floristic diversity of Gandhamardan hill range, Orissa, India". *Bangladesh J. Pl. Taxon.* 16: 29–36.

Abstract: The plant resources of Gandhamardan hill range were studied and analysed. A total of 912 vascular species belonging to 556 genera under 142 families were recorded. Herbs dominate the flora followed by trees, climbers and shrubs. Dominance of phanerophytes indicates the tropical moist and humid climate. Proper conservation and management plans are needed to save the natural resources, especially medicinal plants of this sacred hill range.

375. Reddy, C.S., Pattanaik, C., Dhal, N.K. & Biswal, A.K. 2006. "Vegetation and floristic diversity of Bhitarkanika National Park, Orissa, India". *Indian Forester* 132(6): 664–680.

Abstract: Bhitarkanika National Park of Orissa has much significance due to ecological, biological and geo-morphological background. It has rich floristic diversity and great variability at species and ecosystem levels in consisting of different types of vegetation in different habitats representing *Diospyros* swamp forest, *Tamarix–Salvadora* scrub, palm swamp, salt marshes, grasslands, sand dune and aquatic vegetation. A total of 372 species belonging to 262 genera under 100 families.

376. Reddy, C.S., Pattanaik, C., Mohapatra, A. & Biswal, A.K. 2007. "Phytosociological observations on tree diversity of tropical forest of Similipal Biosphere Reserve, Orissa, India". *Taiwania* 52(4): 352–359.

Abstract: The study deals with the quantitative floristic inventory of three tropical forest types in Similipal Biosphere Reserve in Eastern Ghats of Orissa. Three forest types were distinct in field and differed in dominance, composition, diversity and structure. The study resulted in documentation of a total 549 species of flowering plants. Altogether, 4819 stems of $\geq$30 cm gbh belonging to 185 tree species were enumerated and analysed. Tree stand density varied from 527 to 665 ha^{-1} with average basal area of 43.51 $m^2 ha^{-1}$. Shannon-Wiener Index (H') ranges from 4.3 to 5.46. Similarity Index revealed that only 25% of floristic composition of semi-evergreen forest was similar with moist deciduous forest. Analysis of population density of tree species across girth class interval showed that around 48.9% of individuals belong to 30-60 cm gbh. The present study can serve as baseline information for phytodiversity characterisation of tropical forests in the Similipal Biosphere Reserve in particular and Eastern Ghats of Orissa in general.

377. Reddy, P.R. & Pullaiah, T. 1998. "Caesalpiniaceae in Eastern Ghats". *J. Econ. Taxon. Bot.* 22: 339–344.

Abstract: The Eastern Ghats is a major hill range of Peninsular India running from northeast to southwest strike along the east coast. A total of 42 species belonging to 12 genera of the family Caesalpiniaceae are recorded in this region. *Cassia* is the largest genus with 18 species followed by *Bauhinia* and *Caesalpinia* with 7 species each. *Hardwickia, Kingiodendron, Parkinsonia, Peltophorum, Saraca, Tamarindus* and *Mezoneurum* are represented by 1 species each. These are systematically enumerated in this paper.

378. Reddy, P.R. & Pullaiah, T. 2000. "Mimosaceae in Eastern Ghats". *J. Econ. Taxon. Bot.* 24: 141–149.

Abstract: The Eastern Ghats extends between 11°30'–22° N and 76°50'–86°30' E, adjoining the plains along the East Coast of India. They pass through Odisha (south of River Mahanadi), Andhra Pradesh and Tamil Nadu (north of River Vaigai) states. The present paper deals with general information and systematic enumeration of Mimosaceae in Eastern Ghats. A total of 45 species belonging to 15 genera in family Mimosaceae have been recorded. *Acacia* is the largest genus with 18 species, followed by *Albizia* and *Mimosa* with 6 species each and *Neptunia* and *Prosopis* are represented by 3 species each. *Adenanthera, Calliandra, Desmanthus, Dichrostachys, Entada, Leucaena, Parkia, Pithecellobium, Samanea* and *Xylia* are represented by 1 species each.

379. Reddy, P.R. & Rao, M.S. 2000. "Plant resources and ecological-degradation of Eastern Ghats, India". *J. Econ. Taxon. Bot.* 24: 375–383.

Abstract: The Eastern Ghats of India has rich and varied flora. The plant resources of Eastern Ghats have wide ranging applications. Many of the less known plant species can be used as food, forage, medicine and timber. Some of these plants are strictly endemic to the Eastern Ghats. Human activities through various developmental schemes and other practices are observed to be the chief threats to the ecological degradation of any region. An attempt is made to delineate the major plant resources of the Eastern Ghats and impact of human activities on ecology of this mountain ecosystem.

380. Reddy, R.N., Kar, M. & Rath, S.P. 2014. "Dominance of *Shorea robusta* Gaertn.f. in Similipal Wildlife Sanctuary". *Pl. Sci. Res.* 36(1&2): 48–52.

Abstract: Similipal Wildlife Sanctuary spreads in Mayurbhanj district with an area of *2271.78* km^2. The Sanctuary is having hilly terrain dominated by tree species. An analysis of tree species in four different types of forests within Sanctuary revealed that *Shorea robusta*, C.F. Gaertn. (Sal) is the most dominant species in all forest types out of 168 tree species in *48* families. Sal is climax tree species in the forests of study area as in the case of many Sal forests of India. The frequency of individuals and number of species was high in the lower GBH class. The distribution of girth classes show classical negative exponential pattern which is a common feature found in the pristine forest. The study reveals that the intensive management of forests for fodder species and grasslands are required for the wildlife management and conservation.

381. Reddy, R.N., Kar, M. & Rath, S.P. 2014. "Floristic diversity of Similipal Wildlife Sanctuary in Odisha". *Advances Pl. Sci.* 27: 545–549.

Abstract: An extensive survey of the angiosperm floristic diversity was carried out in Similipal Wildlife Sanctuary, Odisha. A total of 25 sample quadrats each measuring 20 × 20 m (1 ha) were laid randomly at different geographic locations of the sanctuary and trees below 10 cm girth were enumerated. The established plants and shrubs were enumerated in 5 × 5m plots drawn within the sample quadrat of 20 × 20 m. Herbs and

ground flora were enumerated in dm × lm plot drawn within the sample quadrat of 20 × 20 m. The enumeration, carried out in the sample quadrats resulted in a total of 241 species, 141 genera belonging to 68 families. Of these enumerated plant species, 91 were trees, 44 shrubs, 78 herbs, 28 climbers and remaining were miscellaneous category. *Shorea robusta* C.F. Gaertn. form the denser species among the trees in the sanctuary with a total of 819 trees/25 sample quadrats (D = 32.76/quadrat) while *Croton roxburghii* N.P. Balakr. with 100 individuals/25 sample quadrat (D = 4/quadrat) and *Dioscorea glabra* Roxb., *Xanthium strumarium* L. with 19 and 93 individuals, were dominant among climbers and herbs, respectively. *Symphorema polyandrum* Wight with 37 individuals is dominant among shrubs. The study also recorded a very good Shannon-Wiener and Simpson diversity index of 2.9973, 90.838 for trees, 2.8738, 27.9428 for climbers and 3.3061, 77.9419 for herbs, 3.1584, 43.9465 for shrubs. The vegetation is predominant with trees.

382. Routray, R., Kar, M. & Sahu, R.K. 2013. "Evaluation of antioxidant potential in selected leafy vegetables of Odisha, India". *Int. J. Pharm. & Pharmaceut. Sci.* 5(1): 232–235.

Abstract: Generally vegetables represent a class of under exploited plants that are stipulated to be rich source of natural antioxidant. Seven edible widely used leafy vegetables of Odisha have been analyzed for their DPPH radical scavenging activity, namely *Amaranthus tricolor, A. viridis, Brassica oleracea, B. campestris, Basella alba, Cucurbita maxima, Cicer arietinum* using methanol, ethanol, petroleum ether as solvent. Their total phenolic content was measured by Folin-ciocalteu reagent. The plant extracts were found to have different levels of antioxidant properties in the system tested. Correlation analysis established a positive Correlation between the phenolic contents and the *in vitro* free radical scavenging activity of the plant extracts. In all the species, methanolic and ethanolic extract gave maximum yield of crude extract, phenol content as well as antioxidant activity. Highest antioxidant activity was demonstrated in *Brassica campestris* followed by *Amaranthus tricolor* and *Cucurbita maxima*. Accordingly minimum IC50 values were obtained in the concentration of maximum antioxidant activity. These values are comparable with ascorbic acid as standard. The conclusions drawn from the study suggest that the rich phytochemical contents especially phenolics of the leafy vegetables and good antioxidant activity may be responsible for its wide and popular use in any balanced diet.

383. Sahoo, A.K. 1986. "Plant resources of Phulbani district (Orissa): Some suggestions to develop cottage industries in tribal localities". *Orissa Rev.* 43(3): 5–10.

384. Sahoo, A.K., Bahali, D.D. & Mahapatra, H.S. 2004. *Orissa*. In: Mudgal, V. & Hajra, P.K. (eds.), *Floristic Diversity and Conservation Strategies in India*. Vol. 3. Botanical Survey of India, Calcutta. pp. 1299–1342.

Abstract: A total of 2630 species of angiospermous plants distributed over 1060 genera and 194 families have been reported in this paper. Of this 2630 species, 1868 species from dicots and remaining 762 species are from monocots; 3 species of gymnosperms distributed in 2 genera belonging to 2 families and 141 species of pteridophytes belonging to 41 families and 66 genera.

385. Sahoo, H.P. & Misra, M.K. 1992. "Ecological study of an Indian coastal village ecosystem". *Int. J. Environm. Studies* 39: 257–266.

Abstract: The man-environment relationship in a coastal village of Orissa was studied during 1989–90 at socio-economic and cultural levels, emphasizing the production and consumption of biomass energy. The village is mainly based on a fish-economy which is distorted by the interference of the trawlers and the middlemen. Certain developmental opportunities existing within the ecosystem are highlighted in the light of the present observation.

386. Sahoo, R.C., Sahu, D. & Misra, M.K. 2014. "Angiosperm diversity of sandy coast of Balasore district, Odisha, India". *Nelumbo* 56: 89–123.

Abstract: The paper deals with the angiosperm diversity of sandy coast of Balasore district, Odisha. The angiospermous flora consists of 352 species in 258 genera belonging to 84 families. Monocotyledons are represented by 72 species (20%). The flora consists of 212 herbs, 19 climbers, 51 shrubs and 70 tree species. Leguminosae are the dominant family followed by Poaceae, Euphorbiaceae, Cyperaceae, Asteraceae, Convolvulaceae and Verbenaceae.

387. Sahoo, S. & Davidar, P. 2013. "Effect of harvesting pressure on plant diversity and vegetation structure of Sal forests of Similipal Tiger Reserve, Odisha". *Trop. Ecol.* 54(1): 97–107.

Abstract: Anthropogenic impacts on forests are pervasive in the Indian subcontinent, and human dependence on fuelwood and other products is one of the main reasons for forest loss and degradation. We evaluated the impact of local populations on vegetation structure and diversity of Sal (*Shorea robusta* C.F. Gaertn.) dominated forests of Similipal Tiger Reserve (STR), Odisha using plot-based method. We selected eight villages, four in the buffer zone and four in the core zone of STR. We then laid two one-hectare plots in the forests adjacent to each village: one was the study plot where the local people extensively collected fuel-wood and fodder (called disturbed plot), while the other served as control and was located >1 km away in a site with no current harvesting (called undisturbed plot). In the study plots we also evaluated the extraction pressure on vegetation over a 21-month period from 2006 to 2008. All woody species ≥3.18 cm dbh (diameter at breast height) were permanently marked and tagged. We monitored

the rate of removal of plant parts like stem and branches at 3-month intervals to estimate extraction pressure. The species richness, diversity, basal area and stand density were lower in the disturbed compared with the undisturbed plots. Mean extraction pressure in terms of per cent of trees lopped/harvested mo^{-1}, ranged from 1.2 to 11% and was positively correlated with the population size of villages. Fuelwood was the major product harvested. Therefore, an alternate source of domestic energy for rural households is important for arresting forest loss.

388. Sahoo, S., Rout, N.C. & Behura, S. 1995. "Zingiberaceae in Orissa: Problems and prospects". *Pl. Sci. Res.* 17(1&2): 39–42.

Abstract: Zingiberaceae of Orissa had not received specific attention in the past except the cultivation of a few economically important species such as *Curcuma longa* L., *C. amada* Roxb., *Zingiber officinale* Roscoe. A complete floristic account of the members of this family in this state is a long desired need since the earlier works were not exhaustive and are now nomenclaturally outdated. However, recently in Flora of Orissa (Saxena & Brahmam, 1995) 24 species belonging to 9 genera have been recorded for this family. Amongst these 13 species have been reported from Similipal range (Saxena & Brahmam, 1989) in Mayurbhanj district, which is a vast repository of Zingiberaceae especially the massive population of *Curcuma longa* with lot of variations. Since the members of this family are economically very important the genetic resources of these members in the State should be well documented to be utilised for the purposes like crop improvement, yield of essential oil, natural dyes and pharmaceuticals, taxonomic and *in vitro* studies and above all conservation of germplasms especially in view of the rapid depletion of natural habitats due to destruction of forest areas in Orissa.

389. Sahoo, S., Rout, P.K. & Panda, P.K. 2002. "Early flowering of Kewda (*Pandanus fascicularis* Lam.) in a genotype collected from Keluapalli (Ganjam district) and grown under Bhubaneswar conditions". *Pl. Sci. Res.* 24(1&2): 4–6.

Abstract: Kewda *(Pandanus fascicularis* Lam.) planting material was collected from different coastal regions of Orissa and planted ten years ago in the Aromatic and Medicinal Plants Garden of our Laboratory. One of the plants collected from Keluapalli in Ganjam district has given its first flower in 1997. The plant has been flowering since then regularly throughout the year yielding on an average 30 flowers. This plant was utilized as parent plant and several branches multiplied by vegetative propagation. One of the progenies flowered within 5 months drastically reducing the time period between planting and flowering. The composition of the extracts of flowers obtained from the parent and progeny plants was determined using GC and GC/MS. The major components were phenylethyl methyl ether, terpinen-4-01, -terpineol and oleic acid.

390. Sahu, A.K. & Panda, S.P. 2014. "Mangroves of Odisha coast: Current status and conservation". *J. Econ. Taxon. Bot.* 38: 306–315.

Abstract: Odisha state has a coastline of 480 km, out of which the littoral and tidal forests which are the conspicuous vegetation types for the state accounts 222 km^2 encompassing the coastal districts of Balasore, Bhadrak, Kendrapara, Jagatsinghpur and Puri. However, the protections of mangrove forests have adequately increased in all coastal districts except Balasore. In the due course of time many species have become threatened/rare due to mainly anthropogenic interferences of different categories as well as critical ecological changes. So, there is an urgent need to conserve these physiological xerophytic species for posterity. For successful conservation a recent status survey of the species is highly essential so as to develop conservation strategies for fast disappearing species on priority basis. Realising the multifaceted importance of the mangrove, the present communication emphasizes on the current status and distribution of mangroves of Odisha coast along the river estuaries. Concurrently some conservation aspects are also highlighted in brief.

391. Sahu, C.R., Nayak, R.K. & Dhal, N.K. 2013. "The plant wealth of Boudh district of Odisha, India with reference to ethnobotany". *Int. J. Curr. Biotechnol.* 1(6): Article No. CB602.

Abstract: Ethnobotanical study was carried out in Boudh district of Odisha, India. Fifteen villages dominated by tribal communities under three community development blocks were selected. The indigenous knowledge of local traditional uses was collected through questionnaire and personal interviews during field trips. Indigenous communities of the region are largely dependent on plant resources such as medicines, food, fuel, fodder and for other livelihoods. A total of 20 traditional agricultural crop species, 8 traditional vegetable species and nearly 150 forest species were documented. Conservation of these valuable resources in its natural habitat would be an appropriate approach for ensuring food security of future generations.

392. Sahu, C.R., Nayak, R.K. & Dhal, N.K. 2014. "Wild edible plants of Boudh district of Odisha state, India". *Phytotaxonomy* 14: 107–113.

Abstract: A survey was carried out during 2010–2013 in forest areas of Boudh district of Odisha on wild edible plants and personal interviews were conducted with various tribal and local villagers. The tribal and rural people of Boudh have a fair knowledge of plants and their uses. The paper deals with 82 edible plant species under 51 families belonging to 69 genera consumed as food supplement by the tribals of Boudh district apart from their seasonal crops and vegetables. The rhizomes, seeds, grains, tubers, fruits, leaves and young shoots are used for this purpose.

393. **Sahu, D. & Misra, M.K. 2007.** "Ecology and traditional technology of screw pine perfume industry in coastal Orissa". *Indian J. Tradit. Knowl.* 6(2): 253–261.

Abstract: Kewda perfume industry is one of the important cottage industries in coastal Ganjam district of Orissa, which has initiated about 200 years ago. The semi-natural Kewda vegetation provides flowers and performs many ecological functions. The objective of this study was to analyze the ecology of flower collection and the technical know-how used in Kewda distillation and its ecological implication. The traditional methods of flower collection, processing and extraction of essence (Kewda attar, Kewda water and Kewda oil) from the flower were described in detail. Three sample sites were surveyed for flower collection and annual flower production ranged from 6253 to 6993 flowers per hectare. Maximum daily flower distillation in the 10 units surveyed ranged between 6084 and 13,235 flowers while annual consumption varied from 125 × 103 to 505 × 103 flowers. The material inputs were fuel wood, base oil and a large number of other traditional materials such as copper containers, lid and *chunga*. The annual firewood consumption in the distilleries varied from 18.83 to 75.72 Mg. The annual production of Kewda attar, Kewda water and Kewda oil in the distilleries varied from 57 to 243 l, 50 to 124 l and 150 to 469 gm respectively. Other outputs were charcoal and flower waste materials, which were used locally.

394. **Sahu, D. & Misra, M.K. 2010.** "Flora of sandy coast of Ganjam district, Orissa, India". *J. Bombay Nat. Hist. Soc.* 107(3): 213–219.

Abstract: This paper deals with the systematic account of plants from the sandy coast of Ganjam district of Orissa, and reports 175 species of angiosperms under 134 genera belonging to 61 families. Poaceae were the dominant family followed by Euphorbiaceae, Cyperaceae, Fabaceae and Asteraceae. The native species are represented by 155 species (89%), whereas the exotic species are represented by 20 species (11%), of which 16 species (9% of the total) are naturalized in the area. *Ceropegia candelabrum* – a species hitherto reported from inland is now reported from the coastal area. *Bulbostylis subspinescens* and *Micrococca mercurialis* are reported after 85 years of their first collection from the coast.

395. **Sahu, D. & Misra, M.K. 2013.** "Coastal phytodiversity of Puri district, Odisha, India". *Nelumbo* 55: 62–88.

Abstract: The paper deals with the systematic account of plants from the coast of Puri district of Odisha comprising of 260 species of angiosperms in 195 genera belonging to 72 families. The flora consists of 162 herbs, 27 climbers, 33 shrubs and 38 tree species. *Micrococca mercurialis* is recorded from the coasts of Ganjam and Puri districts of Odisha after a century. Leguminosae were the dominant family followed by Poaceae, Cyperaceae, Asteraceae, Rubiaceae, Verbenaceae and Asclepiadaceae.

396. Sahu, N.C. & Das, B. 1979. "An appraisal of the forest policy of Orissa". *Indian Forester* 105: 41–49.

Abstract: Forest policy in Orissa, as a matter of fact in India, has a long ancestry. Sporadic attempts on the part of the native and British rulers to protect and exploit the forests form the ingredients of the present forest policy. Under the impact of planning, forest policy exhibits new dimensions such as growth, stability, environmental and recreational aspects of forest and wildlife protection from different important facets of the new forest policy. Some gaps, however, have been identified in the structure of forest policy pursued in Orissa. It has been felt that the forest policy has not been looked at in depth as developmental imperatives warrant.

397. Sahu, R.K., Deo, B., Mallick, U.C. & Moharana, R.C. 1989. "An account of tolerant plant species growing on coal mine wastes of Talcher, Orissa". *Curr. Sci.* 58(4): 181–183.

Abstract: The present study describes specialized vegetation, tolerant to nutrient-deficient and trace-metal-enriched soil of coal mine waste of Talcher, Orissa. A total of 105 species, belonging to 40 families, have been reported, and 2 species with morphological abnormalities have been detected. The importance of such floristic studies for such re-vegetation of abandoned coal mine sites has been suggested.

398. Sahu, S.C. & Dhal, N.K. 2012. "Floristic diversity of Mandargiri hills, Angul, Odisha: An overview". *J. Econ. Taxon. Bot.* 36(3): 554–562.

Abstract: Floristic study was conducted in Mandargiri hills of Angul district, Odisha. A total of 190 species belonging to 159 genera and 62 families were identified from these sites. The contribution of dicotyledons, monocotyledons, gymnosperms and pteridophytes was 86.84%, 10.52%, 0.52% and 2.1%, respectively. *Acacia, Dioscorea* and *Ficus* were the most dominant genera having 4 species each. Fabaceae were the most dominant families having 17 species followed by Rubiaceae (8), Verbenaceae (8), Apocynaceae (8), Mimosaceae (7), Euphorbiaceae (7), Lamiaceae (6), Combretaceae (6), Caesalpiniaceae (5), Anacardiaceae (5), etc. Among the total number of plant species 82 (43.15%) were trees, 22 (11.57%) shrubs, 61 (32.1%) herbs and 25 (13.15%) climbers, including lianas.

399. Sahu, S.C., Dhal, N.K. & Bhadra, A.K. 2010. "Arboreal taxa diversity of tropical forests of Gandhamardan hill range, Eastern Ghats, India: An approach to sustainable biodiversity conservation". *Taiwania* 55(3): 208–215.

Abstract: The rich biodiversity repository of Gandhamardan hill ranges, Eastern Ghats is under severe threat from various magnitudes such as deforestation, unsustainable collection of medicinal plants, invasion of alien species, forest fire, urbanization and habitat destruction. The Protected Forests (PFs) have lost a number of wild species from

their natural habitat pose to loss of biodiversity. The hill range having two preservation plots of 100 ha each identified in Nrusinghanath (SITE – I) and Harishankar (SITE – II) range as study area. The present study inventoried a total of 10775 trees belonging to 91 tree species within a 17.6 hectare sampled area (441 plots). The predominant tree species are *Diospyros melanoxylon, Madhuca indica, Cleistanthus collinus, Anogeissus latifolia,* and *Lagerstroemia parviflora*. The Shannon-Weiner Index (H') is 3.92 (SITE – I) and 3.31 (SITE – II) with Simpson's value 1.0. This value indicates that the tropical moist deciduous forests are also species diverse systems. Mean stand density was 671 ha^{-1} in SITE – I, and 565 ha^{-1} in SITE – II. Stem density and species richness have consistently decreased with increasing girth class of tree species from 50 cm girth. The present study on diversity of tree species and participatory approaches on sustainable use of natural resources will provide the baseline information for effective and sustainable biodiversity conservation of tropical moist deciduous forest.

400. Sahu, S.C., Dhal, N.K. & Ravindranath, N.H. 2015. "*Myriostachya wightiana* (Nees ex Steud.) Hook.f. (Poaceae): Ecology, distribution and economic importance in mangrove swamps". *Int. J. Innov. & Appl. Res.* 3(3): 9–12.

Abstract: *Myriostachya wightiana* (Nees ex Steud.) Hook.f. is one of the important salt marsh grasses belonging to the family Poaceae in mangrove areas. It plays a vital role in soil conservation, phytoremediation, provides habitat for fishes and other organisms and live hood to local rural people in and around mangrove areas. We have conducted few case studies at different sites of Mahanadi delta of Odisha to explore the uses of plants by local people. This information was collected through opened/structured/Participatory Rural Appraisal (PRA) methods. This paper describes morphology, distribution, ecology and process of craft products preparation.

401. Sahu, S.C., Dhal, N.K., Dash, S.S. & Rout, N.C. 2013. "Plant diversity in CSIR–IMMT (Institute of Minerals and Materials Technology) premises, Bhubaneswar, Odisha". *Nelumbo* 55: 1–40.

Abstract: A systematic study has been carried out to assess the plant diversity in CSIR-IMMT premises. A total of 231 vascular plants were recorded belonging to 192 genera and 71 families. Among them, 205 species belong to dicotyledons, 23 species to monocotyledons, 1 species to gymnosperms and 2 species to pteridophytes. Euphorbiaceae with 20 species are the dominant family followed by Asteraceae (13 species), Acanthaceae (12 species), Poaceae, Rubiaceae and Fabaceae (10 species each), Apocynaceae (9 species), Caesalpiniaceae (8 species), Mimosaceae and Rutaceae (7 species each). The paper highlights some threatened medicinal plants, viz., *Rauvolfia serpentina* (L.) Benth. ex Kurz, *Gloriosa superba* L., *Saraca asoca* (Roxb.) de Wilde,

Oroxylum indicum (L.) Vent. and *Mesua ferrea* L., which have been stressed for *ex situ* germplasm conservation.

402. Sahu, S.C., Dhal, N.K., Reddy, C.S., Pattanaik, C. & Brahman, M. 2007. "Phytosociological study of tropical dry deciduous forest of Boudh district, Orissa, India. *Res. J. Forest.* 1(2): 66–72.

Abstract: Phytosociological study was carried out in tropical dry deciduous forest of Boudh district, Eastern Ghats of Orissa. We inventoried a total of 187 species (trees 91, shrubs 10, climbers 12 and herbs 74) within a 4 ha sample area. The predominant tree species are *Shorea robusta, Madhuca indica, Buchanania lanzan, Cleistanthus collinus* and *Diospyros melanoxylon.* Study area shows species rarity (those represented by individuals) of 18%. The Shannon-Weiner Index (H') is 4.51 with Simpson's value 0.92 infer that tropical dry deciduous forests are also species diverse systems. Mean stand density was 591 ha^{-1} and mean basal area was 25.50 m^2 ha^{-1}. Stand density and species richness have consistently decreased with increasing girth class of trees species. Girth class having <30 cm gbh contributed to about 68.13% of species richness. The present study can serve as baseline information for monitoring and sustaining the phytodiversity of tropical dry deciduous forests in the state of Orissa.

403. Sahu, S.C., Pattnaik, S.K., Dash, S.S. & Dhal, N.K. 2013. "Fibre-yielding plant resources of Odisha and traditional fibre preparation knowledge – An overview". *Indian J. Nat. Prod. Resources* 4(4): 339–347.

Abstract: The paper enumerates a brief overview of 26 different uses of 146 plant species belonging to 98 genera and 40 families in the state Odisha. A few case studies were carried out on some promising species to explore the traditional methods of fibre extraction and their various uses. The data mainly based on field surveys and ethnobotanical information collection through open ended/structured/Participatory Rural Appraisal (PRA) methods. This account not only provides valuable information on the untapped wealth of fibre genetic resources in Odisha but also creates an ample scope for cultivation and commercialization of few promising species.

404. Sahu, S.C., Sahoo, K., Jee, P.K. & Dhal, N.K. 2013. "Floral and microbial dynamics in relation to the physic-chemical constituents of the Devi-estuary of Odisha coast of the Bay of Bengal, India". *Indian J. Geo-Marine Sci.* 42(1): 90–96.

Abstract: The floristic and microbial diversity, were assessed with respect to the prevailing physico-chemical composition of the mangrove forest of the Devi estuary, Odisha. Floristic composition showed that *Avicennia officinalis* L., *A. alba* Blume, *Sonneratia apetala* Buch.-Ham. and *Acanthus ilicifolius* L. were dominant plant species. Microbial population dynamics was more, i.e., 3.34×10^6 CFU/gm at Bandara, and lower, i.e., 2.96×10^5 CFU/gm at Machamachikuda region of the mangrove sediments. *Aspergillus* and

Streptomyces species were most abundant microbes in the five sampling sites. Organic carbon content and pH were significantly correlated with microbial dynamics, whereas the salinity had negative relation. A positive correlation was found among the physico-chemical characters, viz., pH, organic carbon and salinity.

405. Santapau, H. 1951. 'Supplement to the Botany of Bihar and Orissa'. By Herbert Mooney, 1930. Review. *J. Bombay Nat. Hist. Soc.* 49: 768–770.

Abstract: It briefly reviews the 'Supplement to the Botany of Bihar and Orissa' by Mooney.

406. Sanyal, A. 1957. "Additional notes on the Botany of Bihar and Orissa by H.H. Haines and its supplement by Dr. Herbert Mooney". *Indian Forester* 83: 230–235.

Abstract: A total of 59 additional plant species have been added to the Botany of Bihar and Orissa by H.H. Haines and its Supplement by Dr. Herbert Mooney in the paper.

407. Sarangi, S. 1981. "A survey of climbers of Puri, Orissa". *Proc. 5th Annual Conf. Orissa Bot. Soc.* p. 36.

408. Satapathy, G.C. 1983. "Timber resources of Kalahandi district". *Proc. 8th Annual Conf. Orissa Bot. Soc. (Rayagada)*. p. 32.

Abstract: The major timber resources of the Kalahandi district of Orissa is *Careya arborea* Roxb., *Dalbergia sissoo* Roxb., *Gmelina arborea* Roxb., *Lannea coromandelica* (Houtt.) Merr., *Pterocarpus marsupium* Roxb., *Shorea robusta* C.F. Gaertn., *Tectona grandis* L.f., *Terminalia arjuna* Wight & Arn. and *T. tomentosa* Wight & Arn.

409. Satapathy, H.K., Sahu, N.C. & Misra, M.K. 1987. "Need and justification for cashew development in Orissa". *Cashew*: 7–12.

Abstract: This paper substantiates the ecological and economic arguments for cashew plantations in Orissa. The position of the state in relation to the other cashew growing states in India has been assessed. The physical and financial scope for cashew development has been examined. It is felt that cashew plantations and the industries based on it deserve more attention than what they receive now in Orissa.

410. Saxena, H.O. 1975. "A survey of plants of Orissa (India) for tannins, saponins, flavonoids and alkaloids". *Lloydia* 38(4): 346–351.

Abstract: A total of 138 plant samples collected from various parts of Orissa were studied for the presence of tannins, saponins, flavonoids and alkaloids. Of which 46 samples were found to be positive for tannins, 12 for saponins, 58 for flavonoids and 14 for alkaloids. The presence of alkaloids in five species is reported for the first time. The tannin content of nine samples was found to be between 3 and 10.5 per cent.

411. Saxena, H.O. 1976. "Additions to the flora of Bihar and Orissa". *J. Bombay Nat. Hist. Soc.* 73(3): 553–554.

Abstract: Nine species, viz., *Cassia hirsuta* L., *Crotalaria nana* Burm.f., *Euphorbia prostrata* Aiton, *Hibiscus prainii* Raizada & Chatterjee, *Justicia nilgherrensis* Wall. ex T. Anderson, *Merremia aegyptia* Urb., *Rothia indica* (L.) Druce, *Synedrella nodiflora* Gaertn. and *Tylophora tenuis* Blume have been recorded for the first time for the flora of Bihar and Orissa from Ganjam, Similipal reserve forest in Mayurbhanj district and tidal forests of Mahanadi delta. Occurrence of *Justicia nilgherrensis* Wall. ex T. Anderson in Orissa is of particular interest as it extends the distribution of the species from south, towards eastern India.

412. Saxena, H.O. 1976. "Notes on the flora of Bihar and Orissa". *Indian Forester* 102(5): 295–297.

Abstract: The paper describes two new records for Bihar and Orissa, namely *Ageratum houstonianum* Mill. and *Cyperus pulchellus* R. Br., and four species for Orissa besides notes on *Lindernia hirsuta* (Benth.) Wettst., *Portulaca tuberosa* Roxb., *Shuteria densiflora* Benth. and *Suaeda maritima* Dumort.

413. Saxena, H.O. 1977. "Floristic studies in Orissa". *Bull. Bot. Surv. India* 19(1–4): 39–41.

Abstract: The paper briefly outlines the five different types of forests and the botanical history of the state of Orissa.

414. Saxena, H.O. & Brahmam, M. 1978. "Additions to the Flora of Bihar and Orissa – II". *J. Bombay Nat. Hist. Soc.* 75: 941–942.

Abstract: A total of ten plant species, viz., *Cyperus pubisquama* DC., *Fimbristylis polytrichoides* Vahl, *Hydrocera triflora* (L.) Wight & Arn., *Jatropha glandulifera* Roxb., *Momordica cochinchinensis* (Lour.) Spreng., *Mucuna gigantea* DC., *Oldenlandia biflora* L., *Neopeltandra suberosa* (Müll.Arg.) Gamble, *Pittosporum napaulense* (DC.) Rehder & E.H. Wilson and *Sphaeranthus africanus* L. have been recorded for the first time for the Flora of Bihar and Orissa, from Ganjam, Bhubaneswar, Barang, Dhenkanal, Bhitarkanika and tidal forests of river Brahmani.

415. Saxena, H.O. & Brahmam, M. 1978. "Further contribution to the flora of Mahendragiri Hills (Orissa). *Indian J. Forest.* 1(1): 84–86.

Abstract: The paper records 96 species of plants (ferns, gymnosperms and angiosperms), which were not reported previously from Mahendragiri hills. Occurrence of *Stemona tuberosa* Lour. is interesting as there was no record of its occurrence in any previous collections from Bihar and Orissa.

416. Saxena, H.O. & Brahmam, M. 1979. "Industrially important minor forest products of Orissa". *Proc. Prod. Utilis. Forest Prod. (Jammu)* 3: 176–183.

417. Saxena, H.O. & Brahmam, M. 1983. "Grasses of Orissa". *Proc. 8th Annual Conf. Orissa Bot. Soc.* pp. 29–30.

Abstract: The paper records 264 species of indigenous grasses belonging to 83 genera, besides 18 species of cultivated grasses. The report is primarily based on the collections made by the authors during the floristic survey of Orissa state for over 12 years and also based on earlier reports from Orissa in the published literature or earlier collections in the Indian herbaria.

418. Saxena, H.O. & Brahmam, M. 1985. "Flora of Orissa state". In: Sharma, M.R. & Gupta, B.K. (eds.), *Glimpses of Plant Sciences*. Prof. M.B. Raizada Commemoration Volume. Dehra Dun. pp. 79–94.

419. Saxena, H.O. & Brahmam, M. 1985. "The Flora of Similipahar hills". *Proc. 9th Annual Conf. Orissa Bot. Soc.* pp. 26–27.

Abstract: The total number of species comprising the Flora of Similipahar hills is 990, representing 145 families of vascular plants. The gymnosperms are represented by only two species. The pteridophytes include 73 species of fern allies.

420. Saxena, H.O. & Brahmam, M. 1989. *The Flora of Similipahar (Similipal), Orissa with particular reference to the potential economic plants*. Regional Research Laboratory. Bhubaneswar.

Abstract: The book accounts for 1076 species representing 168 families of vascular plants. Nomenclature of the taxa has been updated as far as possible. Potential medicinal and other economic plants, ethnobotanical notes and results of phytochemical screening have been highlighted.

421. Saxena, H.O. & Brahmam, M. 1994. "Family Malvaceae in Orissa". *J. Econ. Taxon. Bot.* 18(2): 351–369.

Abstract: Family Malvaceae in Orissa is represented by 38 species belonging to 12 genera. Key to the genera, species and infraspecific taxa have been given. Up-to-date nomenclature, brief description of this plant and notes on the occurrence and phenology have been given for each taxon. *Malvastrum coromandelianum* (L.) Garcke is a new record for Orissa and *Sida rhombifolia* L. subsp. *retusa* (L.) Borss.Waalk. and *Hibiscus lunarifolius* Willd. are new records for Bihar and Orissa.

422. Saxena, H.O. & Brahmam, M. 1995. "Vascular flora of Gandhamardan hills". *J. Econ. Taxon. Bot.* 19(1): 113–132.

Abstract: Gandhamardan of Ramayana, reputed as a repository of a variety of medicinal plants, the area has been surveyed and 781 species of vascular plants including 30 species of cultivated plants are enumerated in this paper. *Crotalaria striatula* DC. var. *acutifolia* Trim. and *Echinops echinatus* DC. are new records for Bihar and Orissa.

423. **Saxena, H.O. & Brahmam, M. 1996.** *The Flora of Orissa*. Vols. I–IV. [Vol. **1** (**1994**): Ranunculaceae to Fabaceae; Vol. **2** (**1995**): Rosaceae to Martyniaceae; Vol. **3** (**1995**): Acanthaceae to Commelinaceae; Vol. **4** (**1996**): Flagellariceae to Poaceae, Gymnosperms and Pteridophyta]. Orissa Forest Development Corporation Ltd., Bhuabneswar.

Abstract: The Flora includes 2576 species (2417 indigenous and 159 cultivated species) of angiosperms belonging to 994 genera and 185 families. The Flora also includes 10 species (7 cultivated and 3 indigenous) of gymnosperms belonging to 2 genera in 2 families, and 141 species of pteridophytes belonging to 66 genera and 41 families.

424. **Saxena, H.O., Brahmam, M. & Dutta, P.K. 1979.** "A survey of *Costus speciosus* (Koenig) Sm. for diosgenin in Orissa". *Indian Pharm. Sci.* 41: 64.

425. **Saxena, H.O., Brahmam, M. & Raizada, M.B. 1980-82.** "Annotated list of vascular plants of Bhubaneswar". *Indian J. Forest.* 3: 67–80; 3(3): 204–210; 5(2): 99–104.

Abstract: The paper deals with an account of the flora of Bhubaneswar and its environs. A total of 681 species of phanerogams and pteridophytes belonging to 134 families were recorded. Thirteen species (marked by asterisk) are new records for Orissa, out of which six are new records for both Bihar and Orissa (marked by double asterisk).

426. **Saxena, H.O., Dutta, P.K. & Brahmam, M. 1978.** "A survey of Vetiver, Lemongrass and *Hyptis suaveolens* in Orissa for their essential oils". *Indian Perfumer* 22(4): 298–299.

Abstract: Vetiver, Lemongrass and *Hyptis suaveolens* have been found growing abundantly in wild state in different parts of Orissa. The essential oil content in vetiver roots shows a variation from 0.02 to 0.20 per cent. There are apparently two distinct types, one with white roots and the other with brownish roots. The brownish type which is more abundant in Orissa, is however poor in quality. Lemongrass contains 0.20 per cent oil but the oil has negligible quantity of citral. *Hyptis suaveolens* leaves contain 0.1 per cent oil, which can find some use in low grade perfumes.

427. **Sharma, C.B.S.R., Behera, B.N. & Dash, S.K. 1978.** "A cytological study of some grasses from Orissa, an Eastern coastal belt of India". *Proc. Indian Acad. Sci., Pl. Sci.* 87B: 355–360.

Abstract: A preliminary cytological screening of 19 grasses of coastal Orissa revealed three new records of chromosome numbers and nine variations from earlier reports. These variations are due to polyploidy and aneuploid gains and losses. Interestingly

only seven species have chromosomes conforming to the earlier reports. Nine seems to be the commonest basic number. This report incidentally is the first ever cytological study of Poaceae of this coastal belt.

428. Singh, A.K., Das, P.K., Singh, V.R.R. & Singh, R. 2015. "Vegetation survey of the Panchpatmali Bauxite mine area, Koraput district, Orissa". *Indian Forester* 141(6): 591–598.

Abstract: The study reports the vegetation survey of naturally occurring plant species found at Panchpatmali bauxite mine area at its undisturbed state and also after plantation without mining for bauxite and at rehabilitated sites of various ages after bauxite mining. Altogether 9, 12 and 23 species of shrubs and 43, 34 and 113 species of herb/lianas were recorded during pre-monsoon period in virgin area, unmined area and rehabilitated over burden (OB) area, respectively. These figures were 9, 13 and 24 for shrubs, and 68, 51 and 163 for herb/lianas during post-monsoon period in virgin area, unmined area and rehabilitated over burden (OB) area, respectively. A total of 225 species belonging to 56 families were recorded for the study area.

429. Singh, J.N. & Sastry, A.R.K. 1985. "Mineral storage and edaphic relationship of a few forage grasses of Similipal Tiger Reserve, Orissa". *Indian J. Forest.* 8: 114–118.

Abstract: The study incorporates results on mineral storage capacity of six constituent grass species of grasslands in the Similipal National Park (one of the Tiger Project areas in India), Orissa. Besides, analytical studies on edaphic conditions of these grasses have also been made to establish the phytopedon relationship in the grasslands. The results reveal the grasses to be a rich source of mineral content snad also of the prevalence of balanced habitat conditions in these grasslands. The paper is concluded with some suggestions related to the eco-management aspects of these grasslands, which are so vital for the wildlife in the National Park.

430. Singh, J.S. & Verma, D.M. 1964. "A contribution to the forest botany of the Angul division of Orissa state". *J. Sci. Res. Banaras Hindu Univ. Varanasi* 14(2): 222–232.

431. Sinha, M.K. 1982. "Important fruit and timber yielding plants of Keonjhar". *Proc. 7th Annual Conf. Orissa Bot. Soc.* p. 26.

432. Sinha, R. & Lakra, V. 2007. "Edibel weeds of tribals of Jharkhand, Orissa and West Bengal". *Indian J. Tradit. Knowl.* 6(1): 217–222.

Abstract: An extensive survey was carried out among ten ethnic groups in Jharkhand, Orissa and West Bengal of Eastern India to document edible plants, which grow as weeds in their agricultural and non-agricultural fields. Data were collected through PRA exercises and interview schedules covering 8 districts, 10 community developed block and 12 villages. The study identifies 43 species of weeds belonging to 36 genera and

26 families that are commonly consumed by the tribal population as per their availability. The habit, season as well as place of procurement and edible part of these plants have been discussed.

433. Sri Ramamurthy, K. & Pullaiah, T. 1998. "A taxonomic account of the genus *Indigofera* L. in Eastern Ghats, India". *J. Econ. Taxon. Bot.* 22: 391–396.

Abstract: The genus *Indigofera* L. is represented by 25 species in Eastern Ghats of Tamil Nadu, Andhra Pradesh and Odisha. In the present communication, key to species, up-to-date nomenclature, a brief description and distribution of each taxon have been provided.

434. Sri Ramamurthy, K., Sandhya Rani, S. & Pullaiah, T. 1997. "Genus *Tephrosia* Pers. (Faboideae–Fabaceae) in Eastern Ghats". *J. Indian Bot. Soc.* 76: 201–206.

Abstract: The genus *Tephrosia* Pers. is represented by 11 species in Eastern Ghats. The paper provides general characters of the genus, i.e., vegetative parts, inflorescence, flowers, fruits, uses and phenology. Field key to the species, up-to-date nomenclature, brief description and distribution of each species have been provided.

435. Sri Ramamurthy, K., Sandhya Rani, S. & Pullaiah, T. 1998. "*Desmodium* Desv. (Faboidea) in Eastern Ghats, India: A systematic survey". *J. Bombay Nat. Hist. Soc.* 95: 536–542.

Abstract: *Desmodium* Desv. is mainly of tropical and subtropical in distribution and comprises of about 450 species, of which nearly 47 species, 12 subspecies and 8 varieties are found in India. In the Eastern Ghats, *Desmodium* is represented by 18 species, of which 5 are restricted in their distribution, i.e., *D. caudatum* is rare in Paderu, Vishakhapatnam, *D. ferrugineum* and *D. repandum* are common in Shevaroy and Kolli hills; *D. pryonii* is rare in Udayagiri of Seshachalam hills of Nellore district and *D. biarticulatum* is occasional in Araku valley and Seshachalam hill ranges. *Desmodium benthamii* is restricted to northern Eastern Ghats. *Desmodium gangeticum, D. heterocarpon, D. laxiflorum, D. triflorum, D. pulchellum* and *D. velutinum* are common throughout the Eastern Ghats. *Desmodium alysicarpoides, D. dichotomum, D. heterophyllum, D. motorium, D. triangulare* and *D. triquetrum* are occasional in their distribution in different regions.

436. Sri Ramamurthy, K., Sandhya Rani, S. & Pullaiah, T. 2000. "Genus *Dalbergia* L.f. (Leguminosae: Faboideae) in Eastern Ghats". *J. Econ. Taxon. Bot.* 24: 133–139.

Abstract: A systematic account of the genus *Dalbergia* L.f. is presented for Eastern Ghats. Altogether seven species are treated including an introduced and naturalized species. *Dalbergia rubiginosa* Roxb. is a new record to Andhra Pradesh. General characters of the genus, key to the species, up-to-date nomenclature, brief description, phenology, uses and distribution of each species have been provided in the paper.

437. Sri Ramamurthy, K., Sandhya Rani, S., Reddy, P.R. & Pullaiah, T. 1998. "Potential resources of Leguminosae in Eastern Ghats, India". *J. Econ. Taxon. Bot.* 22: 29–36.

Abstract: Eastern Ghats is spread over three states (11º30'–22º N and 76º50'–86º30' E in a northeast to southwest strike) of India, namely Odisha, Andhra Pradesh and Tamil Nadu. The paper deals with general information, i.e., area, geology, soil, climate, floristic wealth, phytogeographical divisions, vegetation types, previous explorations and systematic enumeration. In Eastern Ghats, Leguminosae (nom. alt. Fabaceae) are represented by 85 genera and 340 species. The family Leguminosae and its resources can be broadly divided into medicinal, edible and vegetable, timber, fibre, dyes, fodder, gums and ornamental resources.

438. Srinivasan, K.S. & Rao, G.V.S. 1961. "The Flora of Parlakimedi and its immediate neighbourhood". *J. Bombay Nat. Hist. Soc.* 58: 155–170, 407–419.

Abstract: A total of 286 species of flowering plants under 229 genera and 75 families from the Parlakimedi area have been enumerated in the paper. A study of the flora, as now presented, reveals at least 45 species as new records for Ganjam district, not being reported so far in earlier floras.

439. Subudhi, H.N. 1991. *Flora of Cuttack district*. Ph.D. Thesis, Utkal University, Bhubaneswar (unpublished).

440. Subudhi, H.N. & Choudhury, B.P. 1993. "Addition to the Flora of Orissa – I". *J. Bombay Nat. Hist. Soc.* 90: 322–323.

Abstract: Three species, viz., *Hibiscus talbotii* (Rakshit) T.K. Paul & M.P. Nayar (Malvaceae), *Vahlia digyna* (Retz.) Kuntze (Vahliaceae) and *Nesaea brevipes* Koehne (Lythraceae) turned out to be new records for the state of Orissa from Cuttack district.

441. Subudhi, H.N. & Choudhury, B.P. 1998. "Mangrove forest of Mahanadi delta (Orissa) and their conservation". *Geobios (Jodhpur)* 25(4): 215–220.

442. Subudhi, H.N. & Choudhury, B.P. 1999. "Grass Flora of Cuttack district, Orissa". *J. Econ. Taxon. Bot.* 23(3): 731–734.

Abstract: The paper deals with systematic account of grasses of Cuttack district. A total of 112 species of grasses belonging to 64 genera that have been collected from the study area are identified and preserved. The nomenclature has been made up-to-date and species under each genus are arranged alphabetically, followed by synonyms, wherever available. *Paspalum vaginatum* is turned out to be a new record for Orissa from Cuttack district.

443. Subudhi, H.N. & Choudhury, B.P. 2000. "Vegetation of rice fields in Cuttack district (Orissa)". *J. Econ. Taxon. Bot.* 24(1): 157–159.

Abstract: The paper deals with vegetation study in rice fields of Cuttack district. A total of 195 angiospermic species have been collected, identified and housed in the herbarium of P.G. Department of Botany, Utkal University, Bhubaneswar.

444. Subudhi, H.N. & Dixit, N. 1998. "Weed flora of rice fields in Orissa". *J. Econ. Taxon. Bot.* 22(3): 737–739.

Abstract: A total of 180 weeds of paddy fields in Orissa during Kharif and Rabi crop seasons have been enumerated. Of which, 110 species are dicotyledons and 70 are monocotyledons.

445. Subudhi, H.N., Choudhury, B.P. & Acharya, B.C. 2002. "Systematic enumeration of plants from Orissa coast". *J. Econ. Taxon. Bot.* 26(1): 185–192.

Abstract: The paper deals with systematic account of plants from Orissa coast. During the study, 171 angiospermic species under 124 genera belonging to 57 families have been collected, identified and housed in the herbarium of P.G. Department of Botany, Utkal University, Bhubaneswar. Cyperaceae are the dominant family followed by Fabaceae and Rhizophoraceae. Families are arranged according to modified Bentham & Hooker's system of classification. The genus and species are arranged alphabetically under each family and genus, respectively. The species are followed by synonyms occurring in "The Botany of Bihar and Orissa" wherever available.

446. Subudhi, H.N., Choudhury, B.P. & Acharya, B.C. 2006. "Flora of Cuttack district (Orissa) – Vegetation types". *J. Econ. Taxon. Bot.* 30(1): 25–35.

Abstract: Cuttack is one of the coastal districts of Orissa, covering an area of 11,142 km^2. Due to various biotic factors the natural vegetation has been devastated. A survey programme has been documented to document the floristic elements present in this district. Through this study, 1017 angiospermic species belonging to 591 genera under 133 families have been collected. These have been housed in the herbarium of P.G. Department of Botany, Utkal University, Bhubaneswar. A concise account of major vegetational types along with representative elements has been presented in this paper. Dominant families, rare/threatened and new record of species have been listed. Conservation strategies of these taxa have been suggested.

447. Subudhi, H.N., Panda, S.P. & Nayak, P.K. 2006. "Comparative floristic survey of mangroves in Mahanadi delta and Bhitarkanika Wildlife Sanctuary (Orissa)". *J. Econ. Taxon. Bot.* 30(1): 157–160.

Abstract: This paper deals with floristic survey of mangroves in Mahanadi delta and Bhitarkanika Wildlife Sanctuary. All the species have been identified, preserved and housed in the herbarium of P.G. Department of Botany, Utkal University, Bhubaneswar.

The status, habit and occurrence of 66 species of mangroves and associates in both areas have been compared and presented in a table.

448. Subudhi, H.N., Misra, S., Saha, D. & Choudhury, B.P. 1996. "Addition to the flora of Orissa – III". *J. Econ. Taxon. Bot.* 20(3): 671–672.

Abstract: Three species, viz., *Fimbristylis griffithii* Boeckeler (Cyperaceae), *Azima sarmentosa* (Blume) Benth. & Hook.f. (Salvadoraceae) and *Salsola baryosma* (Roem. & Schult.) Dandy (Chenopodiaceae) turned out to be new record for the state of Orissa from Cuttack district.

449. Subudhi, H.N., Panda, S.P., Behera, P.K. & Patnaik, C. 2015. "A check list of weeds in rice fields of coastal Orissa, India". *J. Agric. Sci.* 7(6): 207–216.

Abstract: A survey was undertaken to different ice ecologies to collect, identify and conserve the weed species as herbarium specimens in coastal districts of Odisha. In this programme, 201 angiosperm taxa and 3 pteridophytes under 146 genera belonging to 56 families were collected, identified and documented. Poaceae were the dominant family followed by Fabaceae and Cypeaceae. Families are arranged according to modified Bentham & Hooker's system of classification in the enumeration. Genus and species were arranged alphabetically under each family and genus. The number of weed species was more in upland followed by irrigated, semi deep water and deep water. Conservation strategies ae also highlighted in this paper.

450. Subudhi, H.N., Panda, S.P., Bose, L.K. & Choudhury, B.P. 2004. "Survey of weed flora in rice fields of Orissa". *Bull. Pure Appl. Sci.* 23B(2): 111–122.

Abstract: This paper deals with systematic enumeration of weeds from different ecologies of rice fields in the state of Orissa. A total of 199 angiospermic species under 146 genera belonging to 55 families and three pteridophytic species were collected, identified and deposited in the herbarium of P.G. Department of Botany, Utkal University, Bhubaneswar and Genetic Resources Division of CRRI, Cuttack. Correct nomenclature of each species is followed by habit, phenology and ecology. The dicot and monocot ratio is 1.6: 1. The number of weeds are more in upland (65) followed by irrigated (61), semi-deep (55) and deep water ecosystems (21). The dominant families are Poaceae (31), followed by Fabaceae (20), Cyperaceae (17), Asteraceae (11) and Scrophulariaceae (11). Genera and species are arranged alphabetically under each family and genus, respectively. The families are arranged according to Bentham & Hooker's system of classification (1862–1883).

451. Subudhi, H.N., Panda, S.P., Nayak, R.K. & Choudhury, B.P. 2002. "Weed flora of deep water rice fields in Orissa". *Pl. Sci. Res.* 24(1&2): 50–52.

Abstract: This paper deals with collection of deep water rice weeds from different places of Orissa. During this survey 76 species have been collected, identified and deposited in P.G. Department of Botany Utkal University, Bhubaneswar. Correct nomenclature along with family name and habit of each species has been provided in brief.

452. Subudhi, H.N., Panda, S.P., Nayak, R.K. & Choudhury, B.P. 2002. "Diversity of wild rice in Orissa and necessity for conservation". In: Sahoo, S., Ramesh, D.B., Panda, P.K. & Misra, V.N. (eds.), *Proceedings of the National Seminar on Plant Resources Utilization for Backward Area Development.* Allied Publishers Pvt. Ltd., New Delhi. pp. 6–11.

Abstract: This paper deals with collection of *Oryza* species and its wild relatives from Orissa. The origin and diversity of each species are highlighted. Ecology, diagnostic characters of each species with correct nomenclature are provided. Conservational aspects are dealt with in brief.

453. Subudhi, H.N., Swain, D., Panda, S.P. & Choudhury, B.P. 2008. "Biodiversity of wild rices in Orissa and necessity for conservation". *Bull. Pure Appl. Sci.* 27B (1&2): 1–12.

Abstract: This paper deals with collection of wild rices and their wild relatives from Orissa. Origin, diversity and taxonomy of each species are given. Correct nomenclature, diagnostic characters, phenology, ecology, distribution and nomenclatural notes of the species, viz., *O. nivara, O. rufipogon, O. granulata, O. officinalis, O. meyeriana, O. sativa* f. *spontanea, Hygroryza aristata, Leersia hexandra* and *Porteresia coarctata* are discussed in brief. Conservational strategies and needs for future research are also highlighted in brief.

454. Swain, A., Das, T. & Rath, S.P. 2002. Diversity of aquatic macrophyte vegetation in the east coast of Orissa. In: Sahoo, S., Ramesh, D.B., Panda, P.K. & Misra, V.N. (eds.), *Proceedings of the National Seminar on Plant Resources Utilization for Backward Area Development*. Allied Publishers, New Delhi. pp. 46–55.

Abstract: A total of 85 aquatic/wetland macrophytes have been enlisted under 58 genera and 37 families. The paper also highlights the decline in the population of certain aquatic macrophytic species due to change in the chemistry of water and dominance of invasive species.

455. Swain, A., Das, T. & Rath, S.P. 2002. "Composition and distribution pattern of aquatic angiosperms along the east coast of Orissa". *Pl. Sci. Res.* 24(1&2): 21–30.

Abstract: Aquatic macrophyte grows in, on and around water bodies including rice fields. Hydrophytes are found sustained in diverse habitats including vast tracts of flood plain depressions and rice fields. It equally signals the poor ecological integrity of the

dominating water bodies in relation to organic nutrient load impacting algal blooms. The invasive aquatic species, viz., *Eichhornia crassipes* encroaches all form of waterbeds, less in running and saline water and dominant in roadside water logged areas. The east coast of Orissa, in spite of phytogeographic contrast harbours rich diversity of aquatic plants horizontally in vast tracts of flood plains and disrupted dead river channels, while the vertical distribution of aquatic macrophyte diversity found reduced from coast to the delta head. However, the oxbow lake Ansupa still harbours a rich source of diversity which indicates the sustained forms thriving in some biological forms in degraded waters. Vertical distribution of species as observed in Ansupa Lake deviates from the normal observation of reduced diversity and less species count but species rich in comparison to Kanjia Lake of Orissa. Depth-wise distribution of submerged species count is very poor, that too, they are found in surface water. It puts a question mark on biological health of water bodies. The water and sediment chemistry appeared dynamic in relation to vegetation composition pattern and distribution of aquatic species. The major changes in the trophic status and use of water bodies must be taken into account that predicts biological health of the water bodies. However, it needs further investigation. Overlapping growth forms of hydrophytes adapted to life might have been linked to the trophic condition of water bodies arising out of local pressure and environmental changes.

456. Swain, A., Das, T.K. & Rath, S.P. 2004. "Impact assessment on nutrient load to coastal wetlands with special reference to Bhitarakanika estuarine water". *Pl. Sci. Res.* 26(1&2): 33–40.

Abstract: Human-nature conflicts have accelerated nutrient fluxes to the estuarine waters. Environmental changes including nutrient fluxes have strained watershed properties. The coastal pristine estuaries are overloaded with the nutrients drained from catchments including up streams. Carbon, Nitrogen, Phosphorous, Silicon and in particular the N retention has shown large fluctuations in surface waters, might be the influence of tidal restriction gates on mangrove litter mass decomposition rate, catchment's properties and reduction of water exchange capacity. It has been shown that N:P ratios in different segments of the estuarine ecosystem have shown variable properties in relation to vegetation distribution. The Si' flux to estuaries has been significantly reduced. The retention 'P' has been more in swamp waters. Climatic shifts in relation to precipitation and temperature are considered as dynamic variables in relation to increased or decreased N retentions. The reduced N:P ratio is linked to climatic warming. The increased warming and reduced precipitation were found linked to the reduction in N, P and Si export to estuaries. An increase in N concentration in estuarine water was probably relied on the increased CO_2 concentration.

457. Swain, B.K. 2005. *The Bamboos of Orissa*. Forest Department, Government of Orissa, Bhubaneswar.

Abstract: The book contains morphology, uses, method of propagation, pests and diseases and the management practices of 12 bamboo species growing in Orissa. The identifying characters of each species have been illustrated in the shape of colour photographs. It also covers the current policy of bamboo, cutting rules and bankable schemes for commercial cultivation.

458. Swain, D. 2014. "State of forest in Similipal Tiger Reserve, Odisha, India: A case study". *Indian Forester* 140(11): 1049–1055.

Abstract: Similipal Tiger Reserve, Odisha, was designated as a Tiger Reserve in 1973. As of December, 2006, core area of the Reserve constituted 906.26 km^2 and buffer area was 1304.49 km^2. The forest cover of Similipal for the year 1997, 2003 and 2006 was assessed using the satellite data of IRS–1D, sensor LISS–III, spatial resolution 23.5 × 23.5 m and spectral resolution 4 bands. The results of such assessment have been presented in this paper. Dense forest constitutes 87.81% area of Similipal forests, whereas open and degraded (scrub) forest constitute 5.65% and 3.24%, respectively. Grassland, crucial for wild ruminants is only 0.04% and it is available in the core area. Barren rocky/stony waste constitutes 2% of the Similipal forests. Water bodies, mostly in the form of streams flowing inside Similipal form 0.23%. Tree-clad area is 0.12%. Agricultural land and built-up land is 0.9%. Similipal witnessed decrease of 252.71 km^2 dense forests in six years from 1997 to 2003 and increase of 347.87 km^2 in three years from 2003 to 2006. There is increase of open forests of 343.82 km^2 from 1997 to 2003 and decrease of 330.56% km^2 from 2003 to 2006. Degraded forests have decreased by 34.56 km^2 between 1997 and 2003 and 27.47 km^2 between 2003 and 2006. Forest biomass carbon stock of Similipal has been estimated to be 16–31 million tons of carbon. The dense forest cover of Similipal has been high potential to mitigate CO_2 emission in the locality.

459. Swain, D. & Nanda, F.B. 1997. Study of plant biodiversity in a newly established preservation plot inside Similipal National Prak, Orissa. In: Tripathy, P.C. & Patro, S.N. (eds.), *Similipal*: *A natural habitat of unique biodiversity*. Orissa Environmental Society, Bhubaneswar, pp. 46–59.

460. Tewary, P.K., Dutt, B. & Rao, G.S. 1991. "Useful weeds in mulberry fields of Ramgiri, Orissa". *J. Econ. Taxon. Bot.* 15(3): 529–538.

Abstract: About 100 weed species have been collected from Ramgiri mulberry fields in different seasons, of which 65 species belonging to 58 genera in 26 families are of economic importance; and are mostly of medicinal important. All the 65 species are

described along with the habit in brief and their economic importance. Botanical names and local names followed by original citation, family names in parenthesis, flowering and fruiting data and nativity are provided for each species. Abundance and rareness of the species have been calculated.

461. Tripathy, G. & Misra, G. 1988. "Studies on the weeds flora associated with wheat crop". *J. Indian Bot. Soc.* 67: 227–228.

Abstract: Three year survey of the weed flora of wheat fields in and around Karanjia in Mayurbhanj district of Orissa revealed the presence of 78 species distributed over 57 genera and 24 families. They are categorised as grasses, sedges and broad-leaved weeds.

462. Tripathy, P.C. 1997. Plant biodiversity of Similipal: How to save it. In: Tripathy, P.C. & Patro, S.N. (eds.), *Similipal*: *A natural habitat of unique biodiversity*. Orissa Environmental Society, Bhubaneswar. pp. 41–45.

463. Upadhyay, V.P. & Mishra, P.K. 2008. "Population status of mangrove species in estuarine regions of Orissa coast, India". *Trop. Ecol.* 49(2): 183–188.

Abstract: The mangrove ecosystems are store-house of economically important resources such as trees, fishes and prawns and other marine organisms. The study highlights the effect of natural and man induced stresses on regeneration and population status of mangroves of Bhitarkanika National Park, Orissa. The species such as *Cynometra ramiflora, Rhizophora mucronata* and *Sonneratia apetala* had lesser number of juveniles compared to other species of Bhitarkanika. The juvenile population across all sites and species ranged between 6 and 18% and individuals of mature/reproducing category ranged between 70 and 94. Among factors responsible for tree death, harvesting and cutting are the most important followed by old age mortality. The large gap in numbers of juvenile and mature population in the study sites suggests that a conservation and management plan is needed to define and develop regeneration strategies.

464. Upadhyay, V.P. & Mishra, P.K. 2014. "An ecological analysis of mangrove ecosystem of Odisha on the eastern coast of India". *Proc. Indian Natl. Sci. Acad.* 80(3): 647–661.

Abstract: The paper deals with ecological investigation of mangrove ecosystem of Bhitarkanika Sanctuary in Odisha. The structural parameters like height, diameter and basal area of mangrove tree species at four sites of the sanctuary, viz., Bhitarkanika, Dangmal, Thakurdia and Kakranasi, were measured and compared with the mangroves of other parts of the world. Dominance diversity curve was found lognormal in shape for this area representing high diversity condition. Of the 29 species recorded from the study sites, only 8 species were common at all sites. The trees with higher DBH classes were found in the protected core sites of Bhitarkanika and Dangmal. *Avicennia officinalis*

and *Sonneratia apetala* formed the top storey in the river bank regions in Bhitarkanika and Dangmal forest blocks, whereas *Sonneratia caeseolaris* and *Rhizophora mucronata* formed top canopy in the river bank areas of Thakurdia and Kakranasi blocks. *Excoecaria agallocha* and *Hertiera fomes* generally have higher basal area and they formed the top storey in the interior forest areas at all sites. Across all sites and species, it was observed that *Excoecaria agallocha, Avicennia officinalis* and *Hertiera fomes* accounted for more than 50% of the total Importance Value Index (IVI) in Bhitarkanika Sanctuary. The mangroves of Bhitarkanika have lower heights, low basal area and higher number of plants compared to other mangroves of the world. The riverine species of Bhitarkanika ecosystem have much higher complexity index values than other mangrove ecosystems of the world, which indicates that this ecosystem is favourable to a diversity of mangrove species.

465. Upadhyay, V.P., Mishra, P.K. & Sahu, J.R. 2008. "Distribution of mangrove species within Bhitarkanika National Park in Orissa, India". *Trees Life J.* 3: 1–5.

Abstract: Mangrove forests are extraordinarily diverse coastal communities anchored by salt-tolerant plants along certain tropical seacoasts. Their distinctive aerial roots help to trap sediment, prevent shoreline erosion, and provide habitat for a variety of sea life. Their unique mode of viviparous reproduction (producing seeds that germinate before becoming detached from the parent plant) allows for the rapid dissemination of viable young plants. Mangrove swamps or forests are among the most productive wetlands on the planet. They are also under intense pressure from development, population spread and pollution. The mangroves of Bhitarkanika National Park in the Kendrapara district of Orissa (located at approximately 20˚40' N, 87˚00' E) make up about 700 of the 2500 km^2 of mangroves on India's east coast. This mangrove forest is home to one of the largest nesting colonies of sea birds in India, including a variety of egrets, cormorants and herons, as well as an enormous diversity of fish, shrimp, prawn, crabs and other large marine animals including saltwater crocodiles and sea turtles. The following report evaluates species density and relative distribution amongst four sites within the Bhitarkanika reserve, using standard ecological sampling methodology.

466. Venkatappa, N. & Pullaiah, T. 2002. "Solanaceae in Eastern Ghats". *J. Econ. Taxon. Bot.* 26: 121–127.

Abstract: In Eastern Ghats (11˚30'–22˚ N and 76˚50'–86˚30' E), Solanaceae are represented by 34 species belonging to 12 genera. *Solanum* is the largest genus represented by 16 species followed by *Datura* with 5 species and *Physalis* 3 species. *Capsicum* and *Cestrum* are represented by two species each, while *Brugmansia, Cyphomandra, Lycianthus, Lycopersicon, Nicandra, Nicotiana* and *Withania* by one species each. High species diversity is seen in southern Eastern Ghats.

467. Verma, S.K. & Totey, N.G. 1996. "Plant diversity in Tabada preservation plot, Orissa". *My Forest* 32(1): 63–71.

Abstract: Analyses of vegetation in Tabada preservation plot (Orissa) are described. *Alangium lamarckii* is the dominant tree species in preservation plot and *Holarrhena antidysenterica* in unpreserved plot with maximum density and frequency. In general the distribution of the tree species is random and contagious. The index of diversity is higher for preserved plot in comparison to unpreserved one. The population structure of most of the species exhibited by having most of individuals in higher girth classes with the absence of seedlings and saplings. Certain tree species show the gap phase type (interrupted) regeneration pattern.

468. Verma, S.K. & Totey, N.G. 1996. "Vegetation diversity in permanent preservation plot in Malyagiri, Orissa". *My Forest* 32(2): 49–56.

Abstract: A study was conducted to know the plant diversity in Malyagiri preservation plot. *Symplocos racemosa* is the dominant tree species in preservation plot and *Bridelia retusa* in unpreserved plot. The distribution of the tree species is random and contiguous in preservation plot. The index of diversity is higher for preserved plot than unpreserved one. The population structure is general is exhibited by species individuals in intermediate as well as higher girth classes with the absence of seedlings. Certain species show the gap phase type (interrupted) regeneration pattern.

Fungi, Lichens, Algae, Bryophytes, Pteridophytes and Gymnosperms

469. Adhikary, S.P. 1998. "Cyanobacteria Germplasm of Orissa State maintained at the Department of Botany, Utkal University". *Pl. Sci. Res.* 20(1&2): 57–63.

Abstract: A cyanobacterial germplasm collection comprising 199 species/strains has been established at the P.G. Department of Botany, Utkal University. These organisms have been isolated from different ecological niches of Orissa such as rice fields, freshwater bodies, brackish water of estuaries, sea coast and the exposed rock surface, of temples. Few species isolated from related ecological habitats of other parts of India and those obtained from other established culture collections were also maintained. Desired isolates can be used for study and research work in colleges and universities, and also by the farmers and entrepreneurs as biofertilizers for rice growing.

470. Adhikary, S.P., Jena, M. & Rath, J. 2009. "Soil and freshwater algae from coastal region of Orissa state, India". *Biblioth. Phycol.* 115: 1–166.

Abstract: A total of 370 taxa of algae belonging to 87 genera under 35 families, 18 orders and 5 phyla, Cyanobacteria (Cyanophyta), Euglenozoa, Ochrophyta, Chlorophyta and Charophyta were reported from the coastal regions of Orissa state. Of these, 25 species (6 from Cyanophyta, 3 from Euglenozoa and 16 of Chlorophyta) are reported for the first time from India. For each taxon, place of occurrence and habitat have been provided.

471. Adhikary, S.P., Keshari, N., Urzi, C. & De Philippis, R. 2015. "Cyanobacteria in biofilms on stone temples of Bhubaneswar, Eastern India". *Algol. Stud.* 147: 67–93.

Abstract: The exterior facades of several stone temples of Bhubaneswar (eastern India), built during the 6th to 13th centuries, are now covered with blackish brown biofilms dominated by cyanobacteria. The architectural carvings show various degrees of deterioration of lithic faces underneath the biofilms, indicating the contribution of these phototrophic microorganisms to this process. A total of 17 species of cyanobacteria, belonging to the genera *Gloeocapsa, Gloeocapsopsis, Porphyrosiphon, Leptolyngbya, Lyngbya, Phormidium, Nostoc, Scytonema, Tolypothrix, Hassallia* and *Stigonema* were found in biofilms during the hot months of the tropical summers. The organisms were identified on the basis of their morphological features and those species that were isolated in pure culture were taxonomically validated by 16S rRNA gene sequencing. The temperature at the exterior of these stone monuments exceeds 60°C, especially during summer, coupled with extreme dryness. Consequently, only cyanobacteria are able to form biofilms. In contrast, during the rainy season, biofilms contained 25 additional cyanobacteria species belonging to the genera *Cyanosarcina, Gloeocapsopsis, Phormidium, Pseudophormidium, Schizothrix, Lyngbya, Plectonema, Nostoc, Scytonema, Tolypothrix, Dichothrix* and *Calothrix* together with the green alga *Chlorella sphaerica*.

472. Alam, A., Behera K.K., Vats, S. & Isbal, M. 2013. "A preliminary study on bryodiversity of Similipal Biosphere Reserve (Odisha), India". *Arch. Bryol.* 157: 1–9.

Abstract: Similipal Biosphere Reserve is a part of biotic province of Chotanagpur Plateau. It has a representative ecosystem under Mahanadian biogeographic region. Its biodiversity is an assemblage representation of Western Ghats and Northeast India. Regarding bryophytes this area was rather unexplored and the current investigation shows the occurrence of 33 taxa of bryophytes in this biosphere reserve and its neighbouring areas. Each species has been enumerated with its ecological and distributional details.

473. Bahuti, R., Rath, C.C. & Mohapatra, U. 2006. "Physico-chemical and mycological studies of selected **soil** samples from Simlipal Biosphere Reserve". *Pl. Sci. Res.* 28(1&2): 1–7.

Abstract: Seven composite soil samples were collected at different geographical locations from Simlipal *Biosphere* Reserve (SBR) and studied for their physico-chemical parameters and fungal diversity. The soil was observed to be acidic and rich with minerals. The organic carbon percentage and N-P-K contents were *reported to be very* high. In *toto* twenty three fungi belonging to five different genera, *viz., Aspergillus, Penicillium, Paecilomyces, Acremonium* and *Curvularia* were isolated. Total fungal load ranged between 10^3 to 10^5 CFU/gm of soil. *Aspergillus* and *Penicillium* sp. accounted for 47.07% and 35.29%, respectively, whereas, *Paecilomyces, Acremonium* and *Curvularia* sp. accounted for 5.8% each. The isolates showed highest growth in PDA followed by RBA and CDA. Approximately 86.95%, 65.2%, 47.2% and 69.56% of the isolates showed extracellular enzymatic activity for amylase, protease, lipase, and phosphatase respectively, by plate assay method.

474. Behera, C. 2008. *Algal diversity of Ansupa Lake*. M.Phil. Dissertation, Utkal University, Bhubaneswar (unpublished).

Abstract: A total of 125 algal taxa belonging to Cyanophyta (Cyanoprokaryota/Cyanobacteria), Euglenophyta, Chlorophyta, Charophyta and Bacillariophyta were recorded from Ansupa Lake, Orissa. The green algal forms were dominant in the lake followed by diatoms and blue-green algae.

475. Behera, J.K. & Nayak, S.K. 1994. "Survey of *Cycas* vegetation in Orissa". *18th Annual Conf. Orissa Bot. Soc. (Bhubaneswar)*. pp. 18–19.

476. Bhakta, S. & Adhikary, S.P. 2013. "Two new taxa of *Ecballocystopsis* (Chlorophyta) from Eastern India". *Nelumbo* 55: 181–184.

Abstract: Two new taxa of the genus *Ecballocystopsis* Iyengar (Chlorococcales, Chlorophyta), viz., *E. himalayansis*, sp. nov. and *E. dichotomous* Zheng-Yu & Lie-Jue var. *minuta*, var. nov. occurring in two different localities, first one in a waterfalls in Sikkim-Himalayas and second one in a stream in Balasore, Odisha are described. The former is the fourth species of *Ecballocystopsis* so far reported and later is a variety of *E. dichotomous* Zheng-Yu & Lie-Jue, earlier recorded from China. Comparative account of the morphological features of these species has been presented.

477. Bhakta, S. & Adhikary, S.P. 2014. "Algal diversity in the streams and waterfalls of Eastern and North-Eastern regions of India". *Nelumbo* 56: 1–47.

Abstract: A total of 214 species of algae were recorded from 12 mountain streams of Odisha and 21 streams and waterfalls of the Eastern Himalayan region covering West Bengal, Sikkim, Arunachal Pradesh, Nagaland and Mizoram. Of these Chlorophyta (39), Cyanophyta (31), Heterokontophyta (24) and Euglenophyta (3) were specifically

from the streams in Odisha whereas Cyanophyta (43), Chlorophyta (34) and Bacillariophyceae (26) were from the streams and waterfalls of the Eastern Himalayan region. The diversity of algae in these two regions of eastern India differing in topography and climatic regime showed a wide variation of occurrence of taxa in these specialized and mostly unpolluted habitats. Only 14 species of algae of which *Phormidium granulatum, Calothrix fusca, Dichothrix orsiniana, Nostoc commune* under Cyanophyta, *Spirogyra maravillosa, Staurastrum bieneanum var. ellipticum, Stigeoclonium longipilum, Oedogonium wyliei* under Chlorophyta and *Fragillaria virescence, Synedra ulna, Synedra ulna var. aequalis, Synedra ulna var. amphirhynchus, Synedra ulna var. oxyrhynchus, Cymbella tumida* under Bacillariophyceae of Heterokontophyta were recorded in certain streams of both the regions. Of these 214 algal taxa, 97 were recoded first from the eastern and north-eastern region region.

478. **Bhakta, S.**, **Das, S.K., Nayak, M., Jena, J., Panda, P.K. & Sukla, L.B. 2011.** "Phyco-diversity assessment of Bahuda river mouth areas of east coast of Odisha, India". *Recent Res. Sci. Technol.* 2(4): 80–89.

Abstract: A total of 31 algal samples were collected from 5 sampling sites of various water bodies of Bahuda river mouth areas of Orissa during a collection trip in the month of January 2010. Altogether 36 algal taxa were reported belonging to Cyanobacteria / Cyanoprokaryota, Chlorophyta, Euglenozoa and Bacillariophyta. The species distribution indicates the dominance of green algae followed diatoms and blue green algae. The occurrence of species with respect to trophic status of these water bodies indicate that ditch is more eutrophicated in comparison to mesotrophic pond and oligotrophic river.

479. **Bhakta, S., Dey, H. & Bastia, A.K. 2008.** *Study of Algal diversity from rice fields of Baripada, Mayurbhanj, Orissa*. In: Das, M.K. (ed.), *Environmental Biotechnology and Biodiversity Conservation*. Daya Publishing House, New Delhi. pp. 154–163.

Abstract: Algae constitute a dynamic component of soil, which aid increase the availability of crop nutrients. A taxonomic survey of algal flora from rice fields of Baripada in the Mayurbhanj district, Orissa was carried out during January to June 2006. A total of twenty algal taxa belonging to eighteen genera were collected out of which six belonging to Cyanophyceae, eight to Chlorophyceae, five to Bacillariophyceae and one to Chlorophyceae. The predominant Cyanophyceae members were *Oscillatoria, Phormidium, Lyngbya, Anabaena, Nostoc* and *Cylindrospermum*. Both heterocystous and non-heterocystous forms were found and most of them occur in floating form. The common Chlorophyceae were *Scenedesmus, Zygnema, Spirogyra, Closterium, Cosmarium, Pediastrum* and *Oedogonium*. Scenedesmus is represented by two distinct species. The common diatoms identified were members of *Fragilaria, Pinnularia, Nitzschia* and *Cymbella. Chara connivence* is the single Charophyceae reported during the survey.

480. Bhakta, S., Pattanaik, L., Sahu, E. & Bastia, A.K. 2014. "Diversity of corticolous algae from Similipal Biosphere Reserve, Mayurbhanj, Odisha". *Phykos* 44(1): 9–16.

Abstract: Similipal Biosphere Reserve an untapped reservoir of diverse algal resources, is located in the central part of the Mayurbhanj district of Odisha lies between 21°28' and 22°08' N and 86°04' and 86°37' E. The present investigation aims to document diverse algal forms collected from tree bark surfaces of different collection sites of the Similipal Biosphere Reserve. A total of 19 species were recorded from 10 sampling sites of Biosphere during the study. Out of these, 18 were cyanobacteria and only one belonging to green algae. The major dominant cyanobacterial taxa were *Nostoc* (4) followed by *Gloeocapsa* (2), *Chroococcidiopsis* (2), *Aphanocapsa* (2), *Phormidium* (2), *Scytonema* (2), *Myxosarcina* (1), *Stigonema* (1), *Tolypothrix* (1), *Fischerella* (1) and a single species of green algae named *Desmococcus olevaceoous* were recorded during the study.

481. Biswal, A.K. & Rout, N.C. 2013. "*Antrophyum henryi* Hieron (Antrophyaceae): A rare fern recorded from Peninsular India". *Ann. Pl. Sci.* 2(11): 494–496.

Abstract: *Antrophyum henryi* Hieron is reported from the Similipal Biosphere Reserve, Odisha, India. Thus, the taxon extends its distribution from Eastern Himalaya to Peninsular India which adds to the biogeographical significance of Similipal hill ranges under Chotanagpur plateau. Detail accounts of the taxon comprising description, photographs, distributional and ecological notes have been provided.

482. Biswal, A.K. & Rout, N.C. 2015. "Notes on diversity and distribution of genera *Pteris* Linn. and *Pteridium* Gleditsch ex Scopoli in Odisha". *Pl. Sci. Res.* 37(1&2): 40–43.

Abstract: Three species of *Pteris* L., *P. arisanensis* Tagawa, *P. ensiformis* Burm.f. and *P. longipes* D. Don and one species of *Pteridium* Gleditsch ex Scop., viz., *P. revolutum* (Blume) Nakai are reported as new distributional records for Odisha state from Similipal Biosphere Reserve. Correct botanical name, diagnostic features, phenology and ecology of each species has been provided.

483. Biswal, A.K., Dhal, N.K. & Rout, N.C. 2011. "A note on the occurrence of *Angiopteris evecta* (Forst.) Hoff. (Marattiaceae) in Odisha". *Pl. Sci. Res.* 33(1&2): 130–132.

Abstract: *Angiopteris evecta* (Forst.) Hoff. [Marratiaceae], reported to occur in several localities of Odisha by Haines (1924), Mooney (1950), Dixit (1996) and other workers, is established here as *A. halferiana* Presl following Fraser Jenkins (2008). *Angiopteris evecta* does not occur in Indian sub-continent and is differentiated from other species of the genus by having recurrent false veins extending down to the midrib. The nomenclature, distinguishing characters and distribution of *A. halferiana* Presl in Odisha is discussed in the paper.

484. Biswas, K. 1924. "The subaerial algae of Barkuda Island in the Chilka Lake, Ganjam district, Madras Presidency". *J. Proc. Asiat. Soc. Bengal* 20: 359–365.

485. Biswas, K. 1932. "Algal flora of the Chilka Lake". *Mem. Asiat. Soc. Bengal* 11(5): 165–198.

Abstract: A total of 22 species under 13 genera belonging to 8 families of algal are recorded from Chilka Lake, excluding diatoms.

486. Das, M. & Panda, T. 2010. "Water quality and phytoplankton population in sewage fed river of Mahanadi, Orissa, India". *J. Life Sci.* 2(2): 81–85.

Abstract: Seasonal dynamics of phytoplankton populations and nutrient status of water were studied in sewage fed river Mahanadi of Orissa for a period of one year covering three seasons. Phytoplankton population and water analysis was performed using standard procedure. Maximum population density was observed in the winter season followed by summer and monsoon. Higher phytoplankton populations were encountered in Sikharpur (site IV) which corresponded to the fluctuation of prevailing conductivity, turbidity, dissolved oxygen, better organic load and chemical oxygen demand content of the said habitat. A total of 25 species belonging to three different groups were recorded during the study period. *Spirogyra ornata, Navicula cuspidata, Oscillatoria limnosa* were the most abundant followed by *Zygnema, Ulothrix, Nitchia* and *Phormidium*. Higher concentration of diatom at Sikharpur site indicates polluted zone of the river. *Oscillatoria* and *Nitchella* species at sewage affected sites can be used as an indicator of organic pollution in the river. Our findings highlighted the deterioration of water quality in the river due to industrialization and human activities. Proper biological and chemical treatment of domestic sewage and industrial effluents before discharge to river system is suggested.

487. Das, P.K. & Misra, M.K. 1986. "Ferns of Koraput district (Orissa)". *J. Orissa Bot. Soc.* 8: 77.

488. Das, P.K., Misra, M.K. & Panigrahi, G. 1989. "Fern Flora of Koraput district, Orissa". *Pl. Sci. Res.* 11(1): 7–44.

Abstract: The paper deals with the correct nomenclature and occurrence of 61 species belonging to 29 genera and 22 families of ferns collected/reported from the Koraput district Orissa. A key to the families, reference to the original literature, 'type' of the family/genus, basionyms/synonyms, are provided for cross reference to earlier publications on the subject. The description of the taxon is followed by specie(s) with collector's field number(s), exact localities of occurrence and ecological notes. Cytological data in respect of several species, as available, are appended followed by discussion highlighting their taxonomic importance.

489. **Das, S. & Adhikary, S.P. 2012.** "Algal diversity in the reservoirs of Odisha state, India". *Indian Hydrobiol.* 15(1): 17–41.

Abstract: Algal diversity in seven reservoirs of Odisha state was documented for the first time. A total of seventy five algal taxa comprising of 15 Cyanophytes, 30 Chlorophytes and 30 Heterokontophytes were recorded. This is second documentation of algae from reservoirs of eastern regions of India, the former one being on Cyanophytes from similar waterbody in Midnapore, West Bengal.

490. **Das, S.K. & Adhikary, S.P. 2014.** *Freshwater Algae of Eastern India*. Daya Publishing House, New Delhi.

Abstract: A total of 646 algal taxa were collected and documented from different freshwater bodies of eastern and northeastern India, under different Division or Phyla, namely Cyanobacteria (135 species under 46 genera), Glaucophyta (1 species under 1 genera), Chlorophyta (306 species under 81 genera), Euglenophyta (54 species under 10 genera) and Heterokontophyta (150 species under 51 genera).

491. **Dash, A.**, **Panda, S.S., Palita, S.K., Patra, H.K. & Dhal, N.K. 2012.** "Spatial and temporal variation of phytoplankton in hot spring of Atri, Odisha, India". *Curr. Bot.* 3(5): 35–40.

Abstract: Seasonal dynamics of phytoplanktons along with various physicochemical parameters were recorded in the hot spring of Atri, Odisha during the year 2010–2011. The study was carried out to ascertain the phytoplanktons diversity in relation to the changing physico-chemical parameters in an extreme condition of the hot spring on seasonal basis. Total twenty eight genera having forty two species of phytoplanktons were recorded under the following classes, viz., Chlorophyceae, Cyanophyceae Bacillariophyceae and Euglenophyceae. Chlorophyceae was found to be dominating class contributing 40% of the total. The highest numbers of phytoplankton species were recorded during summer season with an average of 11,3,000 cells/litre. Dominant species identified were *Anabaena aequalis, Closterium ehrenbergii* Menegh. ex Ralfs, *Eudorina* sp., *Merismopedia punctata* Meyen, *Microcystis aeruginosa* (Kütz.) Kütz., *Navicula membranacea* Cleve, *Oscillatoria* sp., *Pediastrum simplex* Meyen and *Scenedesmus quadricauda* Chodat. Correlation studies of phytoplankton with physicochemical variables indicate a significant positive correlation with chlorophyll-a, alkalinity and nitrate concentration at $p \leq 0.01$ and $p \leq 0.05$.

492. **Dash, N., Bhakta, S. & Bastia, A.K. 2006.** Freshwater algal wealth of Similipal Biosphere Reserve, Mayurbhanj, Orissa. In: Behera, B. (ed.), *Emerging Trends in Plant Sciences: From Morphology to Biotechnology*. Ravenshaw University, Cuttack. pp. 13–20.

Abstract: The Similipal Biosphere Reserve (SBR), an epitone of fascinating beauties, unique flora and fauna, is situated in the heart of Mayurbhanj district covering 5578

km^2. An attempt was made by us to survey algal wealth of different water bodies of the biosphere. Our study revealed remarkable species diversity. In all sixteen taxa belonging to three species of Cyanophyceae, seven species of Chlorophyceae and six species of Bacillariophyceae were recorded from six different collection sites. The common Cyanophyceae were *Phormidium, Anabaena* and *Cylindrospermum*. The predominant members of Chlorophyceae were *Oedogonium, Pediastrum, Scenedesmus, Spirogyra, Mougeotia, Zygnema* and *Cosmarium*. Bacillariophyceae were dominant by *Fragilaria, Cymbella, Navicula, Nitzschia, Pinnularia* and *Grammatophora*. In addition, the physico-chemical parameter like pH of the water bodies were analysed and showed varying pH from 6 to 7 in the neutral range.

493. Dash, P. & Padhi, S.B. 2012. "Natural antioxidant production by *Oscillatoria* sp. and *Microcystis* sp. from ponds of Puri district, Odisha". *Int. J. Microbiol. Res.* 4(6): 249–252.

Abstract: The implications of diet on health sustainability have assumed a major importance. *Microcystis* are able to enhance the nutritional content of conventional food and feed preparation and hence to positively affect humans and animal health due to their original chemical compositions, protein contents, antioxidant properties, vitamins and other biologically active compounds. Butylated hydroxytoluene 'BHT' is one of the synthetic antioxidant agents commonly used for food additives. *Cyanobactria* such as *Oscillatoria* sp. and *Microcystis aerungionosa*, those are commonly available in the coastal zone of Puri district of Odisha State were capable of producing this compound. Extracts from these two species exhibited various degrees of antioxidant properties when they were tested with free radical scavenging assay. The highest antioxidant activity was observed in the extracts of *Microcystic aerungionosa*, which displayed a similar activity to synthetic BHT. Gas chromatography and mass spectroscopy analysis concluded that the compounds are very similar to the synthetic BHT. This synthetic antioxidant was produced in the cells irradiated with higher light intensity. More BHT was produced in the cells irradiated with a higher light intensity and its production was irradiance dependent. The quantity of cellular BHT displayed a positive correlation with antioxidant activity of the tested species. The study confirms the production of natural antioxidant like BHT from these two species of Puri district of Odisha State which constitute a potential source for producing natural antioxidant.

494. Dash, P.K., Mahapatra, P.K. & Kar, M. 2008. "Desmids diversity of Similipal Biosphere Reserve, Orissa, India". *Pl. Sci. Res.* 30(1&2): 70–74.

Abstract: A total of 44 species of desmids in 13 genera belonging to the family Desmidaceae were reported for the first time from 10 different freshwater resources of Similipal Biosphere Reserve during the survey conducted from 2003 to 2007. *Closterium* with 11 species, *Cosmarium* with 10 species and 6 species each from *Euastrum* and

Staurastrum were the dominant genera. *Spirotaenia condensata, Cylindrocystis brebissoni, Xanthidium antilppaeum* and *Panium margaritaceum* were the rare taxa in this study. The qualitative and quantitative condition of the desmid community and their seasonal dynamics were analysed in the relation to physico-chemical characteristics of the water within Similipal.

495. Dash, P.K., Mahapatra, P.K., Kar, M., Dhal, N.K. & Rout, N.C. 2007. "Bryoflora of Similipal Biosphere Reserve with special reference to liverworts and hornworts". *Similipal Biosphere Reserve* 2(1&2): 32–37.

Abstract: The study is focused on the diversity and distribution of 23 species of bryophytes comprising both liverworts and hornworts collected from Similipal Biosphere Reserve. This is a preliminary attempt to explore the diversity of bryophytes from this region and some of the noteworthy species are *Conocephalum conicum, Marchantia linearis, Dumortiera hirsuta, Plagiochasma appendiculatum, Targionia hypophylla* and *T. indica*.

496. Dash, P.K., Mohapatra, P.K. & Kar, M. 2010. "Fresh water algal diversity of Northern Eastern Ghats, India". *EPTRI–ENVIS Newslett.* 16(1): 3–6.

Abstract: In total 163 freshwater algal taxa belong principally to 85 species of Chlorophyceae, 33 species of Bacillariophyceae, 36 species of Cyanophyceae, 7 species of Euglenophyceae, one species each from Rhodophyceae and Carophyceae were recorded from the Eastern Ghats of Orissa, during the survey conducted for the period from 2007 to 2009. The algal taxa were recorded from ponds, pools, rivers, reservoirs, hill streams from 14 sites of the region of which 1 is from Mayurbhanj, 3 were from Raygada, 4 were from Kalahandi, 2 are from Koraput, 2 from Gajapati, 1 from Angul and 1 from Nayagarh district of Orissa. Most of the species are reported for the first time from the Eastern Ghats. Similipal biosphere reserve in Mayurbhanj district is found to be the richest in terms of diversity where a maximum of 116 species were encountered followed by Koraput with 87 species and Kalahandi with 72 species. Out of the 163 species reported here thirty three species are new record for the Eastern Ghats.

497. Dash, P.K., Sahu, D.K. & Saxena, D.K. 2009. "Bryoflora of Baphlamali hill in Eastern Ghats of Orissa, India". *EPTRI–ENVIS Newslett.* 15(1): 3–6.

Abstract: A total of 31 species of bryophytes comprising 20 liverworts, 9 mosses and 2 hornworts are being reported for the first time from Baphlamali hill ranges from the Eastern Ghats of India during the survey conducted from January 2007 to November 2008. Some of the noteworthy species are *Conocephalum conicum, Dumortiera hirsuta, Targionia hypophylla, Pallavicinia lyelli, Lophocolea bidentata, Pellia epiphylla, Frullania muscicola, F. squarrosa* and *Plagiochasma appendiculata*.

498. Dash, P.K., Sahu, D.K., Sahoo, S. & Das, R. 2010. "*Phallus indusiatus* Vent. & Pers. (Basidiomycetes) – A new generic record for Eastern Ghats of India". *J. Threat. Taxa* 2(8): 1096–1098.

Abstract: An interesting macrofungus, viz., *Phallus indusiatus* Vent. & Pers. (Basidiomycetes) was recorded for the first time for Eastern Ghats from the foothills of Kutrumali hills in Koraput district of southern Orissa. This fungus earlier reported from Sikkim, Meghalaya (Khasia hills), Maharashtra, Karnataka and West Bengal.

499. Dash, S.R. 2014. *Algal Diversity of Kanjia Lake, Nandankanan, Odisha.* M.Phil. Dissertation, Berhampur University, Berhampur (unpublished).

Abstract: A total of 50 algal taxa recorded from Kanjia Lake, Nandankanan, Odisha. They belong to 22 genera in 16 families, 10 orders under 3 divisions. Among the three divisions the green algae (Chlorophyta) were the dominant in this lake.

500. Datta, A., **Basu, S.K. & Ghosh, R.K. 1985.** "Additional notes on the ferns of Orissa". *J. Econ. Taxon. Bot.* 6(3): 573–578.

Abstract: Ferns and fern-allies of the three districts of Orissa – Phulbani, Kalahandi and Koraput have been examined. This includes a portion of the Koraput and Kalahandi gatherings made earlier and deposited in CAL and entire collection of Phulbani made by the present authors. The study of the combined gathering reveals that thirteen species of ferns appear new for the state and have not been reported so far.

501. Dey, H.S. & Bastia, A.K. 2008. "Cyanobacterial flora from rice growing areas of Mayurbhanj". *Pl. Sci. Res.* 30(1&2): 22–26.

Abstract: A survey of cyanobacteria in rice growing areas of Mayurbhanj district of Orissa was conducted during 2006–2007 (Kharif and Rabi seasons). In the study, altogether 74 species of cyanobacteria belonging to 23 genera were encountered. Out of these, 30 species were heterocystous and 44 non-heterocystous. Most common Cyanophycean members were: *Microcystis, Chroococcus, Hydrococcus, Gloeocapsa, Aphanocapsa, Coelosphaerium, Microcoleus, Symploca, Oscillatoria, Trichodesmium, Phormidium, Lyngbya, Spirulina, Cylindrospermum, Nostoc, Anabaena, Raphidiopsis, Aulosira, Scytonema, Plectonema, Microchaete, Calothrix* and *Gloeotrichia. Oscillatoria* was found to be the most dominant taxa.

502. Dey, H.S. & Bastia, A.K. 2009. "The genus *Oscillatoria* Vaucher from rice field soils of northern Orissa". *Pl. Sci. Res.* 31(1&2): 78–82.

Abstract: An extensive study on abundance of *Oscillatoria* in the rice fields of northern Orissa especially in Mayurbhanj district was carried out during September 2006 to December 2008. During the field survey altogether 31 species of *Oscillatoria* were recorded. *Oscillatoria*

chalybea was the most abundant cyanobacteria followed by *O. subbrevis, O. chlorina, O. princeps* and *O. animalis*. This genus *Oscillatoria* was found to be one of the most abundant non-heterocystus cyanobacteria in the rice field soils of the region.

503. Dey, H.S. & Bastia, A.K. 2012. "Abundance of family Rivulariaceae of Cyanobacteria from rice fields of North Odisha, India". *J. Algal Biomass Utiliz.* 3(4): 1–4.

Abstract: The rice fields are agronomically managed wet land ecosystem, well-known for the rich diversity of cyanobacteria. Rivulariaceae, a group of heterocystous, unbranched or false branched filamentous cyanobacteria rarely found in the rice fields' soil ecologies of Odisha. In the present investigation, a taxonomical survey of the family Rivulariaceae was carried out in the rice fields of northern Odisha. Altogether ten taxa belonging to three genera were encounted. The genus *Calothrix* was the most dominant cyanobacteria belongs to the family Rivulariaceae with five species, namely *C. braunii*, *C. clavatoides, C. gardneri, C. javanica* and *C. marchica. Gloeotrichia* was the second dominant genera with four species, namely *G. ghosei, G. indica, G. longicauda* and *G. raciborskii.* The genus *Rivularia* was represented by only one species in the study.

504. Dey, H.S., Sahu, E. & Bastia, A.K. 2011. "Distribution of Stigonematales from rice field soils of Mayurbhanj district, Odisha". *Pl. Sci. Res.* 33(1&2): 112–115**.**

Abstract: Stigonematales, a group of heterocystous, true branching, filamentous cyanobacteria are rarely found in the rice field soils of Odisha. During the investigation, a taxonomical survey of the order Stigonematales was carried out in the rice field soils of Mayurbhanj district, Odisha. Altogether eight taxa belonging to seven genera under three families, namely Nostochopsidaceae, Mastigocladopsidaceae and Stigonemataceae were recorded. The genus *Nostochopsis* was represented by two species followed by *Mastigocoleus, Mastigocladopsis, Hapalosiphon, Westiella, Westiellopsis* and *Stigonema* each with only one species.

505. Dey, H.S., Tayung, K. & Bastia, A.K. 2010. "Occurrence of nitrogen-fixing Cyanobacteria in local rice fields of Orissa, India". *Ecoprint* 17: 77–85.

Abstract: Cyanobacterial diversity occurring in some local rice fields of Orissa, India has been studied in two different seasons and influence of pH, organic carbon (%) and conductivity were correlated on their population. At different locations and seasons the pH of the soil varies from 6.30 ± 0.20 to 6.66 ± 0.305. Conductivity and organic carbon (%) varies from 0.6 ± 0.10 to 0.76 ± 0.152 and 0.56 ± 0.045 to 0.70 ± 0.025, respectively. Altogether 58 taxa belonging to 20 genera were obtained and characterized. Out of these 19 forms were heterocystous and 39 were non-heterocystous. Highest abundance of cyanobacteria was found in order Nostocales which was represented by 15 species. Among the species relative abundance of *Oscillatoria chalybea*

(9.90%) was found to be highest followed by *Phormidium purpurascens* (8.49%), *Cylindrospermum muscicola* and *Oscillatoria chlorina* (8.01%). Highest Shannon's diversity index was recorded in sampling site 1, followed by site 2. Comparatively the diversity index was more during winter than in summer in all the study sites. Highest similarity index (0.174) was found in summer-summer isolates of site 1 and 3. Among the environmental variables (i.e., soil pH, organic carbon (%), conductivity) highly positive correlation was observed between cyanobacterial population and soil pH ($r \geq 9$) in all the three sampling sites. The study indicates ubiquitous distribution of cyanobacteria in rice fields and could be exploited for biofertilizer in agriculture.

506. Gamble, J.S. 1892. "The fern of Panchmari and those of Mahendragiri". *Indian Forester* 18: 55–57.

Abstract: A total of 34 species of ferns have been reported from this region.

507. Ghosh, G.R. 1986. "My experience with Fungi of Orissa". *J. Orissa Bot. Soc.* 8(1): 1–10.

Abstract: An attempt was made to collate and systematically present the fungi reported from Orissa. Additionally it has been endeavoured to categorize the various fungal species according to their ecological distribution. Special emphasis has been placed on the ecology of the soil fungi and of the keratinophilic fungi. A survey tracing the historical development of mycological research in the State of Orissa, particularly since the beginning of the current century has been presented. It is hoped that the report will serve the need of students and researchers of mycology, especially those of Orissa.

508. Girach, R.D. & Aminuddin 1989. "Ethnopteridological notes on *Lygodium flexuosum* (Linn.) Sw.". *J. Econ. Taxon. Bot.* 13(2): 255–257.

Abstract: Unreported uses of less-known climbing fern, *Lygodium flexuosum* (L.) Sw. among the tribals of Bihar and Orissa are reported for ethnopteridological records.

509. Gupta, N., Mishra, S. & Basak, U.C. 2009. "Diversity of *Streptomyces* in mangrove ecosystem of Bhitarkanika". *Indian J. Microbiol.* 1(3): 37–42.

Abstract: A total of 105 isolates of *Streptomyces* belonging to 20 different species were isolated from 19 mangrove plants in different locations of Bhitarkanika mangroves. According to physiological and biochemical data, all strains were taxonomically identified to the genus *Streptomyces.* However, all the strains were morphologically varied and exhibited different extracellular activity. Maximum number of *Streptomyces* species was observed in the Khola region. *S. xanthochromogenes* was found to be most prevalent species followed by *S. exfoliates* and *S. auranticus.* The occurrence and distribution of *Streptomyces in the* Bhitarkanika mangrove environment were confirmed. This is the first report of *Streptomyces* biodiversity in mangrove ecosystem of Bhitarkanika.

510. Gupta, N., Basak, U.C., Sabatt, J. & Das, T.P. 2002. "Growth and antimicrobial activity of *Penicillium* sp. obtained from mangrove ecosystems of Bhitarkanika, Orissa". *J. Indian Bot. Soc.* 81: 59–61.

Abstract: Growth and antimicrobial activity of an estuarine *Penicillium* sp. were investigated against different fungi, viz., *Fusarium, Curvularia, Pestalotiopsis, Aspergillus, Hemiliea* and a Gram-positive bacterium. Growth and sporulation favoured by Hensen's, Curries and Mayers's nutritional culture media. Though lower pH enhanced higher production of dry biomass yet sporulation was unaffected. Positive antimicrobial activity of *Penicillium* sp. was noticed against the above test organisms and it was assumed that the estuarine *Penicillium* species could be explored as potential bio-fungicide.

511. Gupta, N., Routaray, S., Basak, U.C. & Das, P. 2002. "Occurrence of arbuscular mycorrhizal association in mangrove forest of Bhitarkanika, Orissa, India". *Indian J. Microbiol.* 42: 247–248.

Abstract: Out of 12 mangrove and 18 non-mangrove species growing in the intertidal regions of the Bhitarkanika wildlife sanctuary of Orissa, the colonization of AM fungi in the range of 10–13% was found in three tree mangroves. The highest was in *Heritiera fomes* followed by *Aglaia cucullata* and *Sonneratia caseolaris. No* herbaceous mangrove showed association with AM fungi. Non-mangroves, only one tree species *Syzygium cumini* showed 40% colonization. Non-mangrove herbs, *Kalanchoe pinnata* showed maximum colonization of 88%; and the other two species *Leucas stricta* and *Lantana camara* showed 50 and 20% colonization, respectively.

512. Gupta, N., Sabat, J., Basak, U.C. & Das, P. 2001. "Rhizosphere microbial population in some tree mangroves of Bhitarkanika, Orissa". *J. Phytol. Res*. 14(1): 35–37.

Abstract: The rhizosphere soils of 10 different mangrove species were analysed for the occurrence and population count of estuarine bacteria and fungi. Most of the soils were found to be enriched with gram positive bacteria and fungi such as *Aspergillus* and *Stachybotrys.* Comparatively, estuarine bacteria was found more sensitive to salinity than the fungi where the later showed a wide range of distribution with respect to host mangrove tree species occurring at varied salinity gradients in the natural ecosystems.

513. Gupta, S.L. 1997. "Notes on an interesting alga from Chilka Lake". *J. Econ. Taxon. Bot.* 21(1). 149–150.

Abstract: Three species of *Lyngbya* Agardh, viz., *L. aestuarii*, *L. aestuarii* var. *tenuis* and *L. confervoides* has been reported from the first time for Orissa from Satpada region of Chilika Lake.

514. Hill, K.D. 1955. "The genus *Cycas* (Cycadaceae) in the Indian region with notes on the application and typification of the name *Cycas circinalis*". *Taxon* 44: 23–31.

Abstract: Diagnostic features of the India cycads are discussed, and a key is presented to the cycads of the Indian region. *Cycas circinalis* is shown to be an Indian endemic species, with two varieties, i.e., *C. circinalis* var. *oxiensis* Haines from north Eastern Ghats in the state of Orissa and *C. circinalis* var. *pectinata* (Buch.-Ham.) J. Schust. from the hills which bound Bengal to the east.

515. Jena, M. 2008. *Diversity of freshwater algae of Eastern region of India with special reference to habitat specific species*. Ph.D. Thesis, Utkal University, Bhubaneswar (unpublished).

Abstract: A total of 56 taxa of Chlorococcales belonging to 21 genera were recorded from several freshwater bodies of eastern and northeastern states of India. Of which, 16 species are reported for the first time from India. Description of each species and their systematic enumeration are given in the paper.

516. Jena, M. & Adhikary, S.P. 2007. "Chlorococcales (Chlorophyceae) of Eastern and North-Eastern states of India". *Algae* 22(3): 167–183.

Abstract: Fifty-six taxa of Chlorococcoles were recorded from different water bodies of eastern and northeastern state of India. These belong to 21 genera, *Chlorococcum* (1 sp.), *Truebaria* (1 sp.), *Pediastrum* (9 spp.), *Hydrodictyon* (1 sp.), *Botrycoccus* (1 sp.), *Coenochloris* (1 sp.), *Radiococcus* (1 sp.), *Coenocystis* (1 sp.), *Oocystis* (1 sp.), *Glaucocystis* (1 sp.), *Chlorella* (1 sp.), *Kirchneria* (2 sp.), *Kirchnereilla* (1 sp.), *Ankistrodesmus* (10 spp.), *Coelastrum* (3 spp.), *Actinastrum* (2 spp.), *Tetrastrum* (1 sp.), *Crucigenia* (1 sp.), *Crucigeniella* (1 sp.), *Desmodesmus* (6 spp.) and *Scenedesmus* (9 spp.). All these species were recorded first time from this region and out of these 16 species reported first from India.

517. Jena, M., **Ratha, S.K. & Adhikary, S.P. 2005.** "Algal diversity changes in Kathajodi river after receiving sewage of Cuttack and its ecological implications". *Indian Hydrobiol.* 8(1): 67–74.

Abstract: The algal form of Kathajodi River before and after receiving sewage of Cuttack city through a municipal drain was studied during summer 2004. Only one green alga *Spirogyra gratiana*, occurred in the upstream of the river. The same organism together with four other species of *Spirogyra*, three of *Oscillatoria* and one species each of *Lyngbya, Scenedesmus*, *Rhizoclonium, Amphora, Cymbella, Navicula, Nitzschia, Lycmophora* and *Fragilaria*, totaling 17 algal taxa found in the municipal drain of Cuttack city. Several algal forms of which are organic pollution indicator, e.g., four different species of *Oscillatoria* and *Navicula* and one species of each of *Lyngbya, Gomphonema, Nitzschia* and *Euglena* occurred in the river soon after receiving the city sewage. The total number of algal forms at this site was 11, of which Cyanophyceae were dominant. However, downstream algal diversity was higher; the number of algal taxa was 44, of

which 5 belong to Cyanophyceae, 25 to Chlorophyceae, 13 to Bacillariophyceae and 1 to Euglenophyceae.

518. Jena, M., Ratha, S.K. & Adhikary, S.P. 2006. "Algal diversity of Similipal Biosphere Reserve, Orissa". *Indian Hydrobiol.* 9: 103–113.

Abstract: The Similipal Biosphere Reserve is a unique ecosystem in the eastern region of India with a total area of 4,373 km^2. It is also the richest watershed in the state of Orissa. There has been no report on the algal diversity of this special undisturbed habitat of the country. We surveyed algal diversity of different water bodies of Similipal Biosphere Reserve. Totally 28 taxa of algae belonging to 8 species of Cyanophyceae, 17 species of Chlorophyceae, 2 species of Euglenophyceae and 1 species of Bacillariophyceae were recorded from this habit. Eight species of Chlorophyceae, namely *Ankistrodesmus falcatus, Coenochlorosis polycocca, Pediastrum ovatum, Eudorina elegans, Desmidium pseudostreptonema, Spirogyra decinima, Zygnema kashmirense* and *Chaetophora attenuata* occurred predominantly in this unique ecosystem.

519. Jena, M., Ratha, S.K. & Adhikary, S.P. 2006. "Desmids (Zygnematales, Chlorophyceae) of Orissa state and neighbouring regions, India". *Algol. Stud.* 122: 17–34.

Abstract: Forty-five taxa of desmids were recorded from different water bodies of Orissa state and its neighbourhood regions. These belonged to eight genera, namely *Closterium* (9 spp.), *Cosmarium* (19 spp.), *Desmidium* (2 spp.), *Euastrum* (6 spp.), *Hyalotheca* (1 sp.), *Micrasterias* (1 sp.), *Pleurotaenium* (3 spp.) and *Staurastrum* (4 spp.). Out of these 9 are described for the first time from India.

520. Jena, M., Ratha, S.K. & Adhikary, S.P. 2006. "Diatoms (Bacillariophyceae) from state and neighbouring regions, India". *Algae* 21(4): 377–392.

Abstract: A total of 78 taxa of Bacillariophyceae belonging to *Aulacoseira* (1 sp.), *Cyclotella* (1 sp.), *Tabellaria* (1 sp.), *Diatoma* (1 sp.), *Thallasionema* (1 sp.), *Grammatophora* (1 sp.), *Fragilaria* (1 sp.), *Synedra* (8 spp.), *Achnenthes* (2 spp.), *Cocconeis* (1 sp.), *Diadesmis* (1 sp.), *Diploneis* (1 sp.), *Gyrosigma* (2 spp.), *Pleurosigma* (3 spp.), *Navicula* (15 spp.), *Pinnularia* (4 spp.), *Stauroneis* (3 spp.), *Eunotia* (1 sp.), *Himantidium* (2 spp.), *Gomphonema* (11 spp.), *Cymbella* (5 spp.), *Cocconema* (1 sp.), *Amphora* (4 spp.), *Rhipalodia* (1 sp.), *Nitzschia* (5 spp.) and *Surirella* (1 sp.) were reported from different fresh water habitats of Orissa state and neighbouring regions. All the taxa were recorded for the first time from this region.

521. Mishra, G.K., Upreti, D.K., Nayaka, S. & Haridas, B. 2011. "New taxa and new reports of *Phyllospora* (lichenized Ascomycotina) from India". *Mycotaxon* 115: 29–44.

Abstract: An account of 14 species of *Phyllospora* from India is provided. *Phyllospra catervisorediata* and *P. himalayensis* are described and new species, while *P. coralline*

var. *subglaucella* as a new variety. *P. albicans, P. breuscula, P. chlorophaea, P. confusa, P. isidiotyla, P. kalbii, P. mauritiana, P. nemoralis, P. subcrustacea* and *P. swinscowii* are new records for Indian lichen biota. *Phyllospora chlorophaea* is reported from Odisha.

522. Mishra, R.C., Panda, P.C. & Das, P. 2001. "A taxonomic study of the ferns and fern allies of Gandhamardan hills, Orissa". *J. Econ. Taxon. Bot.* 25(3): 577–590.

Abstract: The paper deals with the taxonomic account of 33 species of pteridophytes (29 ferns and 4 fern allies) belonging to 21 genera in 12 families collected/reported up-to-date from Gandhamardan hill ranges of western Orissa, India. In the enumeration, for each species, correct name, relevant synonym(s), basionym, brief botanical description, notes on phenology, ecology, locality of occurrence etc. have been given. The field numbers have been cited within parenthesis after the locality of collection. Artificial keys for identification of families, genera and species have been provided, wherever necessary. Besides, general information about the study site has been provided and history of taxonomic research pertinent to the pteridophytes of Orissa described.

523. Mohanty, A.K., Sarangi, B. & Mohapatra, P.K. 2004. "Change of algal diversity in rice fields due to agricultural application of insecticides". *Pl. Sci. Res.* 26(1&2): 28–32.

Abstract: Samples were collected from several rice fields of Soro, Orissa on different days after application of agricultural insecticides at the recommended doses by the farmers. In total 52 species of algae belonging to 35 genera were recorded of which green algae, cyanobacteria and diatoms constituted 25, 27 and 10 species, respectively. Twenty four taxa were found to be eliminated from the field after 5 days of insecticide application. Reduction in the density as well as diversity of the existing taxa facilitated the growth of diatom species. Thirteen other species belonging to eight genera were reported in the flora of the fields of which majority were diatoms. Comparison indicated that within first five days after insecticide application, the cyanobacteria in general and heterocystous taxa in particular were severely affected though majority of them showed recovery later.

524. Mohanty, R.B. & Panda, T. 1994. "Survey of Penicillus fungi in south Orissa soils". *Pl. Sci. Res.* 16(1&2): 51–53.

Abstract: Occurrence and distribution of *Penicillia* from three different soils of south Orissa was studied for a period of 13 months covering 3 major seasons. A total of 39 species were recorded out of which the forest soil had 27 species, field soil had 27 species and the cultivated soil had a share of 25 species, respectively. The forest site with dense and overlying vegetation contained higher population of *Penicillium* than the other two sites. The common and frequently occurring species were *P. citrinum, P. oxalicum, P. mineoluteum, P. nigricans* and *P. purpurogenum.*

525. Mohanty, R.C. & Padhi, B. 1980. "Algal flora of Bhubaneswar. I Cyanophyceae". *Pl. Sci. Res.* 2(1): 31–34.

Abstract: Investigations have been carried out over the last four years in order to determine the algal nature and diversity of various water bodies including some old and historical impoundments of Bhubaneswar. This paper contains a list of floating, benthic and terrestrial members of blue-green algae. Out of twenty-one species reported, seven belong to the order Chroococcales and the rest to the order Hormogonales.

526. Mohanty, R.C. & Padhi, B. 1983. "Phytoplankton succession in a fresh water tank of Bhubaneswar". *J. Orissa Bot. Soc.* 5(1): 18–23.

Abstract: Temporal studies of phytoplankton succession have been carried out over two years during 1975–1977 in an old water body (Bindusagar Tank) of Bhubaneswar. Periodicity of several constituents of phytoplankton has been correlated with some of the physicochemical parameters of the ecosystem. A bloom of *Microcystis aeruginosa* Kütz. has been found to form a stabilized niche during monsoon winter periods and disappeared during the summer seasons; but instead, diatoms have been found in abundance during the hot season. The temperature, dissolved oxygen, phosphates, nitrates and nitrites are observed to have effects on the phytoplankton flora.

527. Naik, K. & Padhi, S.B. 2005. "Seasonality of attached marine micro algae on an exposed rock surface of the Gopalpur sea". *Seaweed Res. Utlilis.* 27: 1–6.

Abstract: Study on attached microalgal communities from a protruded rock surface near the Gopalpur seashore in Orissa was made during December 2001 to November 2002. The epilithic and epiphytic microalgal species belonging to Chlorophyceae, Cyanophyceae and Bacillariophyceae showed seasonal fluctuations. The study enumerates 25 species of green algae, 15 species of blue green algae and 18 species of diatoms. The analysis indicates that a number of environmental factors appear to influence the composition of the attached microalgae.

528. Nair, N.C. & Ghosh, R.K. 1975. "Notes on some additional distribution of ferns to the botany of Orissa". *J. Indian Bot. Soc.* 54: 45–49.

Abstract: Eleven additional ferns such as *Asplenium formosum* Willd., *Athyrium parasnathense* (C.B. Clarke) Ching ex Mehra & Bir, *Bolbitis kanarensis* B.K. Nayar & P. Chandra, *Cheilanthes albomarginata* C.B. Clarke, *C. dalhousiae* Hook., *C. mysorensis* Wall. ex Hook., *Dryopteris otaria* (Kunze) Kuntze, *Lepisorus excavates* (Bory) Ching, *Nephrolepis biserrata* (Sw.) Schott, *Pteris nemoralis* Willd. and *Tectaria polymorpha* (Wall. ex Hook.) Copel. are reported for the first time from Orissa. Significant notes about these taxa are provided.

529. Nair, N.C. & Ghosh, R.K. 1978. "*Pteris heteromorpha* Fee – A new record for India". *Indian Forester* 104(5): 374–376.

Abstract: *Pteris heteromorpha* Fee has been reported for the first time for India from Govindapally, Koraput district, Orissa.

530. Nair, N.C. & Ghosh, R.K. 1980. "Notes on the ferns and fern-allies in the botany of Orissa". *J. Bombay Nat. Hist. Soc.* 77: 271–276.

Abstract: *Pislotum nudum* (L.) Griseb., *Helminthostachys zeylanica* (L.) Maxon, *Actiniopteris radiata* (Sw.) Link, *Pteris biaurita* L., *P. quadriaurita* Retz., *Doryopteris concolor* (Langsd. & Fisch.) Kuhn, *Diplazium lasiopteris* Kunze, *Sphenomeris chinensis* (L.) Maxon, *Asplenium inaequilaterale* Willd., *A. unilaterale* Lam. var. *majus* (C. Chr.) Sledge, *A. varians* Hook. ex Grev., *Colysis hemionitidea* (Wall.) C. Presl, *Pyrrosia mollis* (Kunze) Ching and *P. nayariana* Ching & P. Chandra are reported from Koraput and Kalahandi districts of Orissa with notes of interest.

531. Nayak, H., Sahu, J.K. & Adhikary, S.P. 1996. "Blue-green algae of rice fields of Orissa state II. Growth and nitrogen fixing potential". *Phykos* 35: 111–118.

532. Nayak, M., Jena, J., Bhakta, S., Rath, S.S., Sarika, C., Rao, B.V.S.K., Pradhan, N., Thirunavoukkarasu, M., Mishra, S.K., Panda, P.K., Prasad, R.B.N., Sukla, L.B. & Mishra, B.K. 2011. "Screening of fresh water microalgae from eastern region of India for sustainable biodiesel production". *Int. J. Green Energy* 8: 669–683.

Abstract: Study of six different freshwater microalgae, collected from Odisha, eastern region of India, has been carried out to find out their potential for biodiesel production. The growth, total lipid, and fatty acid composition of six microalgal strains were determined. *Chlorella* sp. IMMTCC–2, which exhibited high lipid content with considerable amount of unsaturated fatty acids, was selected for culture in a self-designed photobioreactor in order to study the scale-up possibilities. The result shows significant increase in lipid accumulation from logarithmic phase to stationary phase in the photobioreactor, i.e., from 12.4 to 28.3%. Analyses of the present results suggest that *Chlorella* sp. IMMTCC–2 is appropriate for biodiesel production.

533. Padhi, S.B., Behera, G., Behura, S., Swain, P., Behera, S., Panigrahi, H., Panigrahi, M., Beja, S., Mishra, A., Das, N., Baidya, S., Pradhan, S. & Das, P. 2010. "Utilisation of nitrate and ammonium by algal biomass available in prawn cultivation sites in Chilika Lake, Orissa". *J. Bot. Res.* 1(1): 1–6.

Abstract: Water quality and seaweed flora were studied during prawn farming activities at various sites of Chilika Lake. The brackish water lagoon has become eutrophicated as it receives the waste material of agricultural, aqua cultural and domestic sewage as

well as the release of extracellular nitrogenous substances released from the fishing activities. Conservation and proper management of Chilika ecosystem is essential not only for preserving biodiversity but also to save and promote the existence of economically important seaweeds. Four seaweeds *Enteromorpha intestinalis, Chondrous crispus, Gracilaria verrucosa* and *Polysiphonia sertularioides* were examined for their efficiency in uptake of nitrate and ammonium to access the potentiality of these algae for removal of nutrients from aqua culture effluents. *Enteromorpha intestinalis* and *Gracilaria verrucosa* removed nitrate from the medium at considerable higher than those measured for *Chondrous crispus* and *Polysiphonia sertularioides*. At similar temperature and irradiance the Vmax and Ks of nitrate uptake *in E. intestinalis and G. verrucosa* are thrice that of *Chondrous crispus*. The result are discussed in designing protocols for management of water quality in fishing zones for removal of nitrate and ammonia from the fish culture sites in Chilika Lake.

534. Padhy, J., Tripathy, S. & Padhi, S.B. 1992. "Studies on blue-green algae of rice fields soils of Ganjam district of Orissa". *Phykos* 31: 7–12.

535. Panda, H.S., Nayak, M., Das, B., Parida, B.K., Jena, J., Bhakta, S., Panda, S., Panda, P.K. & Sukla, L.B. 2011. "Survey and documentation of brackish water algal diversity from East coast region of Odisha, India". *World Environm.* 1(1): 20–23.

Abstract: A total of 150 algal samples were collected from 14 sampling sites of various fresh water and brackish water habitats of east coast region of Odisha, India during the period 2009–2011. A total of 41 algal strains were isolated and cultured into their pure forms. Out of the collected strains 5 taxa of Bacillariophyta, 12 taxa of Cyanobacteria/Cyanopro-karyota and 24 taxa of Chlorophyta have been identified using relevant monographs and are being screend to evaluate their potential for biofuel production.

536. Panda, P.C. & Patnaik, S.N. 2001. "A conspectus of the pteridophytic flora of Puri district, Orissa". *J. Econ. Taxon. Bot.* 25(2): 395–405.

Abstract: The paper deals with a taxonomic account of 41 species of pteridophytes (36 ferns and 5 fern allies) belonging to 25 genera under 16 families collected/reported up-to-date from erstwhile Puri district of Orissa State. In the enumeration, for each species correct name, relevant synonym(s), basionym, notes on phenology, ecology, locality of occurrence etc. have been given. Besides, general information about the district has been provided and history of taxonomic research pertinent to the pteridophytes of Orissa described.

537. Panda, S., Basu, S.K. & Das, A.P. 1992. "Systematic survey of the pteridophytic flora of Sambalpur district, Orissa (India)". *J. Econ. Taxon. Bot.* 16(2): 457–467.

Abstract: Recent (1986 to 1988) floristic exploration in the Sambalpur district of Orissa yields to the record of 6 fern-allies and 24 fern covering 19 genera and 17 families. Different species were enumerated in the paper alongwith their latest nomenclature, synonyms (if any), sori seasons voucher specimen, associated species and distribution. *Lindsaea ensifolia* Sw. has been reported for the first time from Orissa, while, *Equisetum diffusum* D. Don has been recorded from the warmer Kholbilung valley. The ecological background of its pteridophytic vegetation and the change in habitat conditions are also discussed.

538. **Panda, S.S., Sahoo, K., Rana, M., Rout, N.C. & Dhal, N.K. 2014.** "Antimicrobial activities and phytochemical investigation of some native pteridophytes". *Asian J. Pharmaceut. Clinic. Res.* 7(1): 43–45.

Abstract: The present investigation was carried out to screen the phytochemical and antimicrobial properties of three species of pteridophytes such as *Salvinia minima* Baker, *Thelypteris interrupta* (Willd.) K. Iwats. and *Marsilea minuta* L. commonly found in Odisha. The dried and pulverized plant materials (whole) were extracted using two different solvent such as methanol and chloroform. The antimicrobial activity was demonstrated against eighteen bacterial pathogens such as *Staphylococcus aureus, S. citreus, Escherichia coli, Pseudomonas aeruginosa, Salmonella typhii, S. paratyphii A, S. paratyphii B, Chromobacter, Enterobacter, Citrobacter fruendii, Klebsiella, Vibrio cholera, Shigella sonnie, S. boydii, Providencia, Proteus mirabilis, P. vulgaris* and four fungal pathogens such as *Candida albicans, Aspergillus niger, A. flavus, Rhizopus* sp. Methanol extracts showed the presence of major phytoconstituents such as alkaloids, tannins, anthroquinone, steroids and terpenoids as compared to chloroform. Among the three pteridophytes, *T. interrupta* showed the presences of maximum phytoconstituents. The highest antibacterial activity (28 mm) was observed in the methanol extract of *T. interrupta* against *S. citreus*, whereas maximum antifungal activity (22 mm) was observed against *A. flavus* in the methanol extract of *S. minima*.

539. **Panigrahi, G. 1993.** Conspectus of the pteridophytic flora of Orissa – Part I. – The fern allies. In: Gupta, B.K. (ed.), *Higher Plants of Indian Subcontinent*. Vol. IV (*Indian J. Forest., Addit. Ser.* VII). Bishen Singh Mahendra Pal Singh, Dehra Dun. pp. 103–117.

Abstract: The paper presents 14 species of the fern-allies collected/reported from different parts of the modern Orissa state, from the time of Beddome (1883, 1892) to Das & al. (1989), with correct nomenclature, typification, synonyms, exact localities of occurrence, notes on ecology, phenology, chromosome number and critical comments on nomenclature and taxonomy, are appended, wherever necessary. *Selaginella kurzii* Baker and *S. vaginata* Spring are new reports of taxa for Orissa. Since *Phlegmariurus* Holub (1964) is congeneric with *Huperzia* Bernh. (1801), *Huperzia phlegmaria* (L.) Panigrahi,

comb. nov. and *H. phyllantha* (Hook. & Grev.) Panigrahi, comb. nov. are proposed. *Lycopodium cernua* (L.) Pic.Serm. is re-established as the correct name for *Palhinhaea cernua* (L.) Vasc. & Franco (*Lycopodium cernum* L.).

540. Panigrahi, G. 1998. "Pteridophytic flora of Orissa". *Pl. Sci. Res.* 20(1&2): 1–45.

Abstract: History of taxonomic researches on the Pteridophytic flora of Orissa is outlined and 136 species of ferns and fern-allies collected/reported to-date from parts of the modern Orissa state are enumerated in a modern system of classification based on Kramer and his collaborators (1990) and as adapted in consultation with Brummitt (1992). Correct nomenclature of every taxon is worked out and relevant synonyms/basionyms provided. Notes on exact locality of occurrence, notes on habitat, phenology, cytology and nomenclature, as available, are appended. Several new combinations involving ferns of India, are proposed. *Parahemionitis* Panigrahi based on *P. arifolia* (Burm.f.) Panigrahi, *Selaginella bryopteris* (L.) Baker, *S. cataractrum* Alston and *S. pallidissima* Spring (cf. Mooney, 1950), are to be added to Panigrahi, as new records of species, from Orissa.

541. Panigrahi, G. & Basu, S.K. 1981. "Taxonomic studies on the pteridophytic flora of Orissa". *Proc. Orissa Bot. Soc.* 5: 32–33.

542. Panigrahi, G. & Patnaik, S.N. 1961. "Pteridophytes of Eastern India. Polypodiaceae-enumeration of the species with correct nomenclature". *Indian Forester* 87(4): 242–247.

Abstract: The necessity for revising Beddome's out of date hand book of ferns of British India, Ceylon and Malaya Peninsula and the urgency for publishing an enumeration of the Indian fern species of Polypodiaceae sensu Copeland (1947), distributed in various parts of India, with correct nomenclature, is appended to serve as a useful guide on nomenclature to Indian taxonomists working on the family. Two species, viz., *Microsorum heterocarpum* (Blume) Ching and *Colysis pentaphylla* (Baker) Ching as new records for India and one species, namely *Microsorum indicum* (Roxb.) Copel. as new record for eastern India have been established.

543. Panigrahi, R.C. & Gouda, R. 1990. "Occurrence of a bloom of the diatom *Asterionella glacialis* Castracane) in the Rushikulya estuary, east coast of India". *Mahasagar* 23(2): 179–182.

Abstract: The occurrence of bloom of the diatom *Asterionella glacialis* Castrac. was recorded in the Rushikulya estuary (Orissa), east coast of India for a period of about 5 weeks during April–May, 1988. Phytoplankton cell counts during this period ranged from 3.98–9.42 × 10^4 cells 1^{-1} in which *A. glacialis* alone contributed 72–86.2% of the total population. Intensity of the bloom declined towards later part of May.

544. Panigrahi, S.N., Nayak, B.B. & Acharya, B.C. 2001. "Planktonic algae as water pollution index of Maipura estuary, east coast of India". *J. Mar. Biol. Assoc. India* 43(1&2): 168–172.

Abstract: Maipura is a tropical mangrove estuary situated in the east coast of India. It is one of the largest sea turtle rookeries of the world and has a great ecological significance. The seasonal variations of different genera of planktonic algae were observed along with the physic-chemical parameters such as DO, BOD, salinity and nutrient, viz., nitrogen (nitrate, nitrite, ammonia), phosphorous and silicate of Maipura estuary during November 1998 and August 1999. The analysis of different community structure of these planktonic taxa revealed that the water of Maipura estuary is organically polluted, which may be due to the impact or organic litter of the adjacent mangrove forests. A total of 15 pollution tolerant genera were encountered during the study period to the classes Chlorophyceae, Bacillariophyceae, Cyanophyceae and Euglenophyceae. It has been observed that the estuarine stations were more organically polluted as compared to the coastal stations.

545. Parija, P., Pattnaik, H. & Rao, S.D. 1969. "Blue-green algae in soils of Cuttack". *Prakruti (Utkal Univ. J. Sci.)* 6: 183–186.

546. Pradhan, B. & Padhi, B. 1981. "Survey of the wood rotting Polypores of Orissa". *J. Orissa Bot. Soc*. 3(1): 37–40.

Abstract: A total of 221 specimens were collected in a preliminary survey of wood rotting polypores from seven districts of Orissa. Survey of specimens revealed that they belong to 63 species distributed under 10 genera of the family Polyporaceae, of which 42 species are new records for Orissa. Two species of the genus *Polyporus* were found to be edible as reported by local people. *Polyporus* is the most dominant genus, represented by 26 species. *Favolus* is the rarest having only one species. *Ganoderma applanatum* is the largest in size among all the species under collection.

547. Pradhan, B., Pradhan, D. & Padhi, B. 1986. "Aphyllophorales of Orissa". *J. Orissa Bot. Soc.* 8(1): 25–32.

Abstract: A total of 221 specimens were collected in a preliminary survey of wood rotting Aphyllophorales from seven districts of Orissa. Survey of specimens revealed these belong to 61 species distributed under 31 genera of 4 families of the order Aphyllophorales, namely Corticiaceae, Ganodermataceae, Hymenochaetaceae and Polyporaceae, of which 40 species are new records for Orissa. Two species namely *Laetiporus sulphureus* and *Polyporus arcularius* were found to be edible as reported by local people. *Phellinus* and *Trametes* are the most common and dominant genera represented by eight species each. *Ganoderma applanatum* is the largest in size (30 × 18.5 × 6.5 cm) among all the species under collection.

548. Rao, M.U. 2008. "On *Gracilaria* species of Chilka Lake". *Seaweed Res. Utilis.* 30: 39.

Abstract: Two taxa of *Gracilaria*, viz., *G. tenuistipitata* var. *tenuistipitata* and *G. tenuistipitata* var. *liui* have been reported for the first time for India from Chilka Lake, Orissa. Earlier these two taxa are reported from China.

549. Rao, V. & Reddy, K.A. 1981. "Two new hyphomycetes". *Indian J. Bot.* 4(1): 108–114.

Abstract: *Kramabeeja* with *K. shrungashakha* gen. & sp. nov. and *Shrungabeeja* with *S. vadirajensis* gen. & sp. nov. are described as new genera of hyphomycetes from Orissa and Karnataka, respectively.

550. Rath, J. & Adhikary, S.P. 2005. "A ckeck list of algae from Chilika Lake, Orissa". *Bull. Bot. Surv. India* 47: 101–114.

Abstract: A total of 102 species of algae belonging to 5 Divisions, namely Cyanophyta, Chlorophyta, Bacillariophyta, Dinophyta and Rhodophyta were recorded from the Chilika Lake during 2000–2001, of which 58 species belonging to 4 Divisions were reported for the first time. *Enteromorpha usneoides* recorded in the southern sector of the lake for the first time shows new and extended distribution range of *Enteromorpha* species in India. A ckeck list of algal species found in Chilika Lake has been given.

551. Rath, J. & Adhikary, S.P. 2005. "Distribution of marine macro-algae at different salinity gradients in Chilika Lake, east coast of India". *Indian J. Mar. Sci.* 34(2): 237–241.

Abstract: Biomass of macro-algal forms with their seasonal and sectoral distribution in the salinity gradient of Chilika Lake was evaluated. Three macro-algae, viz., *Gracilaria verrucosa, Enteromorpha intestinalis* and *Chaetomorpha linum* occurred abundantly in the lake throughout the year. These organisms preferred moderate salinity of southern and central sectors and their biomass changed in response to the salinity levels during different seasons. *Gracilaria verrucosa* and *E. intestinalis* did not grow in the northern sector where the salinity level was least in the lake. Maximum biomass was obtained in the winter followed by summer and rainy seasons. The total biomass of 26,963 tonnes dry weight in 7.63% of the total area surveyed showed richness of macro-algal resources in the lake. Of this, occurrence of 14,467 tonnes of the economically important alga *Gracilaria verrucosa* suggests its possible exploitation for agar production.

552. Rath, J. & Adhikary, S.P. 2005. *Algal Flora of Chilika Lake*. Daya Publishing House, Delhi.

Abstract: The book provides a detailed account of algae of Chilika Lake, the largest brackish water lagoon in Asia, in the east coast of India. The taxonomic account of recorded algal forms, resource mapping and biomass estimation of economically important algal species in different salinity gradients of the lake are provided in this

book. Viable protocol for agar-agar extraction from *Gracilaria verrucosa* occurring in the lake and its possible commercial exploitation is also given.

553. Rath, J. & Adhikary, S.P. 2006. "Seasonal variation of phytoplankton in Chilika Lake, east coast of India". *Seaweed Res. Utilis.* 28: 43–48.

Abstract: A total of 47 species of phytoplankton belonging to Chlorophyta, Bacillariophyta, Dinophyta and Cyanophyta frequently occurred in Chilika Lake. *Cocconis pediculus, Gyrosigma acuminata, Mastigloia minuta, Pinnularia alpina, P. nobilis* and *Pleurosigma normanii* of Bacillariophyta and *Lyngbya aestuarii* of Cyanophyta were the dominant species. Total quantity of phytoplankton was highest in the outer channel sector followed by northern, central and southern sectors. The quantity of phytoplankton is the lake was highest during summer (17,748 cells/l) followed by winter (15,005 cells/l) and rainy season (14,051 cells/l). Distribution and abundance of phytoplankton and their relative occurrence were goverened by salinity gradient of the lake.

554. Ratha, J. & Adhikary, S.P. 2006. "Marine macro-algae of Orissa, East coast of India". *Algae* 21(1): 49–59.

Abstract: A total of twenty one species of marine macro-algae were reported from 460 km long Orissa coast in the east coast of India. Of these 9 species belong to Chlorophyta, 2 to Phaeophyta and 10 to Rhodophyta. The low species richness compared with southern and western coasts of India, and it was credited to lack of rocky and/or coral substratum. *Enteromorpha usneoides* and *Gelidium divaricatum* were reported first from India. *Enteromorpha linza*, *E. clathrata*, *Colpomenia sinuosa*, *Dictyota dichotoma*, *Catenella impudica*, *Compsopogon aeruginosus* and *Grateloupia lithophila* were the new records for Orissa coast.

555. Ratha, S.K. & Adhikary, S.P. 2009. "Two species of *Batrachospermum* from Orissa State, Eastern India". *Algae* 24(2): 61–66.

Abstract: Two species of *Batrachospermum*, *B. longiarticulatum* Necchi and *B. vagum* (Roth) C. Agardh are reported from fast running streams of Orissa state, in eastern India. *Batrachospermum longiarticulatum*, previously known only from Brazil is a new record for India. This brings the number of *Batrachospermum* species known from India to 14.

556. Ratha, S.K., Jena, M. & Adhikary, S.P. 2006. "Euglenophytes from Orissa state, East coast of India". *Algae* 21(1): 61–73.

Abstract: A total of 60 taxa of *Euglena*ceae belonging to 19 species of *Euglena*, 1 species of *Colacium*, 8 species of *Lepocinclis*, 22 species of *Phacus* and 10 species of *Trachelomonas* were reported from different habitats of Orissa state in the east coast of India. All the taxa were recorded for the first time from this region.

557. Ratha, S.K., Jena, M., Rath, J. & Adhikary, S.P. 2007. "Three ecotypes of *Compsopogon coeruleus* (Rhodophyta) from Orissa State, east coast of India". *Algae* 22(2): 87–93.

Abstract: Three ecotypes of the freshwater red alga *Compsopogon coeruleus* (Balbis) Montagne were recorded from different freshwater and brackish water habitats of Orissa state in the east coast of India. These three had persistent differences in their branching pattern, the differences are: (i) acute angle between main axis and lateral branches, (ii) equal or near to right angle between main axis and lateral branch, and (iii) short spine-like outgrowth instead of branch in older filements, besides having differences in the length, breadth and thickness of cortex of the thallus. Morphological observation of these taxa and the ecological characteristics of the habitat of their occurrence are presented.

558. Ray, J.C. 1955. "Periodicity of the plankton diatoms of the Chilika Lake for the years 1950 and 1951". *J. Bombay Nat. Hist. Soc.* 52: 112–123.

Abstract: More than 40 species of diatoms spread over 19 genera were recorded from this lake. The majority of them were of marine origin and the rest were of brackish water types.

559. Rout, N.C. 2015. *Studies on diversity and conservation of pteridophytic flora of Similipal Biospher Reserve*. Ph.D. Thesis, Utkal University, Bhubaneswar (unpublished).

Abstract: The study records the occurrence of 99 species of pteridophytes in 43 genera belonging to 31 families.

560. Sahoo, K. & Dhal, N.K. 2009. "Potential microbial diversity in mangrove ecosystems: A review". *Indian J. Mar. Sci.* 38(2): 249–256.

Abstract: Mangroves provide a unique ecological niche to different microbes which play various roles in nutrient recycling as well as various environmental activities. Mangrove forests are large ecosystems distributed in 112 countries and territories comprising a total area of about 181,000 km^2 is over a quarter of the total coastline of the world. The highly productive and diverse microbial community living in mangrove ecosystems continuously transforms nutrients from dead mangrove vegetation into sources of nitrogen, phosphorous and other nutrients that can be used by the plants and in turn the plant-root exudates serve as a food source for the microbes. Analysis of microbial biodiversity from these ecosystems will help in isolating and identifying new and potential microorganisms having high specificity for various applications. The study comprises literature on diversity of predominant microbes such as bacteria, fungi and actinomycetes from mangrove ecosystems.

561. Sahoo, K., Dhal, N.K. & Das, R. 2012. "Diversity study of predominant fungi from the sediments of mangroves at Mahanadi delta and its adjoining areas". *PI. Sci. Res.* 34(1&2): 34–38.

Abstract: Microorganisms in mangrove areas perform complex interactions for nutrient and ecological balances. Marine fungi play an important role in nutrient regeneration cycles as decomposers of dead and decaying organic matter. Since a very little is known about fungal populations in Mahanadi delta mangroves, the present study has been conducted to analyze the fungal diversity in relation to soil physico-chemical properties in the Mahanadi delta and its adjoining areas, a tropical mangrove ecosystem in India. In the study, ten sediment samples have been collected from different mangrove areas and the physico-chemical as well as fungal diversity study has been carried out. The physico-chemical parameters varied significantly among all sites. The pH was maximum (pH = 8.3) at MHS-2 and minimum (pH = 4.3) at DVS-1, organic carbon content was maximum (48.48mg/gm soil) and minimum (14.1 mg/gm soil) at MHS-5, salinity was maximum (3.84 PSU) at DVS-1 sediments. The fungal diversity was maximum ($8.56 \pm 0.48 \times 10^5$ cfu/gm soil) at DVS-4 sediment sample. The most dominant genus among all the fungi was *Aspergillus*. The occurrence of other genera such as *Trichoderma, Penicillium, Acremonium* and *Fusarium* were also found in the different sampling sites. This study revealed the presence of diverse fungi in the mangroves of Mahanadi delta which provides information regarding better utilization of the industrially potent marine fungal groups for valuable product formation such as antibiotics, surfactants, antioxidants, industrial enzymes, metal-tolerant enzymes, stress proteins and food preservatives.

562. Sahu, J. 1988. "Survey of blue-green algal flora of Keonjhar and its adjoining area". *Pl. Sci. Res.* 10: 47–51.

563. Sahu, J.K. 2000. "Distribution and monthly succession of blue green algae in the rice fields of Puri district of Orissa". *J. Econ. Taxon. Bot.* 24(1): 191–196.

Abstract: Diversity of blue green algae in the rice fields at six different localities of Puri district of Orissa state during kharif cropping season of 1997 was studied. Totally 39 species of blue green algae were encountered, of which 25 were heterocystous forms. Species belonging to *Nostoc, Anabaena, Aulosira* and *Cylindrospermum* occurred as floating patches as well as attached to the soil. Heterocystous blue green algae appeared during September coinciding with tillering period and their maximum diversity occurred at the time of panicle emergence.

564. Sahu, S.C., Baul, A., Dhal, N.K. & Rout, N.C. 2013. "*Microsorum zippelii* (Bl.) Ching (Polypodiaceae), a new distributional record for Peninsular India". *Ann. Pl. Sci.* 2(4):114–116.

Abstract: *Microsorum zippelii* (Blume) Ching, earlier known from northeast India is recorded for the first time from Peninsular India. The species is collected from Mahendragiri hills of Gajapati district, in the Eastern Ghats of Odisha. On critical examination it was

found to be *Microsorum zipelii* a Near Threatened (NT) fern, is differing morphologically from its close ally *M. membranaceum* having sori larger, round, distinct and fewer. A detailed description, photograph, illustration along with Scanning Electron Microscopic views of its sorus, sporangium and spores are provided for easy identification of the taxon.

565. Samad, L.K. & Adhikary, S.P. 2008. "Diversity of micro-algae and cyanobacteria on building facades and monuments in India". *Algae* 23(2): 91–114.

Abstract: A total of 57 taxa of Cyanobacteria and 15 taxa of Chlorophyta were recorded from the exterior of buildings and rock surfaces of monuments in different regions in India, Assam, Meghalaya, Orissa and Rajasthan. Four cyanobacteria, namely *Chroococcidiopsis kashayi, Pseudophormidium indicum, Plectonema puteale* and *Scytonema geitleri*, and the green alga *Trentepholia abietina* var. *tenue* occur on the sub-aerial habitats throughout the year. In addition, five other green algae: *Chlorococcum infusionum, Scenedesmus arcuatus, Trentepholia aurea, Gloeocystis polydermatica* and *Printzina effusa*, and 18 other cyanobacteria taxa of the genera *Chroococcus* (5), *Asterocapsa* (1), *Cyanosarcina* (2), *Gloeocapsa* (7), *Gloeothece* (2) and *Scytonema* (1) occur on the sub-aerial surfaces enduring extreme temperature and desiccation during summer months of the tropics. During the rainy season, the warm and humid climatic regime coupled with availability of moisture supported an additional ten green algae and 29 cyanobacteria in 8 and 17 genera, respectively. The green algal genera *Klebsormidium, Stichococcus* and *Trebouxia*, which are dominant in temperate regions, did not occur on the sub-aerial habitats in India: however, species of *Gloeocapsa, Chroococcus, Chroococcidiopsis, Phormidium, Leptolyngbya, Nostoc, Scytonema, Chlorella* and *Trentepholia* showed global occurrence in similar habitats.

566. Samad, L.K., Jena, M. & Adhikary, S.P. 2008. "Cyanobacteria in biological crusts on soil and sub-aerial habitats from different locations of Eastern India". *Bull. Bot. Surv. India* 51(1-4): 51–56.

Abstract: Thirteen species of Cyanobacteria species belonging to eight genera, namely *Phormidium* (3 spp.), *Leptolyngbya* (1 sp.), *Calothrix* (1 sp.), *Anabaena* (2 spp.), *Nostoc* (3 spp.), *Scytonema* (1 sp.), *Fischerella* (1 sp.), *Westiellopsis* (1 sp.) were recorded in biological crusts from different sub-aerial habitats of Orissa and in the aerial crust of NEHU campus, Shillong, Meghalaya.

567. Sethi, B.K., Nanda, P.K. & Sahoo, S.L. 2012. "Biodiversity and seasonal distribution of fungal species in some soils *of* Odisha". *Pl. Sci. Res.* 34(1&2): 10–16.

Abstract: In this study, various soil samples of Odisha were evaluated for presence of instinctive fungal community. Edaphic properties of the soil were evaluated from February

to June, 2011. There was not much disparity evident in temperature and pH of the soil samples. The water content was found steadily diminished from February to May. Water holding capacity was 67% and 66.9%, respectively. Organic carbon, organic matter, total nitrogen and phosphorous contents were 0.26%, 0.45 %, 0.2g/kg % and 0.38mg/kg respectively. Soil mycoflora enumeration revealed utmost numbers of fungi including *Aspergillus* species from soils of the botanical garden of P.G. Department of Botany (3×10^8 CFU/g) followed by Mancheswar Industrial Estate (1×10^8 CFU/g). The soils of Joda Industrial Estate and Barbil Industrial Estate of Keonjhar were also affluent in fungal community. Among all 35 fungal taxa, *Aspergillus niger* was the most predominant microflora followed by *A. terreus.* A detailed investigation of mycoflora was undertaken from the garden soil, Department of Botany, Utkal University. Other fungal species such as *Alternaria alternata, Aspergillus candidus, A. flavus, A. fumigatus, A. stellatus* and *Aspergillus* sp. were more prevalent in summer. The utmost incidence of *Fusarium oxysporum, Aspergillus niger, A. terreus* and *Mucor* sp. in this environment was found in rainy season. Species such as *Aspergillus terreus, A. oryzae, A. niger, A. fumigatus, A. awamori, Penicillium* sp., *Mucor* sp. and *Trichoderma* sp. were abundant in winter. However, throughout the year maximum numbers of *Aspergillus* spp., *Alternaria* spp. and *Penicillium* spp. were observed.

568. Sethi, S.K., Samad, L.K. & Adhikary, S.P. 2012. "Cyanobacteria and micro-algae in biological crusts on soil and sub-aerial habitats of eastern and north eastern region of India". *Phykos* 42(1): 1–9.

Abstract: A total of 24 species of Cyanobacteria and 6 species of micro-algae were recorded in biological crusts from different sub-aerial habitats such as cemented building facades, tree trunks, soil surface of barren land and rice fields in certain locations of Orissa state, in the eastern region of India. These belong to seventeen genera, namely *Gloeocapsa* (1 sp.), *Aphanocapsa* (1 sp.), *Oscillatoria* (4 spp.), *Phormidium* (5 spp.), *Calothrix* (1 sp.), *Anabaena* (2 spp.), *Nostoc* (5 spp.), *Cylindrospermum* (2 spp.), *Scytonema* (1 sp.), *Fischerella* (1 sp.), *Westiellopsis* (1 sp.), *Chlorococcum* (1 sp.), *Chlorella* (1 sp.), *Microspora* (1 sp.), *Pandorina* (1 sp.), *Volvox* (1 sp.), and *Closterium* (1 sp.). All these taxa were described with illustrations and the habitats in which they occur is presented. The brownish coloured crusts on soil contained sheathed cyanobacteria species, whereas the greenish brown crusts on rice field soils harboured green algae and cyanobacteria. The cemented building facades and tree trunks were colonized by filamentous cyanobacteria species. The green algal forms occurred in the crust only during the rainy season.

569. Singh, K.P. & Gupta, S. 2012. "New records of *Pertusaria* (lichenised Ascomycota) from India". *Phytotaxonomy* 12: 28–32.

Abstract: The paper reports 6 species as new records for lichen flora of India, viz., *Pertusaria dermatodes* Nyl. from Assam, *P. pycnothelioides* Vain. from West Bengal, *P. leucostigma* Müll.Arg., *P. plittiana* Erichsen, *P. subobductans* Nyl. from Odisha and *P. subrigida* Müll.Arg. from Manipur. These are briefly described to facilitate their identification.

570. Singh, K.P. & Kumar, K. 2012. "A note on the lichens from Similipal Biosphere Reserve, Odisha, India". *Indian J. Forest.* 35(3): 383–390.

Abstract: The paper records 141 species of lichens from Similipal Biosphere Reserve in Mayurbhanj district of Odisha state. A total of 129 species marked by asterisk (*) are new records for the state of Odisha while 3 species, viz., *Conotrema lumbricoides* Siepman, *Megalotremis biocellata* Aptroot and *Ocellularia lankaensis* Hale marked by double asterisk (**) are new records for India from Chahela, Similipal Biospeher Reserve, Mayurbhanj district, Odisha.

571. Singh, S. 2002. "*Lygodium altum* (C.B. Clarke) v.A.v.R. – A fern new to Orissa". *J. Econ. Taxon. Bot.* 537–539.

Abstract: *Lygodium altum* (C.B. Clarke) Alderw. is described in detail with illustrations as a fern new to Orissa state, earlier reported from Meghalaya, Manipur and Arunachal Pradesh.

572. Sinha, M.P. 2006. "Impact of cyclone on fungal flora of Orissa: Retrospect and Prospect". *Pl. Sci. Res.* 28(1&2): 46–47.

Abstract: Cyclone is a regular feature in the coastal areas. Super cyclone is occasional. Both of them leave trail of devastation behind them. The greatest destruction is done to tall trees, which stand unprotected at the time of cyclone or super cyclone. Trees are not only the home of birds but are also a place where thousands of microbes grow, reproduce and thrive. This includes a large number of fungi also. It is natural that when a tree is destroyed, by any means, many microbes also die, destroyed or damaged. The life cycle of microbes is also affected. If some microbes are specific to some plant species the destruction of the plant species endangered the life of those microbe/which survive on them.

573. Sinha, M.P. & Padhi, B. 1980. "Survey and cultivation of edible mushrooms of Orissa". *Pl. Sci. Res.* 2(1): 1–4.

Abstract: A preliminary survey of the mushroom flora of the state was done. A total of 250 specimens from 5 districts were collected. The investigations showed that these belong to forty seven species under thirteen families and twenty four genera. All species are new record for Orissa and 36 are new for India. Ten genera consist of edible

mushrooms as reported by local people. One species, namely *Amanita verna* is deadly poisonous. *Lepiota* is the most dominant genus with ten species and *Amanita* is the rarest. *Macrolepiota procera* is the largest species. The cultivation of three species namely, *Volvariella volvacea*, *Volvariella diplasia* and *Pleurotus sajor-kaju* has been introduced. A spawn producing unit has been set up in OUAT to sell spawn to common cultivators. Further investigations are in progress (first author's institution) to culture spawn for the local mushrooms which grow naturally during the rainy seasons.

574. Sinha, R. 2006. "Edible wild mushroom of tribals of Jharkhand, Orissa and West Bengal". *Int. J. Mendel* 23(3&4): 147–148.

Abstract: The tribal dominated districts of Jharkhand, Orissa and West Bengal were studied for wild mushroom consumption pattern in ten tribal groups. Data were collected through PRA exercises and interview schedules. Altogether 18 species of wild mushrooms have been reported to be consumed by these tribals. Of which, 11 are collected from the forest. The place and season of availability of these mushrooms have been discussed.

575. Srinivasan, K.S. 1960. "*Rosenvingea intricata* (J. Agardh) Borgs., a Phaeophyceae new to Chilka lake in India". *Bull. Bot. Surv. India* 2(1&2): 9–13.

Abstract: *Rosenvingea intricata* (J. Agardh) Børgesen. A brown sea-weed is reported here for the first time from Chilka Lake in Orissa. The structure of the alga is described in detail. The habitat and geographical distribution of the alga are briefly discussed. A chaetophoraceous alga occurring as an endophyte in *Rosenvingea intricata* (J. Agardh) Børgesen is referred to.

576. Srinivasan, K.S. 1961. "Report on *Phaeophila dendroides* (Crouan) Batters endophytic in *Rosenvingea intricata* (J. Ag.) Borgs." *Bull. Bot. Surv. India* 3(2): 111–113.

Abstract: *Phaeophila dendroides* (P. Crouan & H. Crouan) Batters is reported here for the first time from Chilka Lake. While the species is known as an endophyte in several marine algae belonging to Chlorophyta and Rhodophyta and a few marine Spermatophyta, it is reported here for the first time in a Phaeophyta in *Rosenvingea intricata* (J. Agardh) Børgesen. The endophyte from Chilka Lake is described in some detail.

577. Swain, N., Rath, B. & Adhikary, S.P. 1994. "Limnological investigation of two temple tanks of Puri, India". *J. Indian Bot. Soc.* 73: 105–109.

Abstract: Two temple tanks (Markendeya and Indradyumna) of Puri, Orissa, India, were studied for monthly variation in their phytoplankton distribution and physico-chemical properties of water during 1992. Altogether 92 algal species were identified in both

the tanks. In Markendeya tank Cyanophyceae constituted 95.6–98% of the total phytoplankton followed by Chlorophytes (1.0–3.8%) and Bacillariophyceae (0.0–0.6%), whereas in Indradyumna tank Chlorophyta members were dominant (82.4–94.2%) followed by Cyanophyceae (0.0–15.8%) and Bacillariophyceae (1.7–7.3%). Year round presence of *Microcystis aeruginosa* Kuntze together with higher quantity of various nutrients in Markendeya tank indicated its eutrophic nature whereas lower nutrient content and absence of bloom forming and other organic pollution indicator species in Indradyumna tanks showed its oligotrophic status.

578. Swamy, J.A. & Behera, P.K. 2007. "Growth of oyster mushrooms from two different environments of Orissa". *Pl. Sci. Res.* 29(1&2): 5–7.

Abstract: Growth of *Pleurotus sajor-caju* and *P. florida* collected from two different mushroom cultivation units located at sea shore and in a forest was compared. Growth of *Pleurotus sajor-caju* was almost twice that of *P. florida* under both the environmental conditions. Time to 50% growth of *Pleurotus sajor-caju* was faster under all ranges of temperature at the forest site environment and was slower in *P. florida* at both the sea shore and forest sites. Maximum yield was recorded in *Pleurotus sajor-caju* at the forest site at 20 ± 2°C. Difference between two species of *Pleurotus* was consistent in their growth at separate environmental conditions of the cultivation site.

579. Tirkey, J. & Adhikary, S.P. 2005. "Cyanobacteria in biological spol crusts of India". *Curr. Sci.* 89(3): 515–521.

Abstract: Species of filamentous, sheath-forming cyanobacteria were the major component in the blackish brown crusts on the upper millimetre of soils in different regions of India. Chlorophyll *a* density of these biological crusts on lateritic soils of Bhubaneswar, Orissa, brown forest soils of Salbani, West Bengal, arid soils of Tiruchirappalli, Tamil Nadu and sandy soils of old Goa ranged between 248 and 282 mg $m^{-2,}$ which is of the same order as in the leaves of higher plants. The species composition of cyanobacterial community in these soil crusts of India has been documented. Organisms in the crust absorbed water rapidly, regained photosynthesis and nitrogenase activity, which were stabilized within 48 to 72 h of wetting. The dominant cyanobacteria in the crust were rich in carotenoid pigment, absorbing at 507 nm and mycosporine amino acid-like substances absorbing in UV only when desiccated and simultaneously exposed to bright sunlight. It is concluded that the highly active upper layers of arid soils contain certain sheathed cyanobacteria that bind with soil particles forming a matrix protecting them from wind erosion. In addition, they are finely tuned in their physiology to the natural environmental conditions contributing organic matter and nitrogen through carbon and nitrogen fixation, thus increasing soil fertility.

Revision, Monograph, New Discoveries, New Reports and Rediscoveries

580. Acharya, P.K., Debata, A.K. & Panda, P.C. 2009. "Occurrence of *Passiflora suberosa* Linn. (Passifloraceae) in Orissa – A new plant record for eastern India". *J. Econ. Taxon. Bot.* 33(2): 423–425.

Abstract: The paper deals with *Passiflora suberosa* L. (Passifloraceae) – an interesting species of the genus, reported for the first time for Orissa or broadly from eastern India from Champagarh and Ugratara GPs of Khurda district along National Highway No. 5 between 19º58'768''–19º58'843'' N and 85º27'455''–85º27'493'' E. Correct nomenclature, diagnostic features, ecology, phenology and distribution are discussed in the paper.

581. Ahmed, S. 1946. "Occurrence of *Chickrassia (Chukrasia) tabularis* in Orissa". *Indian Forester* 72: 27–28.

Abstract: *Chickrassia (Chukrasia) tabularis* has been reported for the first time from this region from Ganjam district of Orissa.

582. Bairiganjan, G.C., Panda, P.C., Choudhury, B.P. & Patnaik, S.N. 1985. "Fabaceae in Orissa". *J. Econ. Taxon. Bot.* 7(2): 249–276.

Abstract: Through a recent survey of plants belonging to Fabaceae (Papilionaceae) in Orissa, 147 species and 7 varieties/subspecies belonging to 59 genera of the family could be collected. These along with an exhaustive survey of literature and specimens at different herbaria in India revealed the occurrence of 242 taxa including 12 infra-specific categories belonging to 75 genera of the family within the State. Of these, 12 species are new records for Orissa while 83 species and 5 varieties reported by various workers up-to-date could not be collected. Two endangered species namely *Pterocarpus santalinus* L.f. and *Atylosia cajanifolia* Haines could be collected during the present survey. While the former is mostly found in cultivated condition, the latter could be obtained from its type locality. A new combination, i.e, *Vigna sublobata* (Roxb.) Bairig. & al. has been proposed.

583. Banerjee, D.K. & Pal, D.C. 1970. "Some new distributional records in Indian grasses". *Bull. Bot. Surv. India* 12: 70–72.

Abstract: The paper records new distributional areas in India for 12 grasses, namely *Arthraxon quartinianus* (A. Rich.) Nash, *Brachiaria subquadripara* (Trin.) Hitchc., *Dimeria hohenackeri* Hochst. ex Miq. from Bihar, *Brachiaria mutica* (Forssk.) Stapf from Orissa and *B. subquadripara* (Trin.) Hitchc., *B. villosa* (Lam.) A. Camus var. *barbata* Bor, *Coelorhachis khasiana* (Hack.) Stapf ex Bor, *Echinochloa crus-pavonis* (Kunth) Schult., *Eragrostis riparia* (Willd.) Nees, *Iseilema anthephoroides* Hack., *Melinis minutiflora* P. Beauv., *Microstegium*

vagans (Nees ex Steud.) A. Camus and *Setaria paniculifera* (Steud.) E. Fourn. ex Hemsl. from West Bengal.

584. Banerjee, L.K. 1986. "New distributional records of some mangrove species from Orissa coast". *J. Bombay Nat. Hist. Soc.* 83: 271–273.

Abstract: Eight species, viz., *Thespesia populneoides* (Roxb.) Kostel. (Malvaceae), *Aglaia cucullata* (Roxb.) Pellegr. (Meliaceae), *Instia bijuga* (Colebr.) Kuntze (Papilionaceae), *Rhizophora stylosa* Griff., *Ceriops tagal* (Perr.) C.B. Rob. (Rhizophoraceae), *Sonneratia griffithii* Kurz (Sonneratiaceae), *Cerbera manghas* L. (Apocynaceae), *Avicennia marina* (Forssk.) Vierh. var. *acutissima* Stapf & Moldenke (Avicenniaceae) have been recorded for the first time for Orissa from Mahanadi delta in Cuttack district.

585. Banerjee, L.K. & Das, G.C. 1972. "New distributional records from Orissa coast". *Bull. Bot. Surv. India* 14(1–4): 184–186.

Abstract: A total of 12 species, viz., *Polyalthia korinti* (Dunal) Thwaites (Annonaceae), *Colubrina asiatica* (L.) Brongn. (Rhamnaceae), *Rourea minor* (Gaertn.) Leenh. (Connaraceae), *Indigofera aspalathoides* Vahl ex DC., *Taverniera cuneifolia* Arn. (Fabaceae), *Finlaysonia obovata* Wall., *Tylophora tenuis* Blume (Asclepiadaceae), *Rivea hypocrateriformis* Choisy, *Ipomoea macrantha* Roem. & Schult. (Convolvulaceae), *Litsea nitida* (Roxb.) Hook.f. (Lauraceae), *Cyperus pachyrhizus* (Nees) Kük., *Fimbristylis ferruginea* (L.) Vahl (Cyperaceae) was reported for the first time for Orissa from Mahanadi estuary.

586. Banerjee, L.K. & Rao, T.A. 1978. "Noteworthy taxa from the tidal forest of Orissa". *J. Indian Bot. Soc.* 57(Suppl.): 57.

Abstract: Of the several taxa collected in Orissa from the tidal forests only nine plants are found to be of some interest. The points of interest are two new records for India, viz., *Rhizophora stylosa* Griff. and *Sonneratia griffithii* Kurz, two hitherto unrecorded taxa for east coast, viz., *Ceriops tagal* (Perr.) C.B. Robb. and *Thespesia populneoides* (Roxb.) Kostel., four new records for Orissa, viz., *Amoora cucullata* Roxb., *Ceriops tagal* (Perr.) C.B. Rob., *Instia bijuga* (Colebr.) Kuntze, *Xylocarpus moluccensis* (Lam.) M. Roem., one unexpectedly common plant along the coasts of India where it has hitherto been quite overlooked due to the possibility of an error in their earlier determination, and finally *Cerbera manghas* L. with critical field data.

587. Bennet, S.S.R. 1966. "*Phyllanthus mukerjeeanus* Mitra & Bennet – New record for Orissa state". *J. Bombay Nat. Hist. Soc.* 66: 655.

Abstract: *Phyllanthus mukerjeeanus* D. Mitra & Bennet has been reported for the first time for the flora of Orissa from Puri district. Earlier this species was reported from West Bengal.

588. Bhattacharjee, B., Lakshminarasimhan, P., Bhattacharjee, A., Agrawala, D.K. & Pathak, A.K. 2013. "*Vernonia amygdalina* Delile (Asteraceae) – An African medicinal plant introduced in India". *ZOO's Print* 28(5): 18–20.

Abstract: The paper deals with *Vernonia amygdalina* Delile, an African medicinal plant belonging to the family Asteraceae, which has been found in cultivation in different places of central and eastern India as well as an escape from cultivation. The paper reports its availability in India, and facilitates identity of the species with detailed description and photo plate and emphasises to explore the scope of commercialization of this species in the country as health supplement and medicinal plant.

589. Biswal, A.K., Mandal, K.K. & Reddy, C.S. 2013. "*Uncaria sessilifructus* Roxb. (Rubiaceae): A new generic record for Odisha, India". *Ann. Pl. Sci.* 2(12): 532–534.

Abstract: The genus *Uncaria* (Rubiaceae) has about 40 species with most species native to tropical Asia, three from Africa and the Mediterranean region and two from the Neotropical region. *Uncaria sessilifructus* Roxb. occurs in Indian subcontinent, China and Vietnam. Similipal Biosphere Reserve in the state of Odisha is a grand repository of flora and fauna. The occurrence of certain Himalayan taxa in this region is of great phytogeographical significance. *Uncaria sessilifructus* Roxb. is reported as new distributional record for Odisha from Similipal Biosphere Reserve. Occurrence of this taxon adds to phytogeographical uniqueness of the region and the state of Odisha in India. Correct botanical nomenclature, brief description and photographs of the taxon have been provided for easy identification.

590. Biswal, A.K., Mohapatra, A. & Reddy, C.S. 2008. "*Barleria lupulina* Lindl. (Acanthaceae) – An addition to the flora of Orissa, India". *J. Bombay Nat. Hist. Soc.* 105(2): 231–232.

Abstract: *Barleria lupulina* Lindl. has been reported for the first time for the state of Orissa from Rangamatia, Mayurbhanj district of Orissa.

591. Biswal, A.K., Rout, N.C., Dhal, N.K. & Nair, M.V. 2011. "*Exacum tenue* (Gentianaceae): A new record for India". *Rheedea* 21(2): 174–176.

Abstract: *Cotylanthera* Blume (*Exacum* L.) is less-known genus in India found mostly in Himalayas (1000–2000 m). The rarity of the taxon is reflected from its non-representation in Indian herbaria including CAL. The genus has confused taxonomists since its discovery till it was found to be nested in genus *Exacum* L. (Gentianaceae) in early part of this century. There are only four saprophytic and achlorophyllous species reported for the genus from Old World. *Exacum tenue* (Blume) Klack. is reported here as a new report for Indian Gentianaceae from Similipal, Odisha. Its occurrence in a geographically isolated from its earlier reported localities is of ecological and phytogeographical significance.

592. Biswas, A.K. & Choudhury, B.P. 1994. "New records of plants from Orissa". *J. Bombay Nat. Hist. Soc.* 91(2): 351–352.

Abstract: Four species, viz., *Alternanthera paronychioides* A. St.-Hil., *Cuscuta chinensis* Lam., *Justicia vahlii* Roth and *Lindernia multiflora* (Roxb.) Mukerjee turn out as new records for the state of Orissa.

593. Brahmam, M. & Saxena, H.O. 1983. "Family Rubiaceae in Orissa". *Proc. 8th Annual Conf. Orissa, Bot. Soc. (Rayagada)*. p. 34.

Abstract: A total of 78 species (including 5 species of cultivated plants) belonging to 36 genera on the family Rubiaceae in Orissa have been reported after both field and herbarium studies. Nomenclature of the species has been brought up-to-date after critically examining all available herbarium material. Keys and detailed descriptions of the taxa have been prepared and field notes and taxonomic notes are given. *Ophiorrhiza trichocarpa* Blume, *Psychotria fulva* Buch.-Ham. ex Hook.f. and *Neanotis quadriloculari*s (Thwaites) Lewis have been found to be new records for Bihar and Orissa. *Mussaenda incana* Wall., is reported for the first time from Orissa.

594. Brahmam, M. & Saxena, H.O. 1996. "A note on the occurrence of *Siphonodon celastrineus* Griff. (Siphonodontaceae) in Orissa". *Advances Pl. Sci.* 9 (2): 223–224.

Abstract: A rare tree, *Siphonodon celastrineus* Griff. (Siphonodontaceae) has been reported for the first time for Orissa from Gurguria, Simlipahar forests, Mayurbhanj district. Earlier this species was reported from Bihar, Andaman, Sikkim and some parts of eastern India.

595. Brahmam, M. & Saxena, H.O. 1996. "*Siphonodon celastrineus* Griff. (Siphonodontaceae)-A rare tree from Orissa". *J. Bombay Nat. Hist. Soc.* 92(1): 135.

Abstract: A rare tree, *Siphonodon celastrineus* Griff. (Siphonodontaceae) has been reported for the first time for Orissa from Gurguria, Simlipahar forests, Mayurbhanj district.

596. Chandramohan, K., Prasanna, P.V. & Reddy, P.R. 2016. Note on the distribution of *Lophopogon kingii* Hook.f. (Poaceae), an endemic grass from Eastern Ghats. *Int. J. Advanced Res. Sci. Technol.* 5(2): 604–605.

Abstract: This paper deals with the distributional notes on *Lophopogon kingii* Hook.f., which is an endemic grass reported from the Eastern Ghats. Detailed description and illustration are provided here for easy identification.

597. Chandramohan, K., Prasanna, P.V., Swamy, J. & Rahman, T. 2016. "Two new distributional records for Odisha state". *Indian J. Forest*. 39(3): 295–297.

Abstract: *Acmella radicans* var. *debilis* (Kunth) R.K. Jansen and *Spermacoce exilis* (L.O. Williams) C.D. Adams ex W.C. Burger & C.M. Tayleo are reported for the first time for the state Odisha from Tikarpada Range, Satkosia Wildlied Sanctuary, along river banks of Mahanadi. Detailed description, photo plate and relevant notes are also provided.

598. Chelvan, P.T. & Durani, P.K. 1983. "Occurrence of *Parthenium hysterophorus* L. in Orissa and Pondicherry (India)". *Geobios New Rep.* 2: 131.

599. Chorghe, A., Prasad, K., Prasanna, P.V. & Rao, Y.V. 2016. A new species of *Themeda* (Poaceae: Panicoideae) from the Eastern Ghats, India. *Phytotaxa* 245(2): 183–186.

Abstract: *Themeda odishae* (Poaceae), a new species from the Mahendragiri hill ranges, Odisha, is described and illustrated. It differs from *T. mooneyi* in shorter and hairy leaf blades, longer peduncle, length of sessile spikelet callus, number of pedicelled spikelets, and longer anthers, and from *T. saxicola* by its longer peduncle, number of racemes, number of pedicelled spikelets and hairy involucral spikelets.

600. Chorghe, A., Dey, S., Prasad, K., Prasanna, P.V. & Rao, Y.V. 2015. *Tripogon mahendragiriensis* sp. nov. (Poaceae) from the Eastern Ghats of Odisha (Orissa) State, India. *Nordic J. Bot.* 33(6): 655–658.

Abstract: *Tripogon mahendragiriensis* (Poaceae), a new species from Mahendragiri hills, Eastern Ghats, Odisha, is described and illustrated. It is similar to *T. humilis* and *T. purpurascens*, but differs mainly by having longer culms, leaf blades and spike, unlobed lemmas and 2 anthers which are longer. From *T. purpurascens* it also differs by having 3-awned lemmas.

601. Das, P.K. & Panda, P.C. 2011. "*Crotalaria hebecarpa* (DC.) Rudd. (Fabaceae) – A new plant record for Orissa". *J. Econ. Taxon. Bot.* 35(1): 172–173.

Abstract: The paper reports *Crotalaria hebecarpa* (DC.) Rudd, as an addition to the Flora of Orissa from Badrama Wildlife Sanctuary, Sambalpur district. Complete synonymy, diagnostic description, phenology and distribution of the species are provided.

602. Das, P.K. & Panda, P.C. 2013. "*Crotalaria hebecarpa* (DC.) Rudd (Fabaceae) – A new plant record for Odisha". *J. Econ. Taxon. Bot.* 37(1): 108–109.

Abstract: *Crotalaria hebecarpa* (DC.) Rudd is reported here as an addition to the legume flora of Odisha from Badrama Wildlife Sanctuary of Sambalpur district.

603. Dash, P.K. & Kumar, P. 2013. "*Habenaria barbata* Wight ex Hook.f. – A new record for Central India". *ZOO's Print* 28: 21–22.

Abstract: *Habenaria barbata* Wight ex Hook.f. (Orchidaceae) was rediscovered from Krishnamali hills of Karlapat Wildlife Sanctuary, part of the Eastern Ghats, Odisha, growing at an elevation of 1000 m. After critical review of the published literature on

its distribution, it was found to be a new record for the Central India. The present paper deals with its description, distribution and ecology.

604. Dash, P.K., Bhattacharjee, A., Kumar, P. & Mohapatra, P. 2015. "*Cheirostylis* Blume (Orchidaceae), a new generic record for the Eastern Ghats, India". *J. Threat. Taxa* 7(1): 6826–6829.

Abstract: *Cheirostylis parvifolia* Lindl. (Orchidaceae) has been discovered from Mahendragiri hills of the Gajapati district of Odisha, part of the Eastern Ghats, growing at an elevation of 900 m constituting a new record of the genus *Cheirostylis* Blume for eastern India. The present finding shows an extensive of its range of distribution from the Western Ghats to the Eastern Ghats.

605. Dhal, N.K., Reddy, C.S., Pattanaik, C., Sahu, S.C. & Brahman, M. 2006. "*Dicoma tomentosa* Cass. and *Torenia fournieri* Linden ex Fournier – As alien weeds to the Flora of Orissa". *J. Econ. Taxon. Bot.* 30(3): 654–655.

Abstract: Two alien weeds, *Dicoma tomentosa* Cass. (Asteraceae) and *Torenia fournieri* Linden ex E. Fourn. (Scrophulariaceae) are recorded as additions to the Flora of Orissa.

606. Dhal, N.K., Rout, N.C. & Thirunavoukkarasu, M. 2000. "*Plumbago indica* Linn. (Plumbaginaceae): A specific case study for birth control among the Jani tribe of Orissa". *Ethnobotany* 12: 27–28.

Abstract: *Plumbago indica* L., commonly known as Sitaparu among the Jani tribes of Orissa, is known for its abortifacient properties. Jani tribes of Orissa effectively use this plant as an oral contraceptive for birth control. The paper is a case study taking a sample of about 115 female folk belonging to 35 families. This species has been planted in the houses of the said locality for its importance.

607. Dhole, P.A., Baske, P.K., Halder, A.C. & Sujana, K.A. 2015. "*Tragia praetervisa* Chakrab. & N.P. Balakr. (Euphorbiaceae) – An addition to the flora of Odisha from Nayagarh". *ZOO's Print* 30(12): 13–14.

Abstract: *Tragia praetervisa* Chakrab. & N.P. Balakr. has been reported for the first time for the Flora of Odisha from Nayagarh district. Earlier this species was reported from Goa, Karnataka, Kerala, Maharashtra, Mizoram, Tamil Nadu and West Bengal.

608. Dhole, P.A., Baske, P.K., Halder, A.C. & Singh, H. 2016. Traditional use and processing of loincloth from the stem bark of *Careya arborea* (Lecythidaceae). *ENVIS Newslett.* 21(1): 4.

Abstract: The method of preparing a loincloth using the stem bark of *Careya arborea* Roxb. is explained in the paper. This loincloth is traditionally being used by the local monks in Nayagarh district, Odisha.

609. Dubey, A.K. & Panigrahi, G. 1982. "New records of plants for Orissa". *Proc. 7th Annual Conf. Orissa Bot. Soc.* p. 18.

Abstract: A critical comparative study of the collections made by Mooney during 1948–1950 from the Koraput district (Potangi), Dhenkanal district (Pal Lahara), Sambalpur district (Barapahar) and Kalahandi district (Tejbandh) deposited in Forest Research Institute, Dehra Dun (DD) have yielded the following nine species as new records for Orissa. *Rhynchoglossum notonianum* (Wall.) Burtt. (Potangi, *Mooney* 4045); *Polygonum cipitatum* Buch.-Ham ex D. Don (Potangi, *Mooney* 4088); *Pilea melastomoides* (Poir.) Wedd. (Potangi, *Mooney* 4062); *Cyanotis arachnoidea* C.B. Clarke var. *thwaitesii* (Hassk.) R.S. Rao & Kammathy (Potangi, *Mooney* 4062): *Apocopis paleacea* (Trin.) Hochr. (Pal Lahara, *Mooney* 3775); *Chloris virgata* Sw. (Barapahar, *Mooney* 3591); *Cymbopogon pendulus* (Nees ex Steud.) Will.Watson (Tejbandh, *Mooney* 3188); *Eulalia quadrinervis* (Hack.) Kuntze var. *wightii* Hook.f. (Potangi, *Mooney* 4066); *Jansenella griffithiana* (Müll.Hal.) Bor (Potangi, *Mooney* 4082).

610. Girach, R.D. & Aminuddin. 1993. "*Solanum sisymbriifolium* (Solanaceae) – A new adventitious species for Orissa". *Indian J. Forest.* 16(3): 292.

Abstract: *Solanum sisymbriifolium* Lam. has been reported for the first time for the flora of Orissa from Chandaneswar near Bengal in Balasore district, previously reported from West Bengal, Assam, Bihar and Upper Gangetic plain.

611. Girach, R.D. & Aminuddin. 1994. "Some new records of plants for Orissa". *J. Bombay Nat. Hist. Soc.* 91(1): 171–172.

Abstract: Five plant species, viz., *Cassia alata* L. (Caesalpiniaceae), *Digera muricata* (L.) Mart. (Amaranthaceae), *Echinops echinatus* L. (Asteraceae), *Heliotropium supinum* L. (Boraginaceae) and *Ranunculus sceleratus* L. (Ranunculaceae) have been reported for the first time for the flora of Orissa.

612. Govindaswami, S. & Krishnamurthy, A. 1958. "A note on the occurrence of a new species of Oryza in Jeypore tract". *Sci. & Cult.* 24: 234–235.

Abstract: A new species of *Oryza*, viz., *O. jeyporensis* aliied to *O. glaberrima* Steud. has benn described from Papadahandi, a village in the Nowrangpur subdivision of Koraput district.

613. Haines, H.H. 1919. "Some new species of plants from Bihar & Orissa". *J. Proc. Asiat. Soc. Bengal* 15: 309–317.

614. Henderson, C. 1929. "Some orchids not previously recorded from the Ganjam district, Madras Presidency". *J. Bombay Nat. Hist. Soc.* 33: 1003.

Abstract: *Aerides odoratum, Vanda tessellata, V. parviflora, Sarcochilus* sp., *Luisia* sp., *Dendrobium aduncum* and *Rhynchostylis retusa* have been reported for the first time from Ganjam Agency of Madras Presidency.

615. Jain, S.K. 1966. "Notes on Indian grasses – III. A new form of *Cynodon barberi* Rang. *et* Tad.". *Indian Forester* 92: 699–700.

Abstract: A new forma of *Cynodon barberi* Rang. & Tadul., viz., *Cynodon barberi* Rang. & Tadul. f. *longifolium* allied to *C. barberi* Rang. & Tadul. f. *barberi* has described from Puri, Orissa based on J.H. Walsh (1889) collection.

616. Jha, R.R. 1995. "*Eragrostis aspera* (Jacq.) Nees: An addition to the grasses of Orissa". *J. Bombay Nat. Hist. Soc.* 92: 145–47.

Abstract: *Eragrostis aspera* (Jacq.) Nees has been reported for the first time for Orissa from Kalahandi, Gajapati and Ganjam districts. Earlier this grass has been reported from Tamil Nadu, Maharashtra, Rajasthan and Bihar.

617. Kalidass, C. 2014. "Genus *Cardamine* L. (Brassicaceae) – A new record for Odisha". *J. Econ. Taxon. Bot.* 38: 650–651.

Abstract: The record of *Cardamine hirsuta* L. from Chandaka Reserve Forest of Khurda district results in report of the genus *Cardamine* for the first time to the flora of Orissa. Brief description and photographs are provided.

618. Kalidass, C. 2015. "*Cuscuta chinensis* Lam. (Convolvulaceae) – A new record for Odisha". *J. Econ. Taxon. Bot.* 39: 124–125.

Abstract: *Cuscuta chinensis* Lam. is collected from Bhubaneswar for the first time from Odisha. Detailed description and photographs are provided to facilitate easy identification.

619. Kalidass, C. 2015. "*Eragrostis nairii* (Poaceae: Eragrostideae): A new species from Odisha, India". *J. Econ. Taxon. Bot.* 39: 126–129.

Abstract: A new species of *Eragrostis*, viz., *E. nairii* allied to *E. pilosa* (L.) P. Beauv. has been described and illustrated from Similipal Biosphere Reserve, Odisha.

620. Kalidass, C. 2015. "*Mitracarpus hirtus* var. *sessilis* (Rubiaceae), an addition to the flora of Odisha state". *Indian J. Forest.* 38(3): 273–274.

Abstract: *Mitracarpus hirtus* var. *sessilis* Dhruvan, Pandur. & N. Mohanan (Rubiaceae), hitherto known only from Kerala is reported here for the first time from Chandhaka Reserve Forest, Bhubaneswar, Eastern Ghats, Odisha. Detailed description, photographs and relevant notes are provided for easy identification.

621. Kalidass, C. 2016. *Carex panduranganii*, a new name for *Carex nilagirica* Viji, Pandur., Deepu & G.C. Tucker (Cyperaceae). *Phytotaxa* 269(2): 127.

Abstract: *Carex* L. (1753) is one of the largest genera of angiosperms with more than 2000 species in the world (Reznicek, 1990; Goetghebeur, 1998). In India, Karthikeyan & al. (1989) and Prasad & Singh (2002) reported 160 species, 1 subspecies and 29 varieties. Recently, Viji & al. (2016) recorded a new species from Tamil Nadu, which is new to the Indian flora, namely *C. nilagirica* Viji, Pandur., Deepu & G.C. Tucker. However, there is another *C. nilagirica* published by Hochst ex Steudel (1855), which is currently treated as a heterotypic synonym of *C. filicina* Nees (1834). As a result, and under the International Code of Nomenclature for algae, fungi and plants (McNeill & al., 2012), the name *C. nilagirica* Viji, Pandur., Deepu & G.C. Tucker is illegitimate, as it is a later homonym of *C. nilagirica* Hochst ex. Steud. Therefore, a new name *C. panduranganii* is proposed as a replacement name for *C. nilagirica* Viji, Pandur., Deepu & G.C. Tucker.

622. Kalidass, C. & Murugan, P. 2015. "*Physalis angulata* L. (Solanaceae): A new record for Odisha, India". *J. Econ. Taxon. Bot.* 39: 312–314.

Abstract: The paper reports *Physalis angulata* L. (Solanaceae), as a new record for Odisha. Distribution, morphological characters, nomenclatural citation, phenology, figure and relevant notes are also provided.

623. Kalidass, C. & Srivastava, A. 2015. "*Trichodesma amplexicaule* Roth (Boraginaceae) – A new record to the flora of Orissa". *Indian J. Forest.* 38(2): 153–154.

Abstract: *Trichodesma amplexicaule* Roth (Boraginaceae), is reported as a new record to the Flora of Orissa from Bhatli forest range, Ramkhol forest, Bargarh district. Brief description and photographs are provided.

624. Kamble, S.Y. 1992. "On a new species of *Protasparagus* from Orissa, India". *J. Econ. Taxon. Bot.* 17(1): 195–197.

Abstract: A new species of the genus *Protasparagus*, viz., *P. biradarii* Kamble allied to *P. racemosus* (Willd.) Oberm. has been described and illustrated from Dharamchampa, Mayurbhanj district of Orissa.

625. Kapoor, S.L. & Srivastava, G.S. 1962. "A new locality for *Gymnosporia bailladillana* Narayan. & Mooney'. *J. Bombay Nat. Hist. Soc.* 59: 685–686.

Abstract: *Gymnosporia bailadillana* V. Naray. & Mooney has been collected from a new locality, i.e., Rajbasa and Kunti Daur of Mahendragiri hills of Orissa. This species was earlier reported from Bailadilla hills and Karlapet of Kalahandi district.

626. Kar, T., Nayak, A.K. & Mandal, K.K. 2014. "*Neanotis wightiana* (Rubiaceae): A new distributional record for Odisha, India and taxonomic notes on its variations". *Ann. Pl. Sci.* 3(9): 811–812.

Abstract: While preparing an inventory of flowering plants of Similipal Biosphere Reserve, Odisha, few interesting specimens of family Rubiaceae were collected and identified as *Neanotis wightiana* (Wall. ex Wight & Arn.) W.H. Lewis. The scrutiny of literature and herbarium specimens at CAL revealed that this species is hitherto not reported from Odisha. Therefore, the said species is reported here as a new distributional record for the state. Description, dissected floral parts, photograph and taxonomic notes on its variations as observed in field have been provided for easy identification.

627. Kar, T., Nayak, A.K. & Mandal, K.K. 2014. "Occurrence of *Triadica cochinchinensis* Lour. (Euphorbiaceae) in Odisha, India". *Int. J. Appl. Res.* 10(4): 84–85.

628. Kar, T., Nayak, A.K. & Mandal, K.K. 2014. "*Sloanea sterculiacea* (Elaeocarpaceae): A new generic record for Odisha, India". *Int. J. Sci. Res.* 7(3): 41–42.

629. Kar, T., Nayak, A.K., Dash, B.R. & Mandal, K.K. 2014. "*Duchesnea indica* (Rosaceae): An addition to the flora of Odisha, India". *Biosci. Disc.* 5(2): 202–203.

Abstract: *Duchesnea indica* (Andrews) Focke is reported first time for Odisha from Similipal Biosphere Reserve. A detailed description, nomenclature, photograph, notes on occurrence and distribution of this taxon are provided for easy identification.

630. Maiti, M.M., Misra, G. & Ghosh, R.B. 1983. "Some new records of weeds from crop fields of Orissa". *J. Econ. Taxon. Bot.* 4: 308–310.

Abstract: A survey of the weed flora in relation to rice, sugarcane and jute crops was conducted in and around Larambha in the district of Sabalpur, Orissa during the year 1972 and 217 weeed species were collected. These are distributed in 148 genera under 43 families. Six species, viz., *Euphorbia parviflora, Kohautia aspera, Pulicaria wightiana, Heliotropium zeylanicum, Elsholtzia densa* and *Murdania versicolor* are noted to be new records for Orissa.

631. Majumdar, N.C. & Banerjee, L.K. 1985. "A new species of *Heritiera* Dryand. (Sterculiaceae) from Orissa". *Bull. Bot. Surv. India* 27: 150–151.

Abstract: A new species of *Heritiera* J.F. Gmel., viz., *H. kanikensis* allied to *H. fomes* Buch.-Ham. has been described and illustrated from Bhitarkanika, Orissa.

632. Malik, S.S. & Dikshit, N. 1990. "Occurrence of *Oryza officinalis* and *O. granulata* in Orissa". *J. Econ. Taxon. Bot.* 14(3): 605–608.

Abstract: Two wild species of rice that are *Oryza officinalis* Wall. ex Watt and *O. granulata* Nees & Arn. ex Watt were collected from Similipal Wildlife Sanctuary. These both species were evaluated for morphological characters. *Oryza officinalis* turn out as new record for the state of Orissa, whereas *O. granulata* has earlier been reported from Joypur tract of Orissa.

633. Mandal, K.K., Kar, T., Rout, N.C. & Biswal, A.K. 2012. "*Gymnopetalum* Arn. and *Gymnostemma* Blume (Cucurbitaceae): Two generic records for Odisha". *Life Sci. Leafl.* 11: 57–60.

Abstract: *Gymnopetalum* Arn., viz., *G. cochinchinense* (Lour.) Kurz and *Gymnostemma* Blume, viz., *G. pedata* Blume of Cucurbitaceae family are reported as two generic records for the state of Odisha. Brief description, correct botanical nomenclature and photographs of the two species have been provided to enable their correct identification.

634. Mishra, O.P., Raju, D.C.S. & Misra, S.C. 1990. "Some additions to the orchid flora of Orissa". *J. Bombay Nat. Hist. Soc.* 89: 184–186.

Abstract: Brief notes on taxonomy, distribution and ecological aspects of six epiphytic orchids, viz., *Dendrobium cathcartii* Hook.f., *D. pequanum* Lindl., *Bulbophyllum careyanum* (Hook.) Spreng., *Sarcochilus luniferus* (Rchb.f.) Benth. ex Hook.f., *Acampe ochracea* (Lindl.) Hochr. and *Cottonia peduncularis* (Lindl.) Rchb.f., which have been reported for the first time for the orchid flora of Orissa.

635. Mishra, S.C. & Panigrahi, G. 1982. "*Cleome aspera* Koenig ex DC. (Capparaceae), a new record for Orissa". *Indian J. Forest.* 5(2): 153–154.

Abstract: The paper reports *Cleome aspera* J. König ex DC., as a new record for the state of Orissa. The species extends its range of distribution from the Deccan Peninsula, further north to Orissa.

636. Mishra, S.C., Dubey, A.K. & Panigrahi, G. 1983. "New records of plants for Orissa and critical notes on nomenclature and distribution of certain taxa". *Indian J. Forest.* 6: 289–295.

Abstract: A critical re-assessment of the indigenous and naturalized flora of Orissa has established the presence of 1064 (826 dicots and 238 monocots) genera and 2344 (1835 dicots and 509 monocots) species belonging to 150 families of angiosperms. Another 52 species (35 dicots and 17 monocots) reported as as new records to the flora of modern Orissa state. *Dicliptera roxburghiana* Nees (1832) has been established as a taxonomic synonym for *D. chinensis* (L.) Juss., and therefore, the Indian taxon, so far without a valid name is assigned a new name (nom. nov.) as *D. bupleuroides* Nees var. *roxburghiana* Panigrahi & Dubey (1983). Critical notes on nomenclature, correct identity and distribution are also given in respect of a few other species.

637. Misra, R.C. & Das, G. 2015. "*Ocimum kilimandscharicum* Guerke (Lamiaceae): A new distributional record for Peninsular India with focus on its economic potential". *Proc. Natl. Acad. Sci. India, B* 86(4): 795–803.

Abstract: *Ocimum kilimandscharicum* Gürke (Lamiaceae), alien to the Indian flora, was discovered in the natural habitat from two locations of different agro-ecological zones

of Odisha. After critical review of published literature on distribution, it was earlier known only from Uttarakhand. However, its natural occurrence in Odisha was found to be a new record for peninsular India. A detailed diagnostic description, photographs, ecology and potentiality of the species was provided for easy identification and further economic utilization.

638. Misra, R.C. & Das, P. 1996. "New plant records for Orissa state". *J. Econ. Taxon. Bot.* 20(3): 635–637.

Abstract: Systematic studies on the flora of Nrusinghanath-Harishankar complex have yielded 6 new records of plants for the state of Orissa. These are *Abelmoschus angulosus* Wall. ex Wight & Arn., *A. manihot* (L.) Medik. subsp. *manihot* Borss.Waalk., *Atylosia sericea* Benth. ex Baker, *Euphorbia prolifera* Ham., *Ficus tsjakela* Burm.f. and *Loranthus obtusatus* Wall. A brief description of each taxon along with up-to-date nomenclature, ecological notes, distribution and herbarium specimen number has been provided.

639. Misra, R.C. & Sahoo, H.K. 2014. "*Thladiantha* Bunge (Cucurbitaceae): A new genus from Odisha and Central India". *Vegetos* 27(3): 274–278.

Abstract: *Thladiantha cordifolia* (Blume) Cogn., a wild cucurbit used as vegetable by local tribes, was discovered from semi-evergreen forests of Similipal Biosphere Reserve, Odisha within Mahanadi an east-coastal bio-geographical region of India. After critical review of published literature on distribution, its wild occurrence is found to be a new genus record for the flora of Odisha extending to central India. The present report deals with its taxonomic description, ecology and relevant ethno-botanical information for further economic utilization.

640. Misra, S. 1980. "Tow new orchids from Orissa". *Proc. 67th Indian Sci. Congr. Pt. III*. p. 48.

641. Misra, S. 1981. "Two new orchids from Orissa". *Blumea* 27: 213–216.

Abstract: One new species of *Habenaria* Willd., viz., *H. panigrahiana* allied to *H. foliosa* A. Rich. from Mohana, Ganjam district, Orissa and one variety, viz., *H. panigrahiana* var. *parviloba* from Bhanjanagar, Ganjam district, Orissa have been described and illustrated.

642. Misra, S. 1986. "Two new orchids from Orissa, India". *Nordic J. Bot.* 6: 25–29.

Abstract: Two new species of orchid, viz., *Bulbophyllum panigrahianum* allied to *B. kaitiense* Rchb.f. and *Liparis vestita* Rchb.f. subsp. *seidenfadenii* allied to *Liparis vestita* Rchb.f. subsp. *vestita* have been described from India from Kendughata, Rebana reserve forest, Keonjhar district of Orissa.

643. Misra, S. 1988. "A new subspecies of *Eria* from the Similipal hills of Orissa, India". *J. Orchid Soc. India* 2(1&2): 49–53.

Abstract: *Eria bilobulata* Seidenf. subsp. *meghasaniensis* S. Misra, subsp. nov. is described and illustrated here from the Maghasani Parabat in the Similipal forests of Orissa.

644. Misra, S. 1988. "The genus *Goodyera* in Orissa, India". *J. Orchid Soc. India* 2(1): 19–23.

Abstract: Four species of *Goodyera* are enumerated from Orissa, of which, *G. thailandica* (considered earlier as endemic to Thailand) represents a new record for India. *Goodyera fumata* and *G. hispida* are new records for the state, while *G. procera* has now been collected from many more localities.

645. Misra, S. 1989. "*Malaxis purpurea*: A new record from India". *Orchid News* 5(1&2): 12–14.

Abstract: *Malaxis purpurea* (Lindl.) Kuntze has been reported for the first time for India from Bhanjabasa forest, Similipal hills, Orissa. This taxon known earlier from Sri Lanka and distributed through Thailand, Laos, Vietnam and Philippines.

646. Misra, S. 1989. "*Pomatocalpa decipiens*: A new record from India". *Orchid Rev.* 97: 149–152.

Abstract: *Pomatocalpa decipiens* (Lindl.) J.J. Sm., known to-date as endemic to Sri Lanka, was collected from Orissa and described here as new record for India. An extension of range of another southern floristic element to Orissa, where a number of East Himalayan-Burmese species occur, is of phytogeographical interest.

647. Misra, S. 1992. "Studies on two interesting orchids from the Mahendragiri hills (Orissa), India". *J. Orchid Soc. India* 6(1&2): 43–48.

Abstract: *Gastrochilus acaulis* (Lindl.) Kuntze and *Eria pubescence* (Hook.) Ker Gawl. have been collected from the Mahendragiri hills and are described as new records for Orissa.

648. Misra, S. 2004. *Didymoplexis pallens* Griff., an uncommon saprophytic orchid from Orissa, India. In: Manilal, K.S. & Sathish Kumar, C. (eds.), *Orchid Memories – A tribute to Gunnar Seidenfaden*. pp. 73–80. Mentor Books & Indian Association of Angiosperm Taxonomy.

Abstract: *Didymoplexis pallens* Griff., a scarcely known saprophytic orchid is recorded for the first time for Orissa from Ghumsar forest of Ganjam district. Detailed morphological descriptions of the species along with illustrations are given.

649. Misra, S. 2009. "A new species of *Liparis* L.C. Richard (Orchidaceae) from Odisha". *J. Orchid Soc. India* 23(1&2): 87–90.

Abstract: A new species of *Liparis* Rich., viz., *L. udaii*, allied to *L. paradoxa* (Lindl.) Rchb.f. has been described and illustrated from Khajuridihi forest block, Sundaragada district, Odisha.

650. Misra, S. 2011. "Floral diversity in *Odisha cleistantha* S. Misra: A monotypic and endemic terrestrial orchid from India". *J. Orchid Soc. India* 25(1&2): 13–18.

Abstract: *Odisha cleistantha* S. Misra is monotypic terrestrial orchid described from Odisha. Interesting variations observed in the structure of the flowers, especially in the plants collected from Koraput district of the state, has been discussed. The revised morphological description for this species along with the drawing for the biotypes from different regions of Odisha has been provided.

651. Misra, S. 2012. "A new species of *Zeuxine* (Orchidaceae) from Rebana forest of Odisha, India". *Nelumbo* 54: 17–19.

Abstract: A new orchid species, viz., *Zeuxine mooneyi* S. Misra is described and illustrated from Rebana forest, Kendujhar district, Odisha. The new species is allied to *Z. gracilis* (Breda) Blume, but differs in having connate lateral sepals and incurved peltate-headed papillae inside hypochile of lip.

652. Misra, S., Nayak, P.K. & Panda, S.P. 2011. "Notes on *Habenaria stenopetala* Lindl., an uncommon terrestrial orchid from India". *Indian J. Forest.* 34(2): 181–184.

Abstract: *Habenaria stenopetala* Lindl. (Orchidaceae) is known for its variability. Study of live materials of this species from different regions of Orissa supported this view. Morphology of this species from field observations supplemented with study of herbarium materials has been discussed in this communication.

653. Misra, S., Nayak, P.K. & Panda, S.P. 2012. "*Liparis downii* Ridl., a rare orchid for India from Koraput district of Odisha.". *J. Orchid Soc. India* 26(1&2): 31–33.

Abstract: *Liparis downii* Ridl. collected from Laxmipur, Koraput district, Odisha is a rare finding for India and forms an addition to the orchid flora of the state. This species is allied to *L. paradoxa* (Lindl.) Rchb.f., but is of a shorter stature and has a broad obovate mucronate lip.

654. Misra, S., Panda, S.P. & Nayak, P.K. 2011. "*Bulbophyllum guttulatum* Wall. ex Hook.f.: A rare orchid from the Eastern Ghats of India". *J. Econ. Taxon. Bot.* 35(1):174–178.

Abstract: *Bulbophyllum guttulatum* (Hook.f.) N.P. Balakr., an Himalayan species finds its way rarely in the Eastern Ghats of India from Kutia hills in Koraput district, Orissa. Morphological description with photographs and illustrations for this species is provided here.

655. Misra, S., Panda, S.P. & Nayak, P.K. 2012. "*Nervilia falcata* (King & Pantl.) Schltr. (Orchidaceae) a new record for Peninsular India.". *J. Orchid Soc. India* 26(1&2): 75–78.

Abstract: *Nervilia falcata* (King & Pantl.) Schltr., known as an endemic species of the sub-Himalayan tracts in the northeast India, has been recorded in the state of Odisha from Laxmipur, Koraput district extending its distribution range to Peninsular India. Illustration and morphological description for this rare species has been provided in this communication.

656. Misra, S., Panda, S.P., Nayak, P.K. & Sahu, D. 2010. "*Geodorum attenuatum* Griff. (Orchidaceae), a new record to the flora of India". *Indian J. Forest.* 33(1): 99–101.

Abstract: *Geodorum attenuatum* Griff., collected from the Niyamgiri hills of Odisha, is described here as a new record to the flora of India. Earlier this species is reported from Myanmar, Thailand, Laos and Vietnam.

657. Mondal, P. & Mukherjee, P.K. 1989. "Notes on distribution of some plants from Keonjhar district, Orissa". *Bull. Bot. Surv. India* 31: 130–131.

Abstract: Five species, viz., *Argyreia pilosa* Arn. (Convolvulaceae), *Cycas circinalis* L. (Cycadaceae), *Gnetum scandens* Roxb. (Gnetaceae), *Schefflera stellata* (Gaertn.) Harms (Araliaceae) and *Strobilanthes auriculatus* Nees (Acanthaceae) have been reported for the first time for Orissa from Keonjhar district.

658. Mondal, P. & Mukherjee, P.K. 1990. "Records of two new taxa from Orissa". *J. Bombay Nat. Hist. Soc.* 87: 472–474.

Abstract: *Cyathea balakrishnanii* R.D. Dixit & A.K. Tripathi and *Dracaena spicata* Roxb. have been reported for the first time from Orissa from Keonjhar district.

659. Mondal, P. & Mukherjee, P.K. 1991. "New records of three grasses and one sedge from Orissa". *J. Bombay Nat. Hist. Soc.* 88: 306–307.

Abstract: Three grasses, viz., *Scirpus roylei* (Nees) R. Parker, *Digitaria setigera* Roth and *Eragrostis nigra* Nees ex Steud. and one sedge, viz., *Panicum humidorum* Buch.-Ham. ex Hook.f. have been reported for the first time from Orissa from Keonjhar district.

660. Mukherjee, A. & Namhata, D. 1989. "New plant records from Orissa". *Geobios New Rep.* 8: 82–84.

Abstract: Six species of angiosperms, viz., *Alternanthera paronychioides* A. St.-Hil. (Amaranthaceae), *Exacum pedunculatum* L. (Gentianaceae), *Gnaphalium pensylvanicum* Willd. (Asteraceae), *Melilotus albus* Medik. ex Desr. (Papilionaceae), *Rhus griffithi* Hook.f. (Anacardiaceae) and *Richardia scabra* L. (Rubiaceae) turned out as new records for the state of Orissa from Sundargarh district.

661. Murugan, P., Kalidass, C. & Panda, P.C. 2015. "A new record of *Solanum diphyllum* L. (Solanaceae): From Eastern Ghats India". *J. Econ. Taxon. Bot.* 39(3&4): 527–529.

Abstract: *Solanum diphyllum* L., is newly recorded for Eastern Ghats, from Goudthala, Junagarh range of Kalahandi district of Odisha. Earlier this species is reported from Assam, Bihar, Karnataka, Kerala, Maharashtra, Tamil Nadu, Uttar Pradesh, and West Bengal. A detailed description with images and relevant notes are provided for easy identification in the field.

662. Murugan, P., Kalidass, C. & Panda, P.C. 2015. "*Acmella uliginosa* (Sw.) Cass. (Asteraceae): Note on extended distribution to Odisha, India". *J. Econ. Taxon. Bot.* 39(3-4): 407–410.

Abstract: *Acmella uliginosa* (Sw.) Cass. is recorded for the first time for Odisha from Chandaka Dampara Wildlife Sanctuary, Khurda. Earlier this species was reported from West Bengal and Tamil Nadu. Detailed description, distribution, phenology and photo plate of the collected specimens are provided for its easy identification. A key to all the three species of *Acmella* in Odisha is also provided.

663. Murugan, P., Kalidass, C. & Panda, P.C. 2015. "*Commelina maculata* Edgew. (Commelinaceae): A new species from Odisha, India". *J. Econ. Taxon. Bot.* 39(3&4): 411–412.

Abstract: *Commelina maculata* Edgew., is reported as a new record for Odisha from Udayagiri hills, Gajapati district. Earlier this species was reported from Sikkim, Meghalaya, Kerala and Andhra Pradesh. A short description along with relevant notes and figure is provided for further collection and identification in the field.

664. Naithani, H.B. & Raizada, M.B. 1976. "New distributional records of eleven plants in India, Nepal and Burma". *Indian Forester* 102(10): 675–691.

Abstract: This paper presents new distributional records of eleven plant species in India, Nepal and Burma. *Argyreia involucrata* C.B. Clarke (Convolvulaceae) has been new record for the state of Orissa. Notes are supplemented by remarks on synonymy, description, distribution and distinction from the allied species. Species are arranged alphabetically and specimens are deposited at DD.

665. Nanda, G.C., Satapathy, K.B. & Pathak, N.N. 2002. Medicinal values of some Vitex species. In: Sahoo, S., Ramesh, D.B., Panda, P.K. & Misra, V.N. (eds.), *Proceedings of the National Seminar on Plant Resources Utilization for Backward Area Development*. Allied Publishers, New Delhi. pp. 106–110.

Abstract: Medicinal uses of ten species of *Vitex* species are provided. The species are arranged alphabetically, and for every species the local names, uses, dosage, method of administration and localities from where the uses are recorded also provided.

666. Nanda, S., Biswal, A.K., Choudhury, B.P. & Rath, S.P. 2004. "Notes on occurrence of *Solanum ferox* – A new report from Orissa". *J. Econ. Taxon. Bot.* 28(1): 246–248.

Abstract: *Solanum ferox* L. (Solanaceae) has been reported for the first time for the state of Orissa from Gonasika hills, Keonjhar district.

667. Nayak, A.K., Dash, B.R., Kar, T. & Mandal, K.K. 2013. "*Orthosiphon aristatus* (Lamiaceae): A new record for the flora of Odisha, India". *Pl. Sci. Res.* 35(1&2): 72–73.

Abstract: *Orthosiphon aristatus* (Blume) Miq. (Lamiaceae) is reported for the first time from Odisha state from Similipal Biosphere Reserve. Brief botanical description, nomenclature, distribution and ecological notes of the taxon have been provided in the paper.

668. Panda, P.C. 1997. "A note on the identity and distribution of *Hydrolea zeylanica* (L.) Vahl var. *erecta* Haines (Hydrophyllaceae)". *J. Bombay Nat. Hist. Soc.* 94: 595–596.

Abstract: The occurrence of *H. zeylanica* (L.) Vahl var. *erecta* Haines in Nilagiri, Balasore district, Orissa is a new distributional record. Earlier this variety was reported from Bihar. Nomenclature, brief description, pheno-logy, ecology and distribution in respect of this species are provided in the paper.

669. Panda, P.C. 2002. "*Typhonium flagelliforme* (Roxb. ex Ludd.) Blume, family Araceae: an addition to the flora of Orissa". *J. Bombay Nat. Hist. Soc.* 99(1): 157–158.

Abstract: *Typhonium flagelliforme* has been reported for the first time for Orissa from Cuttack and Khurda districts.

670. Panda, P.C. & Das, P. 1995. "Some additions to the flora of Orissa". *J. Econ. Taxon. Bot.* 19(2): 479–480.

Abstract: On consultation of all available literature on floristic studies, three taxa, viz., *Atylosia sericea* Benth. ex Baker (Fabaceae), *Jasminum trichotomum* B. Heyne ex Roth (Oleaceae) and *Lagascea mollis* Cav. (Asteraceae) turned out to be new distributional records for the state of Orissa. Correct nomenclature, short botanical description, phenology, locality of collection, collection number, notes on ecology and distribution in respect of these species have also been given.

671. Panda, P.C. & Das, P. 1996. "Two additional species of Brassicaceae for the flora of Orissa". *J. Bombay Nat. Hist. Soc.* 93(2): 314–316.

Abstract: Two species of the family Brassicaceae, viz., *Cardamine scutata* Thunb. and *Rorippa montana* (Hook.f. & Thomson) Small have been reported for the first time for Orissa from Regional Plant Resource Centre (Ekamrakanan) premises, Khurda district. Nomenclature, short botanical description, phenology, collection number, place and date of collection, ecological and nomenclatural notes have been provided.

672. Panda, P.C. & Patnaik, S.N. 1984. "On the occurrence of *Avena ludoviciana* Dur. (Poaceae) in Orissa". *J. Econ. Taxon. Bot.* 5(2): 496.

Abstract: The occurrence of *Avena ludoviciana* Durieu (Poaceae) for the first time from Odisha from Utkal University campus, Bhubaneswar, Puri district. Earlier this species was reported from Maharashtra, Uttar Pradesh and West Bengal. Correct nomenclature, short description of the concerned taxon and exact citation of specimens are provided here.

673. Panda, P.C. & Patnaik, S.N. 1986. "*Pomatocalpa decipiens* (Lindl.) J.J. Smith (Orchidaceae) – A new record for India". *J. Econ. Taxon. Bot.* 8(2): 475– 476.

Abstract: An epiphytic orchid, *Pomatocalpa decipiens* (Lindl.) J.J. Sm., endemic in Ceylon has been reported for the first time for India from Rajin Reserve Forest of Puri district, Odisha.

674. Panda, P.C., Acharya, P.K. & Debata, A.K. 2010. "Occurrence of *Ipomoea lacunosa* Linn. (Convolvulaceae) in Orissa – A new plant record for India". *J. Econ. Taxon. Bot.* 34(2): 401–403.

Abstract: The present paper deals with *Ipomoea lacunosa* L., which has been collected for the first time in India from RPRC (Ekamrakanan) campus, Bhubaneswar, Orissa. The species is a native of America and during recent years it established in India. Detailed description, phenology and ecology of the taxon have been provided along with photographs for easy identification.

675. Panda, P.C., Choudhury, B.P. & Patnaik, S.N. 1985. "*Cleome rutidosperma* DC. (Capparaceae) from Orissa – A new distributional record". *Bull. Pure Appl. Sci.* 4B(1): 59–60.

Abstract: *Cleome rutidosperma* DC. (Capparaceae), a native of Tropical Africa, has been recorded for the first time for the flora of Odisha from Puri district along with all relevant information. Earlier, this species reported from Andaman and Nicobar Islands, Assam, Kerala, Maharashtra, Tamil Nadu and West Bengal.

676. Panda, P.C., Choudhury, B.P. & Patnaik, S.N. 1985. "New plant records for Orissa from Puri district". *Proc. 9th Annual Conf. Orissa Bot. Soc. (Cuttack)*. p. 28.

Abstract: In connection with the floristic survey of Puri district under district Flora Scheme sponsored by Botanical Survey of India, about 1100 species of angiospermic plants have been collected from different parts of the district during the period July 1983 to October 1984. Of these, 23 species after consultation with all available literature turn out as new records for the state of Orissa. They belong to two disinct categories, namely

(i) those not all dealt with by Haines (1921–1926), Mooney (1950) and subsequent workers, thus additions to the Botany of Bihar and Orissa (7 species) and (ii) those recorded by Haines (l.c) and Mooney (l.c.) from Bihar or devoid of any precise locality – hence new to the flora of Orissa state (16 species). In the enumeration, the species are arranged alphabetically followed by name of the families within parantheses, correct name with basionym and synonyms (if any) short description, phenology, exact citation of specimens, and ecological and nomenclatural notes, have been provided.

677. Panda, P.C., Choudhury, B.P. & Patnaik, S.N. 1985. "The genus *Macrotyloma* (Wight & Arn.) Verdc. (Fabaceae) in Orissa". *J. Econ. Taxon. Bot.* 7(3): 631–633.

Abstract: An account of two species of *Macrotyloma* occurring in Orissa is presented in this paper with a note on the taxonomy of the genus. *M. ciliatum* (Willd.) Verdc. turned out to be a new record for Eastern India.

678. Panda, P.C., Choudhury, B.P. & Patnaik, S.N. 1985. "New records of plants for Orissa State – II". *Geobios New Rep.* 4: 52–54.

Abstract: Nine species, viz., *Acalypha lanceolata* Willd. (Euphorbiaceae), *Girardinia diversifolia* (Link) Friis (Urticaceae), *Isachne globosa* (Thunb.) Kuntze (Poaceae), *Maerua arenaria* (DC.) Hook.f. & Thomson (Capparaceae), *Nesaea lanceolata* (B. Heyne ex C.B. Clarke) Koehne (Lythraceae), *Neodistemon indicum* (Webb.) Babu & A.N. Henry (Urticaceae), *Phalaris minor* Retz. var. *nepalensis* (Trin.) Box, *Physalis peruviana* L. and *Wahlenbergia erecta* (Roth ex Roem. & Schult.) Tuyn (Campanulaceae), have been recorded for the first time from the state of Orissa. These are pre-sented here with correct name, phenology, cita-tion of specimens, ecological and nomenclatural notes.

679. Panda, P.C., Choudhury, B.P. & Patnaik, S.N. 1988. "New records of plants for the state of Orissa – III". *J. Econ. Taxon. Bot.* 12(2): 381–382.

Abstract: Four plant species, viz., *Cyrtococcum accrescens* (Trin.) Stapf, *Dinebra retroflexa* (Vahl) Panz., *Euclasta clarkei* (Hack.) Cope of Poaceae and *Heliotropium curassavicum* L. of Boraginaceae are reported as additions to the flora of Odisha from Puri district. Species are alphabetically arranged along with correct nomencla-ture, pertinent synonym(s), diagnostic characters, citation of specimens, phenology, ecological and distributional notes.

680. Panda, P.C., Choudhury, B.P. & Patnaik, S.N. 1997. "New and interesting plant records for Orissa". In: Gupta, B.K. (ed.), *Higher Plants of Indian Subcontinent*. Vol. VI *(Indian J. Forest., Addit. Ser. No. VIII)*. Bishen Singh Mahendra Pal Singh, Dehra Dun. pp. 165–169.

Abstract: Ten plant species, viz., *Abelmoschus manihot* (L.) Medik. subsp. *tetraphyllus* (Roxb. ex Hornem.) Borss.Waalk. (Malvaceae), *Adenostemma lavenia* (L.) Kuntze var. *reticulatum*

(DC.) Panigrahi (Asteraceae), *Deeringia amaranthoides* (Lam.) Merr. (Amaranthaceae), *Geniosporum elongatum* Benth. (Lamiaceae), *Heliotropium marifolium* Retz. var. *wallichii* C.B. Clarke (Boraginaceae), *Hydrocotyle sibthorpioides* Lam. (Apiaceae), *Lindernia multiflora* (Roxb.) Mukerjee (Scrophulariaceae), *Rotala mexicana* Cham. & Schltdl. (Lythraceae), *Sporobolus coromandelianus* (Retz.) Kunth (Poaceae) and *Staurogyne glutinosa* (Wall. ex C.B. Clarke) Kuntze (Acanthaceae) have been reported for the first time for the Flora of Odisha. Nomenclature, phenology, locality of collection, field number, notes on ecology and distribution in respect of these ten taxa are given. Name of the family has been cited within parenthesis after nomenclature of individual species.

681. Panda, P.C., Kar, B. & Jena, A.K. 2012. "New record of occurrence of *Boesenbergia longiflora* (Wall.) Kuntze (Zingiberaceae) in Eastern Ghats". *J. Econ. Taxon. Bot.* 36(2): 374–376.

Abstract: *Boesenbergia longiflora* (Wall.) Kuntze (Zingiberaceae) is reported for the first time from Eastern Ghats from Belghar forests of Bouda district of Orissa. So far this taxon is not reported to occur within the geographical boundary of Eastern Ghats covering the states of Orissa, Andhra Pradesh, Tamil Nadu and Karnataka and its presence in Eastern Ghats is a new distributional record with considerable phytogeographical significance.

682. Panda, P.C., Mohapatra, B.K. & Das, P. 1997. "New distributional records of plants from Orissa". *J. Bombay Nat. Hist. Soc.* 94(2): 445–446.

Abstract: Five angiospermic taxa, viz., *Aristolochia tagala* Cham. (Aristolochiaceae), *Sauromatum venosum* (Aiton) Kunth (Araceae), *Spermacoce mauritiana* Gideon ex Verdc., *S. latifolia* Aubl. (Rubiaceae) and *Spilanthes iabadicensis* A.H. Moore (Asteraceae) have been recorded for the first time for the Flora of Orissa.

683. Panda, P.C., Acharya, P.K., Debata, A.K. & Acharya, L.K. 2008. "*Geophila repens* (Linn.) I.M. Johnston (Rubiaceae) – A new and interesting plant record for Eastern India". *J. Econ. Taxon. Bot.* 32: 632–635.

Abstract: The genus *Geophila* D. Don belongs to the tribe Psychotrieae and subfamily Rubioideae of the family Rubiaceae and comprises of 20 herbaceous species in the world with greater concentration of species in the tropics (Mabberley, 1997). In India, the genus is represented by a single species namely, *Geophila repens* (L.) I.M. Johnst. (= *G. reniformis* D. Don) so far known to occur in Khasia hills, Western Ghats and the Andaman Islands (Santapau & Henry, 1973). Present record from Dhuanali Reserve Forest, Puri Forest Division, Orissa extends its distribution to Eastern India.

684. Panda, P.C., Acharya, P.K., Kar, S.K. & Mahapatra, A.K. 2013. "Three new plant records for the state of Odisha". *Pl. Sci. Res.* 35(1&2): 74–76.

Abstract: Three angiospermic plant species namely, *Homalium tomentosum*, *Melinis repens* and *Vahlia digyna* are reported here as new distributional records for Odisha state.

685. Panda, P.C., Acharya, P.K., Sahu, D.K., Baboo, B. & Mahapatra, A.K. 2013. "*Olax nana* Wall. ex Benth. (Olacaceae) – A new plant record for Odisha". *J. Econ. Taxon. Bot.* 37(1): 106–107.

Abstract: Occurrence of *Olax nana* Wall. ex Benth. (Olacaceae) is reported for the first time for Odisha from Polasara Range of Ghumsar South Forest Division of Ganjam district. Earlier reported from northwest Himalaya, northwest and central India, Assam, Bihar, Andhra Pradesh and West Bengal.

686. Panda, S. & Das, A.P. 1989. "Occurrence of *Stachytarpheta dichotoma* Vahl in Orissa". *Indian Bot. Reporter* 8: 71–72.

687. Panda, S. & Das, A.P. 1989. "*Sida ovata* Forsk. (Malvaceae) – A new record for eastern India". *Geobios New Rep.* 8: 77–79.

Abstract: *Sida ovata* Forssk. has been reported for the first time for eastern India from Brook's hill, Sambalpur district, Orissa. This species was reported so far from Uttar Pradesh, Rajasthan, Gujarat, Maharashtra, Karnataka, Delhi and Jammu and Kashmir.

688. Panda, S. & Das, A.P. 1991. "*Pavonia zeylanica* (L.) Cav. – A new record for Western Orissa". *Indian J. Forest.* 14(4): 327–328.

Abstract: *Pavonia zeylanica* (L.) Cav. has been reported for the first time for western Orissa from Kapildhar falls on Gandhamardan hills of Sambalpur district.

689. Panda, S. & Das, A.P. 1992. "A few noteworthy taxa for the floristics of Orissa (India)". *J. Econ. Taxon. Bot.* 16(2): 335–336.

Abstract: Three taxa, viz., *Elatostema cuneatum* Wight (Urticaceae), *Hedyotis nitida* Wight & Arn. (Rubiaceae) and *Lobelia heyneana* Roth ex Roem. & Schult. have been recorded for the first for the flora of Orissa from Sambalpur district.

690. Panda, S. & Das, A.P. 1992. "The distribution of *Glochidion hirsutum* (Roxb.) Voigt in India". *J. Bombay Nat. Hist. Soc.* 88(3): 468–469.

Abstract: *Glochidion hirsutum* (Roxb.) Voigt has been reported for the first time for Orissa from Pradhanpat falls, Deogarh, Sambalpur district. Earlier this species is reported from Assam, Arunachal Pradesh, Meghalaya, Tripura, Sikkim, Maharashtra, Karnataka, Andaman and Nicobar Islands and West Bengal.

691. Panda, S. & Das, A.P. 1993. "A few taxa new to eastern India with annotations on distribution". *J. Bombay Nat. Hist. Soc.* 90: 549–550.

Abstract: *Hedyotis caerulea* Wight & Arn., *Heliotropium zeylanicum* (Burm.f.) Lam., *Hemigraphis crenata* (Benth. ex Hohen.) Bremek., *Lobelia dichotoma* Miq. and *Murdannia pauciflora* (Wight) G. Brückn. have been reported for the first time for Eastern India from Sambalpur district of Orissa.

692. Panda, S., Banerjee, R.N. & Das, A.P. 1990. "Taxonomical and distributional notes on *Polygala telephioides* Klein ex Willd. in India". *J. Bombay Nat. Hist. Soc.* 87: 326–327.

Abstract: *Polygala telephioides* Klein ex Willd. has been reported for the first time for the flora of Orissa from Brook's hill, Sambalpur district. Earlier this species was reported from Karnataka, Kerala and Tamil Nadu. A detailed description with illustration has been provided here for easy identification.

693. Panda, S.P., Subudhi, H.N. & Patra, H.K. 2009. "New record of plants for Orissa". *J. Econ. Taxon. Bot.* 33(4): 837–838.

Abstract: Three infrageneric taxa, viz., *Adenia hondala* (Gaertn.) W.J. de Wilde (Passifloraceae), *Muntingia calabura* L. (Elaeocarpaceae) and *Eclipta prostrata* (L.) L. var. *dixitii* An.Kumar & K.K. Khanna have been enumerated as new records for the state of Orissa from Cuttack district.

694. Panda, S.P., Singh, B.K., Subudhi, H.N. & Patra, H.K. 2016. "The genus *Acanthus* L. (Acanthaceae) in Bhitarkanika National Park, Kendrapara district of Odisha, India". *ZOO's Print* 31(8): 9–11.

Abstact: An account of three species of *Acanthus* L. (Acanthaceae) occuing in Bhitarkanika National Pak, Odisha is presented in this paper. *Acanthus ebacteatus* Vahl turned out to be a new distibutional record for the flora of Bhitakanika National Pak and as well as for Odisha state.

695. Panda, S.P., Mohapatra, S.K., Jani, C., Sahu, A.K., Swain, K.K. & Biswal, M. 2013. "Extended range of distribution of *Meyna laxiflora* Robyns (Rubiaceae) from the Bhitarkanika National Park, Odisha, India". *J. Econ. Taxon. Bot.* 37(3): 560–563.

Abstract: Exhaustive explorations of the forests of Bhitarkanika National Park in Kendrapara district of Odisha resulted in extension range of *Meyna laxiflora* Robyns (Rubiaceae). After careful examinations the identity has been confirmed and the taxon is described as a new record both for the flora of Odisha and Bhitarkanika National Park. A brief description of the species along with correct nomenclature, ecology, phenology and distribution is provided.

696. Panda, S.P., Mohapatra, S.K., Jani, C., Sahu, A.K., Swain, K.K. & Biswal, M. 2014. "Extended range of distribution of *Meyna laxiflora* Robyns (Rubiaceae) from the Bhitarkanika National Park, Odisha, India". *Int. J. Innov. & Appl. Res.* 2(5): 6–9.

Abstract**:** Same as the above abstract.

697. Patra, B.C. & Choudhury, B.P. 1986. "Plants hitherto unknown in the state of Orissa". *J. Econ. Taxon. Bot.* 8: 231–232.

Abstract: Four taxa, viz., *Gynura nitida* DC. (Asteraceae), *Hedyotis nitida* Wight & Arn., *H. pumila* L.f. (Rubiaceae) and *Utricularia uliginosa* Vahl (Lentibulariaceae) turn out to be new records for the state of Orissa from Dhenkanal district.

698. Patra, B.C. & Choudhury, B.P. 1988. "*Merremia quinquefolia* (Linn.) Hall.f.: A new record for Eastern India". *J. Bombay Nat. Hist. Soc.* 85: 240–241.

Abstract: *Merremia quinquefolia* (L.) Hall.f. has been reported for the first time for Eastern India from Dhenkanal district of Orissa. This species has so far been recorded from Maharashtra, Gujarat and Rajasthan.

699. Patra, B.C. & Choudhury, B.P. 1989. "A new addition to the grasses of Orissa". *J. Econ. Taxon. Bot.* 13: 254.

Abstract: *Brachiaria deflexa* (Schumach.) C.E. Hubb. ex Robyns has been reported for the first time for Northeast India in general and from Dhenkanal district of Orissa in particular. This species has so far been recorded from Maharashtra, Punjab, Tamil Nadu and Uttar Pradesh.

700. Paul, S.R. 1975. Two new distributional records for Orissa". *Geobios (Jodhpur)* 2: 27–28.

701. Pradhan, P.K., Choudhury, B.P. & Rath, S.P. 1994. "*Alternanthera philoxeroides* (Mart.) Griseb. – An addition to the flora of Orissa". *Proc. 19th Annual Conf. Orissa Bot. Soc.* p. 40.

702. Pradheep, K., **Pani, D.R. & Bhandari, D.C. 2013.** "Addition of *Gymnopetalum chinense* (Lour.) Merr. to the flora of Odisha". *Indian Forester* 135(5): 465–466.

Abstract: *Gymnopetalum chinense* (Lour.) Merr. has been reported for the first time for the Odisha flora from Dhenkanal district. Earlier this species is reported Andaman and Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Jharkhand, Kerala, Manipur, Meghalaya, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

703. Pramod, C., **Manudev, K.M., Pradeep, A.K. & Nampy, S. 2012.** "*Myriophyllum siamense* (Haloragaceae): A new record for India". *Rheedea* 22(2): 95–97.

Abstract: *Myriophyllum siamense* (Craib.) Tardieu (Haloragaceae) is reported for the first time for India from Malligav, Puri district, Odisha, previously reported from Malesia, Vietnam and Thailand. A description, photograph and relevant notes on the species are provided.

704. Rao, T.A. & Banerjee, L.K. 1967. "Some plants records for Orissa state". *J. Bombay Nat. Hist. Soc.* 64(3): 583–584.

Abstract: *Ophioglossum polyphyllum* A. Braun, *Rotala verticillata* L., *R. indica* (L.) Druce and *Utricularia minutissima* Vahl collected near Chandipur shore, Konarak and Puri coast of Orissa state were found to be new records for this state.

705. Rao, T.A., Banerjee, L.K. & Mukherjee, A.K. 1970. "Some interesting plant records from the Orissa coast". *J. Bombay Nat. Hist. Soc.* 66: 659–660.

Abstract: Two interesting plants, viz., *Myriostachya wightiana* (Nees ex Steud.) Hook.f. and *Cyperus esculentus* L. have been reported for the first time from Odisha state from Paradip and Chandipur, respectively.

706. Ravi, N., Saxena, H.O. & Brahmam, M. 1995. "*Dimeria mahendragirensis* – A new species of Poaceae from Orissa". *Rheedea* 5(2): 142–144.

Abstract: A new species of *Dimeria* R. Br., viz., *D. mahendragirensis* allied to *D. lehmanii* (Nees) Hack. has been described and illustrated from Mahendragiri, Ganjam district of Orissa.

707. Reddy, C.S. & Dutt, C.B.S. 2001. "*Ceropegia bulbosa* Roxb. (Asclepiadaceae): A new record for Orissa, India". *J. Econ. Taxon. Bot.* 25(3): 719–720.

Abstract: *Ceropegia bulbosa* Roxb. (Asclepiadaceae) is recorded as an addition to the Flora of Orissa from Kandhal RF, towards Brajanathapur, Angul district.

708. Reddy, C.S. & Pattanaik, C. 2006. "Additions to the flora of Orissa from Gandhamardan hills". *J. Econ. Taxon. Bot.* 30(3): 609–610.

Abstract: Four species, viz., *Asparagus gonocladus* Baker (Liliaceae), *Corchorus triloculari*s L., *Triumfetta rotundifolia* Lam. (Tiliaceae) and *Enicostema axillare* (Lam.) A. Raynal (Gentianaceae) are recorded and additions to the Flora of Orissa from Gandhamardan hills.

709. Reddy, C.S. & Pattanaik, C. 2011. "*Gomphostemma aeriocarpum* Benth. (Lamiaceae) – A new record for the Eastern Ghats, India". *J. Threat. Taxa* 3(10): 2147–2150.

Abstract: *Gomphostemma aeriocarpum* Benth. (Lamiaceae) has been reported for the first time for Eastern Ghats from Sileru West Reserve Forest, Malkangiri district, Orissa. The present exploration of this species from Orissa-Andhra Pradesh border is an extended distribution from the southern state (Karnataka, Kerala and Tamil Nadu). From earlier collections, it was observed that the species confined to the Western Ghats region but the present study found the species in the Eastern Ghats also.

710. Reddy, C.S., Pattanaik, C. & Biswal, A.K. 2009. "*Crotalaria angulata* Miller and *Taxillus bracteatus* (Wall.) Tieghem – New records to the flora of Orissa". *J. Bombay Nat. Hist. Soc.* 106(2): 224–225.

Abstract: *Crotalaria angulata* Mill. and *Taxillus bracteatus* (Wall.) Tiegh. have been reported for the first time for the flora of Orissa from Similipal Biospeher Reserve.

711. Rout, N.C. & Dhal, N.K. 1999. "Rediscovery of *Aniseia martinicensis* (Jacq.) Choisy from Orissa." *Rheedea* 9(1): 105–108.

Abstract: *Aniseia martinicensis* (Jacq.) Choisy (Convolvulaceae) has been relocated on the bank of Ansupa Lake, Cuttack district, Orissa, after a lapse of 36 years. Although a number of district floras have been worked out since the first collection was made by Panigrahi, no subsequent collection of the taxon reflects the rarity of the distribution of the species in Orissa. A detailed description together with illustration is provided to facilitate easy identification of this little-known species from Orissa.

712. Rout, N.C., Dhal, N.K., Biswal, A.K. & Das, P.K. 2010. "Rare and interesting distribution of *Nymphoides parviflora* (Griseb.) Kuntze (Menyanthaceae) from Eastern Ghats, Orissa, India". *J. Econ. Taxon. Bot.* 34(2): 359–362.

Abstract: *Nymphoides parvifolia* (Griseb.) Kuntze is reported to grow in the shallow ponds and paddy fields in the tropics of southern India to Malaysia including Australia at Mean Sea Level. The species has been growing in a shallow pond at 4000 ft in Deomali ranges of Eastern Ghats in Koraput district, Orissa. The rarity and distribution of the taxon in higher elevations makes it further significant. The species turns out to be a new record for the state of Orissa.

713. Rout, N.C., Dhal, N.K., Dash, P.K. & Biswal, A.K. 2008. "*Corallodiscus* Batalin (Gesneriaceae): A new generic record for Eastern Ghats, Orissa". *Curr. Sci.* 95(1): 23–24.

Abstract: *Corallodiscus lanuginosus* (Wall. ex R. Br.) B.L. Burtt has been recorded for the first time for Eastern Ghats from Similipadar Hills in the Karlapat range, Kalahandi district, Orissa. This genus is also a new record for Eastern Ghats.

714. Sahni, K.C. & Bennet, S.S.R. 1974. "A new species of *Albizia* from Orissa". *Indian Forester* 100(6): 371–372.

Abstract: A new species of *Albizia*, viz., *A. orisensis* allied to *A. odoratissima* (L.f.) Benth. has been described and illustrated from way to Panasa, Orissa.

715. Sahu, D.K., Biswas, S., Dhal, N.K. & Brahmam, M. 2010. "*Zeuxine longilabris* (Lindl.) Benth. ex Hook.f. – A few distributional record of Orchidaceae from Orissa". *Indian J. Forest.* 33(3): 399–400.

Abstract: A new distributional record of *Zeuxine longilabris* (Lindl.) Benth. ex Hook.f. from Malkangiri district of Orissa is reported in the paper.

716. **Sahu, D.K., Biswas, S., Dhal, N.K. & Brahmam, M. 2013.** "*Anisomeles indica* (L.) Kuntze var. *mollissima* Benth. (Lamiaceae) – An addition to the flora of Orissa from Malkangiri". *ZOO's Print* 28(2): 25–26.

Abstract: *Anisomeles indica* (L.) Kuntze var. *mollissima* Benth. (Lamiaceae) collected from Mudulipada (Bonda Hills), Malkangiri district is an addition to the Flora of Orissa. Detailed description and illustration of the species has been provided.

717. **Sahu, S.C. & Dhal, N.K. 2011.** "Rediscovery of *Uraria picta* (Jacq.) Desv. ex DC. (Fabaceae) – A lesser known threatened legume from Odisha". *J. Non-Timber Forest Prod.* 18(3): 243–244.

Abstract: During the survey of Eastern Ghats of Odisha (2009–2011), authors have been identified a threatened medicinal plant, viz., *Uraria picta* (Jacq.) Desv. ex DC., which is rediscovered from Satkosia Wildlife Sanctuary of Angul district, Odisha after a lapse of over 25 years. This species was first reported from Ganjam district by Gamble followed by D.C.S. Raju (Podagara Forest, Nabarangpur) and B. Safui & al. (Kalahandi). The species is medicinally important and restricted to a small geographical region of the state. It is coming under RET category of Odisha state (Ved & al., 2007). Therefore, immediate steps should be formulated in order to preserve the threatened legume as soon as possible. A detailed description with photograph, distribution, ecology and phenology are provided.

718. **Saravanan, R., Dhole, P.A. & Sujana, K.A. 2014.** "*Dysoxylum* (Blume) – New generic record to Odisha, India". *Int. J. Advanced Res.* 2(8): 543–545.

Abstract: This paper reports new distributional record of a genus *Dysoxylum* Blume, viz., *D. gotadhora* (Buch.-Ham.) Mabb. to Odisha. A brief description, phenology, distribution along with photo plate have been provided to facilitate its easy identification and formulating conservation measures.

719. **Sastry, A.R.K. & Joseph, J. 1967.** "A second locality for *Dicraea filifolia* Ram. et Joseph". *Indian Forester* 93(12): 800.

Abstract: This first report of *Dicraea filifolia* in Devata Parvat, near Jeypore, Koraput district, Orissa records a second locality of distribution for this species and suggests the possibility of additional locations in the intervening areas between its type locality in Kerala and this reported locality in Orissa.

720. **Satyanarayana, P. & Thothathri, K. 1986.** "Three new species of *Rhynchosia* Lour. (Fabaceae) from India". *Bull. Bot. Surv. India* 28(1–4): 241–246.

Abstract: Three new species of *Rhynchosia* Lour., *R. fischeri* allied to *R. cana* DC., *R. hainesiana* allied to *R. cana* DC. and *R. meeboldii* allied to *R. hirta* (Andrews) Meikle & Verdc. have been described and illustrated from Tamil Nadu (Dimbam, Coimbatore district), Orissa (Angul forest) and Nagaland (Shibong, Naga hills), respectively.

721. **Saxena, H.O. 1973.** "*Utricularia stricticaulis* Stapf– A new record for Orissa". *J. Bombay Nat. Hist. Soc.* 70(1): 233–234.

Abstract: *Utricularia stricticaulis* Stapf, a species known from south Deccan Peninsula and West Bengal, is recorded for the first time for Orissa from Bhubaneswar.

722. **Saxena, H.O. 1974.** "*Mitracarpus verticellatus* (Schum. & Thonn.) Vatke – A new record for Eastern India". *J. Bombay Nat. Hist. Soc.* 70(2): 412–413.

Abstract: *Mitracarpus verticillatus* (Schumach. & Thonn.) Vatke (Rubiaceae), a species of South America and S. Africa was recorded for the first time for Eastern India from Bhubaneswar and Cuttack, Orissa. Earlier this species was reported from Tamil Nadu and Kerala.

723. **Saxena, H.O. & Brahmam, M. 1988.** "Some interesting plant records from Similipahar hills of Orissa". *J. Bombay Nat. Hist. Soc.* 85: 655–657.

Abstract: Fifteen interesting plants, viz., *Anaphalis adnata* DC., *Aneilema ovalifolia* (Wight) Hook.f. ex C.B. Clarke, *Blumea aromatica* (Wall.) DC., *B. clarkei* Hook.f., *Callicarpa longifolia* Lam., *Cissus assamica* (M.A. Lawson) Craib, *Colysis pedunculata* (Hook. ex Grev.) Ching, *Cordia wallichii* G. Don, *Cynanchum tunicatum* (Retz.) Alston, *Embelia floribunda* Wall., *Phoebe wightii* Meisn., *Rhaphidophora glauca* Schott, *Salomonia cantoniensis* Lour. and *Toxocarpus kleinii* Wight & Arn. have been recorded for the first time for the flora of Bihar and Orissa from Similipahar hills, Mayurbhanj district, Orissa.

724. **Saxena, H.O., Brahmam, M. & Rout, N.C. 1995.** "*Teucrium viscidum* Bl. (Lamiaceae) – An interesting distributional record from Orissa". *J. Bombay Nat. Hist. Soc.* 92(1): 140.

Abstract: *Teucrium viscidum* Blume has been reported for the first time for the flora of Orissa from Badomukkabadi and Dudurchampa, Similipahar, Mayurbhanj district. Earlier it was reported from Sikkim, West Bengal, Meghalaya and Uttar Pradesh.

725. **Sen, S.K. & Behera, L.M. 2015.** Roots root out diseases: A study on ethnomedicinal uses of root in Bargarh district of Odisha (India). *Indian Res. J. Pharm. Sci.* 5: 123–129.

Abstract: There is a natural cure for every ailment associated with the plants. Large number of plants grows around human habitation and many of those are neglected because of ignorance about their therapeutic and other utility. Ethnomedicine is the system of medicinal practice based on traditional knowledge used by 65% of Indian

population for maintaining health and curing diseases. Ethnomedicinal survey among 13 tribes in Bargarh district reveals the frequency of use of medicinal plants for cure of many diseases. The present paper records ethnomedicinal values of 41 plant species belonging to 38 genera and 33 families. A list of plant species along with their botanical names, family, local names, parts used and the mode of administration has been enumerated.

726. Sen, S.K., Panda, H.S. & Behera, L.M. 2005. "*Cordia* macleodii (Ehretiaceae) – A wonderful wound-healer from Bargarh district, Orissa". *Ethnobotany* 17: 191–192.

Abstract: The leaves of *Cordia macleodii* (Griff.) Hook.f. & Thomson (Ehretiaceae) cure cut injuries/wounds including the leprous ones. It is a rare and vulnerable medicinal plant used by the tribals in Bargarh district. The species is under threat due to over-exploitation and habitat destruction, indicating an urgent need for conservation of both the species and the habitat.

727. Singh, A.K. & Das, P.K. 2014. "New distributional records of five plants from Orissa". *Indian Forester* 140(6): 621–623.

Abstract: The paper presents new distributional records of five plant species, viz., *Arundinella metzii* Hochst. ex Miq., *Axonopus compressus* (Sw.) P. Beauv. and *Rhynchelytrum repens* (Willd.) C.E. Hubb. (Poaceae), *Atylosia sericea* Benth. ex Baker (Fabaceae) and *Rubus rugosus* Sm. from different places of Orissa.

728. Sreemadhavan, C.P. 1967. "*Justicia trinervia* Vahl: A new record for Orissa". *J. Bombay Nat. Hist. Soc.* 64: 135.

Abstract: *Justicia trinervia* Vahl has been reported for the first time for Orissa from Panchagarh Reserve Forest, Puri district.

729. Subudhi, H.N. 1997. "Collection of *Porteretia coarctata* Tateoka from Orissa coast and its conservation". *J. Econ. Taxon. Bot.* 21(3): 739–741.

Abstract: A total of 15 accession numbers of *Porteresia coarctata* (Roxb.) Tateoka have been collected from the different localities of Orissa. Correct nomenclature, brief diagnostic characters, phenology, ecology, distribution, other uses and conservation aspects have been provided in the paper.

730. Subudhi, H.N. & Choudhury, B.P. 1989. "New records of plants from Orissa coast". *Pl. Sci. Res.* 11(2): 97–98.

Abstract: *Cyperus pangorei* Rottb. and *Paspalum vaginatum* Sw. have been recorded for the first time from Odisha from Munduli, Cuttack and Nipania, Mahanadi delta, respectively.

731. Subudhi, H.N. & Choudhury, B.P. 1998. "New records of plants from Orissa – III". *Geobios, New Rep.* 17: 181–182.

732. Subudhi, H.N. & Panda, S.P. 2005. "New records of weeds from rice fields of Orissa". *Geobios (Jodhpur)* 32(4): 315–316.

Abstract: Three species, viz., *Euphorbia indica* Lam. (Euphorbiaceae), *Malvastrum coromandelianum* (L.) Garcke (Malvaceae) and *Lagascea mollis* Cav. (Asteraceae) turned out to be new records for the state of Orissa from Cuttack district. The correct nomenclature, short diagnostic characters, phenology, ecology, locality, distribution are highlighted in the paper.

733. Subudhi, H.N., Choudhury, B.P. & Acharya, B.C. 1990. "*Sapium indicum* Willd. – An addition to the flora of Orissa". *J. Econ. Taxon. Bot.* 14(3): 583–584.

Abstract: *Sapium indicum* Willd. has been reported for the first time for the flora of Orissa from Khola creek, Bhitarkanika. Earlier this species was reported from West Bengal.

734. Subudhi, H.N., Choudhury, B.P. & Acharya, B.C. 1991. "New plant records for Orissa". *J. Bombay Nat. Hist. Soc.* 88: 311–312.

Abstract: Three plant species, viz., *Blumea aurita* (L.f.) DC., *Ipomoea campanulata* L. and *Hygrophila erecta* (Burm.f.) Hochr. has been reported for the first time for the Flora of Orissa from Bhitarkanika. Correct nomenclature, short diagnostic characters, locality of collection, field number, notes on ecology and distribution have been provided.

735. Subudhi, H.N., Choudhury, B.P. & Acharya, B.C. 1993. "Addition to the flora of Orissa-II". *J. Econ. Taxon. Bot.* 17(2): 297–298.

Abstract: Three taxa, viz., *Phyllanthus lawii* J. Graham (Euphorbiaceae), *Suaeda fruticosa* (L.) Forssk. (Chenopodiaceae) and *Spilanthes paniculata* Wall. ex DC. (Asteraceae) have been recorded for the first time for the state of Orissa from Cuttack district.

736. Subudhi, H.N., Choudhury, B.P. & Acharya, B.C. 2000. "New record of plants from Orissa – II". *J. Bombay Nat. Hist. Soc.* 97(3): 459–460.

Abstract: Three species, viz., *Stachytarpheta dichotoma* (Ruiz & Pav.) Vahl (Verbenaceae), *Ipomoea indica* (Burm.) Merr. (Convolvulaceae) and *Cyanotis arachnoidea* C.B. Clarke (Commelinaceae) turned out to be new records for the state of Orissa from Koraput district. Correct nomenclature, brief diagnostic characters, phenology, collection site, field numbers and notes on the ecology and distribution of these taxa have been provided in the paper.

737. Subudhi, H.N., Choudhury, B.P. & Panda, P.C. 1990. "*Richardia scabra* Linn. – An addition to the flora of Orissa". *J. Bombay Nat. Hist. Soc.* 87(2): 331.

Abstract: *Richardia scabra* L. (Rubiaceae) has been reported for the first time for the flora of Orissa from Kallinga hills, Phulbani district. Earlier this species was reported from Andhra Pradesh, Uttar Pradesh and Tamil Nadu.

738. Subudhi, H.N., Misra, S. & Choudhury, B.P. 1997. "New record of plants from Orissa-I". *J. Econ. Taxon. Bot.* 21(3): 655–656.

Abstract: Three species, viz., *Caldesia reniformis* (D. Don) Makino (Alismataceae), *Ipomoea sindica* Stapf (Colvolvulaceae) and *Hygrophila balsamica* (L.f.) Raf. (Acanthaceae) turned out to be new record for the state of Orissa from Cuttack district.

739. Subudhi, H.N., Nayak, P.K. & Panda, S.P. 2004. "*Oryza nivara* Sharma *et* Shastry: Exploration and conservation". *Asian J. Microbiol. Biotechnol. Environm. Sci.* 6(4): 663–666.

Abstract: Exploration was undertaken in different areas of coastal Orissa to collect *Oryza nivara* species and its variability. About 25 accessions were collected, identified and documented. Observation regarding some morphological characters, viz., plant heights, panicle length, spikelet/panicle, leaf length, leaf width, flag leaf length and flag leaf width were taken and maximum variability was observed. Correct nomenclature of each species along with taxonomy, diversity, ecology and conservation strategies is discussed in brief.

740. Subudhi, H.N., Saha, D. & Choudhury, B.P. 2000. "Collection of *Desmodium* Desf. and wild relatives from Orissa". *J. Econ. Taxon. Bot.* 24(3): 695–699.

Abstract: The paper deals with 16 species of *Desmodium* and wild relatives collected from Orissa state. The correct nomenclature followed by basionym, breif ecological notes, distribution pattern and phenology have been provided for each species. The origin, diversity and conservation aspect have also been given in brief.

741. Sujana, K.A., Dhole, P.A., Saravanan, R. & Mishra, M. 2014. "Rediscovery of an endemic and endangered liana (*Uvaria eucincta* Bedd. ex Dunn) from Odisha, India, after a century". *Ann. Pl. Sci.* 3(2): 617–618.

Abstract: During plant exploration in Kuldiha Wildlife Sanctuary, Odisha an endemic and endangered liana, viz., *Uvaria eucincta* Bedd. ex Dunn (Annonaceae) rediscovered after a century which is presented here for easy identification and to take adequate measures for conservation.

742. Sujana, K.A., Nagaraju, S., Saravanan, R. & Dhole, P.A. 2014. "*Gymnema montanum* – New distributional record of an endemic liana to Odisha, East India". *Ann. Pl. Sci.* 3(7): 776–778.

Abstract: This paper reports new distributional record of *Gymnema montanum* (Roxb.) Hook.f. – an endemic liana to Odisha State from Kuldiha Wildlife Sanctuary, Balasore district. Detailed description and photographs are provided for easy identification and future conservation programme.

743. Swain, P.K. 2007. "Two interesting seagrasses of Cymodoceaceae from Chikila lagoon–Additions to the flora of Orissa, India". *Indian J. Forest.* 30(4): 483–485.

Abstract: Survey of seagrasses of Chilika lagoon revealed two interesting angiosperms, *Halodule pinifolia* (Miki) Hartog and *H. uninervis* (Forssk.) Asch. of the family Cymodoceaceae and are reported for the first time from Orissa state.

744. Tripathy, G. & Misra, G. 1985. "New records of weed plants from crop fields of Orissa". *J. Econ. Taxon. Bot.* 6: 467–469.

Abstract: Five taxa, viz., *Mecardonia procumbens* (Mill.) Small, *Eragrostis unioloides* (Retz.) Nees, *Setaria pallide-fusca* (Schumach.) Stapf & C.E. Hubb., *Elytrophorus spicatus* (Willd.) A. Camus and *Bothriochloa intermedia* (R. Br.) A. Camus are reported as new records for the state of Orissa.

745. Tripathy, N.K. 2006. "*Pogostemon parviflorus* Benth. (Lamiaceae) – A new interesting plants from Orissa flora". *J. Econ. Taxon. Bot.* 30(1): 193–194.

Abstract: *Pogostemon parviflorus* Benth. (Lamiaceae) is reported as an addition to the flora of Orissa from Balangir and Sonepur districts.

746. Uniyal, B.P. & Dutta, R. 1983. "Additions to the grasses of Bihar, Orissa and West Bengal". *J. Bombay Nat. Hist. Soc.* 80: 262.

Abstract: *Calamagrostis pseudophragmites* (Haller f.) Koeler var. *pseudophragmites*, *Festuca gigantea* (L.) Vill., *F. undata* Stapf var. *aristata* Stapf and *Paspalum longifolium* Roxb. have been reported for the first time from West Bengal and *Dichanthium pallidum* (Hook.f.) Stapf ex C.E.C. Fisch. for the first time from Ganjam district of Orissa.

747. Uniyal, B.P. & Srivastava, S.C. 1983. "Distributional note on two plants". *J. Econ. Taxon. Bot.* 4(3): 1029.

Abstract: *Habenaria graveolens* Duthie and *Pseudanthistiria umbellata* (Hack.) Hook.f. have been reported for the first for Rajasthan and Orissa states from Shahabad and Bolangir district (Patna), respectively.

Endemism, IUCN Threat Status and Conservation

748. Dhal, N.K. & Rout, N.C. 2001. "Few rare, endangered, vulnerable and threatened mangals from Orissa coast worth conserving". *Ecol. Environm. Conservation* 7(1): 67–70.

Abstract: Mangrove is a unique ecosystem, which forms "forests of the sea". The mangrove vegetation in Orissa is noteworthy owing to its diversity of mangals, which is about 65 t/a. The forest area has remarkably shrunk and ecological balance has been shattered to an alarming state due to shrimp culture, cultivation, human habitation, timber and charcoal collection. The super cyclone has inflicted irreparable damage to the vegetation and ecology of this area. *Heritiera kanikensis, Rhizophora stylosa, Sonneratia alba, S. caseolaris* and *Merope angulata* are the few taxa under tremendous pressure of depletion and needs immediate measures for conservation. The distributional pattern, ecological notes, and appropriate conservation measures required to be taken up are discussed in this paper.

749. Jalal, J.S. & Jayanthi, J. 2012. "Endemic orchids of peninsular India: A review". *J. Threat. Taxa* 4(15): 3415–3425.

Abstract: The analysis of endemic orchids shows a total account of 130 species belonging to 38 genera in peninsular India. Of these, 43 are terrestrial, 85 epiphytic and two holomycotrophic (saprophytic). The Western Ghats comprises of 123 endemic orchid species, Deccan Plateau has 29 endemic orchid species and Eastern Ghats has 22 endemic orchid species. However, in the present analysis the number of endemic species is reduced from the earlier reports because of the rapid development in the taxonomic explorations in the neighbouring countries. As a result, many species were found to show extended distribution.

750. Mishra, R.C. 1997. The status of rare, endangered and endemic flora of Similipal forest. In: Tripathy, P.C. & Patro, S.N. (eds.), *Similipal: A natural habitat of unique biodiversity*. Orissa Environmental Society, Bhubaneswar. pp. 60–72.

751. Misra, M.K. & Dash, S.S. 1999. "Biodiversity conservation and sustainable utilization of minor forest resources in a cluster of tribal villages on the Eastern Ghat of Orissa". In: Sivadasan, M. & Mathew, P. (eds.), *Biodiversity, Taxonomy and Conservation of Flowering Plants*. Mentor Books, Calicut. pp. 133–143.

Abstract: A detailed floristic survey along with their uses in and around three village ecosystems, viz., Rajikakhola, Nediguda and Badruguda of the Phultani district on the Eastern Ghats of Orissa was conducted during 1994–1995. Through qualitative and quantitative data the paper analyses how the plant diversity of the area meets the basic needs of the tribals for their subsistence. It was observed that out of 249 species

the tribals use 45 species for food, 16 for fuel, 61 for medicine, 18 for timber, 13 for other economic purpose, 3 as stimulents and 17 as sacred plants. The important minor forest products collected from the vicinity were mohua flowers and seeds, siali and sal leaves, bamboo, sap of sago palm, thetch grass, hill broom and other many forest plants. Besides, they practice valley as well as shifting cultivation. Annual collection of minor forest products such as mohua flower was 1.87 tons, siali leaf 2.96 tons, thatch grass 6.73 tons per village. Total annual production of minor forest products in energy equivalent was 252.6 GJ per village. It is concluded that the existing biodiversity should be conserved, without further destruction, with sustainable use, for the proper functioning of these village ecosystems.

752. Misra, R.C. & Das, P. 1998. "Inventory of rare and endangered vascular plants of Gandhamardan hill ranges in western Orissa". *J. Econ. Taxon. Bot.* 22(2): 353–357.

Abstract: Identification of rare and endangered/threatened plants and casual factors for their rarity are prerequisites for formulating strategies and promoting awareness for conservation of plant resources. Keeping these objectives in view, an attempt has been made for an inventory of the endemic, endangered/vulnerable/rare plants of 44 species of Gandhamardan hill ranges in western Orissa from field observations, data from herbarium collections and published literature on flora of Orissa. A tabular compendium of such plant species along with data on habit, habitat/occurrence, distribution, endangered status and probable causes of rarity for each taxon has been provided in the paper.

753. Misra, S., Panda, S.P. & Nayak, P.K. 2010. "Endemic orchids of India: *Aerides maculosa* Lindl." *Indian J. Forest.* 33(2): 225–231.

Abstract: Morphology of *Aerides maculosa* Lindl. with variations observed in the biotypes from Rajasthan and Orissa is provided in this communication supported by scientific drawings.

754. Mitra, S.C. 1927–1928. "Note on a sacred tree at Puri in Orissa". *J. Anthropol. Soc. Bombay* 13: 308–310.

755. Nayar, M.P., Ahmed, M. & Raju, D.C.S. 1984. "Endemic and rare plants of Eastern Ghats". *Indian J. Forest.* 7: 35–42.

Abstract: As many as 75 taxa of vascular plants endemic to Eastern Ghats spread across the state of Odisha, Andhra Pradesh, Karnataka and Tamil Nadu are accounted for on the basis of floristic literature up to date and herbarium specimens housed at CAL. The endemic taxa are spread over 57 genera and 26 families. There are 63 dicot taxa, 11 monocot taxa and 1 gymnosperm. The families with the largest representation of endemic species are Fabaceae and Acanthaceae, followed by Poaceae and

Asclepiadaceae. The exigency of undertaking further biogeographical studies has been re-emphasized. The nature of endemics with respect to phytogeography and conservation values are discussed with reference to centres of endemism. It is suggested that biosphere reserves may be established around such centres of endemism.

756. Panda, D., Bisoi, S.S. & Palita, S.K. 2014. "Floral diversity conservation through sacred groves in Koraput district, Odisha, India: A case study". *Int. Res. J. Environm. Sci.* 3(9): 80–86.

Abstract: The tribal dominated Koraput district of Odisha has rich tradition of nature conservation through cultural and religious practices. Though maximum number of sacred groves has been reported from Koraput, there is hardly any scientific documentation of plant species in them. The present study has documented floral diversity and uses of 94 sacred plant species distributed in 63 genera belonging to 43 different families from 6 different sacred groves in a systematic manner. Most of the plant species are distributed under Caesalpiniaceae followed by Asteraceae and Combretaceae. The plant species are distributed in 48 trees, 26 shrubs and 21 herbs. Many of the plant species are used as herbal medicines (39%) by the tribals followed by religious importance (23%), and food (13 %) plants. Some existing threats related to the sacred groves as well as plants under threat categories have also been recorded. While only *Pterocarpus santalinus* comes under IUCN Endangered category and three other species namely *Shorea robusta, Buchanania lanzan* and *Woodfordia fruticosa* come under Low Risk and Least Concern categories, whereas six species are under Least Concern category. The plants under Vulnerable categories are *Ageratum conyzoides, Dalbergia latifolia, Delonix regia, Pterocarpus marsupium, Santalum album* and *Saraca asoca*. Thus, for assessing the ecological role of sacred groves and formulating strategies for their conservation, a holistic understanding of their structure and function as well as their current status is essential.

757. Panda, P.C., Misra, R.C. & Das, P. 1989. "An inventory of the endemic and endangered flowering plants of Orissa". *J. Orissa Bot. Soc.* 11: 43–44.

758. Pradhan, N.B., Pradhan, R.N., Sen, S.K. & Sahu, P. 1999. "Some threatened noteworthy medicinal plants of Bargarh district (Orissa)". *Neo Bot.* 7: 97–100.

759. Reddy, C.S., Brahmam, M. & Raju, V.S. 2006. "Conservation prioritization of endemic plants of Eastern Ghats, India". *J. Econ. Taxon. Bot.* 30: 755–772.

Abstract: Availability of the updated data on threatened plants is important for framing conservation strategies. The Red Data Book of Indian Plants is a reference manual that lists threatened plants. It is widely used as a major reference for impact assessments on vegetation. So, it is important that the Red Data Book (RDB) should be up-to-date and

comprehensive. This study is an attempt to cross-check the listings in the RDB using literature and herbarium data associated with field inventories. It is observed that 44 species known from type collection and 18 species known from type locality are not included in RDB. The results of the analysis indicate that the RDB should be updated. The paper highlights the current status of the endemic plant species of Eastern Ghats.

760. Saxena, H.O. & Brahmam, M. 1983. Rare and endemic flowering plants of Orissa. In: Jain, S.K. & Rao, R.R. (eds.), *An assessment of threatened plants of India.* Botanical Survey of India, Botanic Garden, Howrah. pp. 80–90.

Abstract: A total of 101 species of flowerting plants in the flora of the state are found to be rare. These have been classified into the status categories (Endangered 3 species, Vulnerable 6 species, Rare 72 species, Indeterminate 19 species and 1 species as insufficiently known) as defined by IUCN with notes on their occurrence, distribution and degree of threat and causes of rarity in some cases. Eight species are found to be endemic in Orissa.

761. Sen, S.K. & Pradhan, N.B. 1999. Conservation of ethnomedicinal plants of Bargarh district in Orissa". *Advances Pl. Sci.* 12(1): 207–213.

Abstract: The tribal areas of Gandhamardhan and Barapahar hills of Bargarh district in the western part of Orissa consist of valuable medicinal plants. The tribes of these localities are depending on the plant resources for medicines and household remedies. The medicinal plants which constitute a large portion of vegetation are in a critical condition due to factors such as overexploitation and deforestation. Hence major steps need to be taken for conservation of the ethnomedicinal plants. These plants also need to be properly identified botanically with their local names. The Department of Botany, Panchayat College, Bargarh under the Sambalpur University in Orissa has started collection, identification and preparation of herbaria of the ethnomedicinal plants from different localities of Bargarh district.

Ethnobotany, Sacred Groves and Medicinal Plants

762. Acharya, B., Sahoo, H.P. & Parida, R.K. 2010. "Ecology and ethnobotany of the Juang Keonjhar district, Orissa, India". *Ecol. Environm. Conservation* 16(1): 57–64.

Abstract: Ecological and ethnobotanical approaches to human society in the context of the environmental degradation. The small scale societies always experience the worst consequences of degradation of their cultural environment. The paper attempts to analyse the prevailing ecological condition of the tribal habitat and the ethnobotanical practices of the Juang tribe of Keonjhar district of Orissa. After giving a brief account of the Juang and the ecology of their habitat, a comprehensive study on the medicinal uses of plant species has been made basing on the traditional knowledge system of the tribe. Ethnobotanical information on the use of 126 palnt species belonging to 107 genus and 54 families have been recorded. Of the total number of plant species reported during investigation of medicinal uses of 66 belonging to 40 families are reported.

763. Acharya, B., Sahoo, H.P. & Parida, R.K. 2010. "Herbal remedies for rheumatic diseases used by the tribals of Keonjhar district of Odisha, India". *Advances Pl. Sci.* 23: 737–739.

Abstract: An ethnomedicobotanical study was conducted on the tribes of Keonjhar district of Orissa to collect information on herbal remedies for rheumatic diseases. The paper reports 32 plant species belonging to 24 families have been used for the treatment of painful disorder of joints and muscles.

764. Acharya, B., Sahoo, H.P. & Parida, R.K. 2014. "Indigenous phytotherapy for snake bite used by the tribals of Keonjhar district of Odisha, India". *Advances Pl. Sci.* 27: 563–565.

Abstract: An ethnomedicinal study was conducted on the tribes of Keonjhar district of Odisha to collect information on herbal remedies for snake bite. This paper reports 17 plant species belonging to 11 families which are used as antidote. Attempt has been made to indicate the phytochemical content of these plants on the basis of documented literature. Plants are arranged in alphabetic order with family name, Odia name (O) and local name (L).

765. Acharya, B.C., Subudhi, H.N. & Panda, S.P. 2010. "Check list of economic plants of Rourkela and adjoining regions (Sundargarh district) – Odisha". *Bull. Pure Appl. Sci.* 29B (2): 53–57.

Abstract: Floristic survey was undertaken in and around Rourkela city. During the survey, 101 angiospermic species were collected from different locality with their local names and uses. The species were arranged according to their uses, there after these are

arranged alphabetically with their habit, family name and parts used. The species were dried and deposited as herbarium specimen in P.G. Department of Botany, Govt. College, Rourkela. The conservation strategies are also suggested.

766. Acharya, R., Padiya, R., Patel, E.D., Harish, C.R. & Shukla, V.J. 2013. "Phytochemical studies of an ethno medicinal plant *Limnophila rugosa* (Roth.) Merr. (Scrophulariaceae) whole plant". *Ann. Ayurvedic Med.* 2(1&2): 37–40.

Abstract: *Limnophila rugosa* (Roth.) Merr. (Scrophulariaceae) is used as a botanical source of Bhringaraja by the traditional practitioners of Balangir and Baragarh districts of Odisha. The study was carried out to screen the preliminary phytochemical constituents of ethanol and aqueous extracts of the whole parts of *L. rugosa* including High Performance Thin Layer Chromatography. The extracts were subjected to various chemical tests in order to identify the main phyto-constituents of the plant. The study revealed that the ethanol extract contains glycosides, little amount of alkaloids and flavonoids, whereas the aqueous extract is rich in glycosides.

767. Adhikary, P.P., Madhu, M., Dash, C.J., Sahoo, D.C., Jakhar, P., Naik, B.S., Gowda, H.H., Naik, G.B. & Dash, B. 2015. "Prioritization of traditional tribal field crops based on RWUE in Koraput district of Odisha". *Indian J. Tradit. Knowl.* 14(1): 88–95.

Abstract: Rain Water Use Efficiency (RWUE) is the assessment of a rainfed cropping system's capacity to convert water into plant biomass or grain. Comparison of RWUE of various crops grown under traditional tribal farming system and its performance in drought year will give an insight for prioritization of crops grown in rainfed tribal areas. A study was undertaken in a tribal watershed of Koraput district to prioritize the commonly grown crops based on RWUE and their comparative performance during water stress condition. Results showed that vegetable crops have higher RWUE than cereals and pulses. Among the cereals, maize (RWUE, 7.77 $kgha^{-1}mm^{-1}$) and finger millet (RWUE, 3.06 $kgha^{-1}mm^{-1}$) performed better in upland areas, while paddy (RWUE, 7.45 $kgha^{-1}mm^{-1}$) in low lying jhola land. Among the pulses and oilseeds, black gram and niger have emerged better in drought situation and the increase of RWUE of black gram and niger was 45 and 73%, respectively. The RWUE of cabbage (53.27 $kgha^{-1}mm^{-1}$) and cauliflower (49.55 $kgha^{-1}mm^{-1}$) was higher than other vegetables, but, under water stress condition, French bean performed better. In sufficient rain year ginger and turmeric showed higher RWUE (19.79 and 17.81 $kgha^{-1}mm^{-1}$, respectively) but there performance drastically decreased during drought year. Farmers prefer the combination of lowland paddy at jhola land, finger millet, niger, black gram, cabbage/cauliflower and beans at medium to upland and ginger and turmeric at the beda land (land parallel to jhola land) during sufficient rainfall year. During drought year, lowland paddy at jhola land, finger millet, niger, black gram at upland and beans at beda land can be a better

choice. Therefore, the study will be a ready-reckoner to the planners/policy makers to devise effective crop combination for better economic return to the rainfed tribal farmers of Koraput district.

768. Aminuddin & Girach, R.D. 1991. "Ethnobotanical studies on Bondo tribe of district Koraput (Orissa), India". *Ethnobotany* 3: 15–19.

Abstract: First-hand information on various aspects of ethnobotany relating to 44 plant species of 31 families collected from Bondo tribal community of district Koraput is presented for ethnobotanical record. The plant species are enumerated alphabetically with their botanical name, family in parentheses, tribal name, locality and voucher specimen number. Plant specimens are deposited in the unit herbarium of RRIUM, Bhadrak.

769. Aminuddin & Girach, R.D. 1991. "Pluralistic folk uses of *Hemidesmus indicus* (L.) R. Br. from south Eastern India". *J. Econ. Taxon. Bot.* 15(3): 715–718.

Abstract: *Hemidesmus indicus* (L.) R. Br., a twining shrub belonging to the family Asclepiadaceae, is a common medicinal plant. It is used in indigenous system of medicine including Unani Tib for skin diseases, fever, diarrhoea, rheumatism and snake bites. Less known or unreported pluralistic uses of this plant recorded from the tribal and rural societies of Bihar and Orissa during the survey of medicinal plant reported in the present manuscriopt with the view of establish genuinity of the claims using scientific parameters.

770. Aminuddin & Girach, R.D. 1993. "Observations on ethnobotany of the Bhunjia – A tribe of Sonabera plateau". *Ethnobotany* 5: 83–86.

Abstract: Sonabera plateau of the district Kalahandi in Orissa is the cradle of Bhunjia culture. This communication deals with ethnobotanical studies among the Bhunjia.

771. Aminuddin & Girach, R.D. 1996. "Native phyto-therapy among the Paudi Bhuinya of Bonai hills". *Ethnobotany* 8: 66–70.

Abstract: The Paudi Bhuinya of Bonai hills in district Sundargarh (Orissa) is one of the primitive sections of Bhuinya tribe. They utilize locally available plant wealth for their day-to-day needs and healthcare. The forests in the area are the treasurehouse of medicinal plants which are used by them for treating various health disorders. The present paper deals with 24 less known or unrecorded medicinal plants used by them to treat various ailments. Some important plants are: *Ardisia solanacea* in bodyache, *Baliospermum montanum* in indigestion, *Catunaregam uliginosa* in bleeding piles, *Clerodendrum viscosum* in migraine, *Desmodium velutinum* in diarrhoea. *Murraya paniculata* used in fracture and *Woodfordia fruticosa* used for treating cough.

772. Aminuddin, Girach, R.D. & Khan, S.A. 1993. "Treatment of malaria through herbal drugs from Orissa, India". *Fitoterapia* 64(6): 545–548.

773. Aminuddin, Girach, R.D. & Khan, S.A. 1994. "Ethnomedicinal studies on *Leucas cephalotes* (Roth) Spreng. (Guma Buti) – A less known medicinal plant in unani medicine". *Hamdard Med.* 37(2): 67–72.

774. Babu, N., Srivastava, S.K. & Agarwal, S. 2013. "Traditional storage practice of spices and condiments in Odisha". *Indian J. Tradit. Knowl.* 12(3): 518–523.

Abstract: Spices and condiments are important cash crops in Odisha. About 2.17 lakh tonnes spices are being produced annually from 2.37 lakh ha area. However, storage losses of spices are very high (30–40%) due to inappropriate storage practices. Therefore, the present study was carried out during 2009–2010 to assess the current status of the traditional practices followed by farmers in general and women in particular for storage of spices and condiments in Odisha for ginger (*Zingiber officinale* Roscoe), turmeric (*Curcuma longa* L.), chilli (*Capsicum annuum* L.), onion (*Allium cepa* L.), garlic (*Allium sativum* L.) and coriander (*Coriandrum sativum* L.). Four districts of Odisha, namely Khurda, Ganjam, Kandhamal and Keonjhar were selected where these spices are cultivated and stored by the farmers. The sample consisted of 360 farmers, including 180 women. Observations revealed that a large number of farmers still practice the traditional storage system. Ginger and turmeric are stored in pit method, heap method and in situ method while chilli, onion and garlic are stored in a mesh bags and hanging method. In traditional method of storage, farmers are depending on local resources and practices. Spices are stored by the farmers of Odisha mainly for home consumption, seed purpose and for income generation. Storage losses were recorded 10–15% in ginger, 20–30% in turmeric, 10–15% in onion and garlic in traditional method of storage, which were less as compared to who has not adopted storage practices.

775. Bal, S., Misra, R.C., Sahu, D. & Dhal, N.K. 2007. "Therapeutic uses of some orchids among the tribes of Similipal Biosphere Reserve, Orissa, India". *J. Trop. Med. Pl.* 8(2): 270–277.

Abstract: In recent years, investigations were made on medicinal values of different groups of higher plants, with few writings on orchids. There has been no report on the therapeutic uses of orchids by the tribes of this biosphere reserve. In this paper, orchids used for curing different ailments are listed in alphabetical order along with local names of plants, place of location, followed by plant parts used and brief notes on mode of administration.

776. Bal, S.N. 1942. "Useful plants of Mayurbhanj state in Orissa". *Rec. Bot. Surv. India* 6: 1–119.

Abstract: A total of 280 useful plants of Mayurbhanj in Orissa are enumerated in the paper along with citation, locality, flowering period, distribution, habit and uses.

777. Banerjee, D.K. 1974. "Magico-religious beliefs about plants among some adibasis of India". *Quart. J. Mythic Soc.* 65(3): 5–8.

778. Baske, P.K. & Halder, A.K. 2013. "An overview on ethnobotany of Bargarh district, Odisha – I". *J. Econ. Taxon. Bot.* 37(1): 66–78.

Abstract: The paper deals with the study of ethnobotanical importance of 99 plant species under 96 genera belonging to 52 families of Bargarh district of Odisha. Different plants available in the locality used used by the tribes namely Barhia (Binjal), Sabar, Kond, Gond, Munda, Mirdha, Harijan, Shet, Barik, Majhi, Nayak, Oraon and Pandey are summarized. Out of 13 tribes, *Barhia, Sabar, Kond, Gond* tribes predominate in this district. The valid scientific names, vernacular names, habits, localities, plant parts used and their ethnobotanical uses are given.

779. Baske, P.K. & Sur, P.R. 2010. "Ethnobotanical study of Gajapati district, Orissa". *J. Econ. Taxon. Bot.* 34(2): 317–322.

Abstract: The paper deals with the study of ethnobotanical importance of Gajapati district, Orissa. Various plants available in the different localities used by the tribals such as Kond, Soura, Mala, and Sudha Sabar are summarized. The valid scientific names, vernacular names, plant parts used and their ethno-economical uses are also given.

780. Baske, P.K., Halder, A.C., Dhole, P.A. & Siddhabatula, N.R. 2015. "Ethno-medicinal plants of Jajpur district, Odisha". *J. Econ. Taxon. Bot.* 39: 153–168.

Abstract: The paper deals with 130 species under 114 genera belonging to 56 families being used for the treatment of different diseases with their traditional knowledge. These plant species are listed alphabetically with their family followed by botanical names, local names, habits, localities, plant parts used and their ethno-medicinal uses are given.

781. Baske, P.K., Halder, A.C., Dhole, P.A. & Siddhabatula, N.R. 2015. "Ethno-medicinal plants of Jajpur district, Odisha". *J. Econ. Taxon. Bot.* 39: 266–281.

Abstract: The present paper deals with 129 species under 114 genera belonging to 56 families being used for the treatment of different diseases with their traditional knowledge. These plant species are listed alphabetically with their family followed by botanical names, local names, habits, localities, plant parts used and their ethno-medicinal uses are given.

782. Baske, P.K., Halder, A.C., Diwakar, P.A. & Sujana, K.A. 2014. "An overview on ethnobotany of Bargarh district, Odisha – II". *J. Econ. Taxon. Bot.* 38: 485–501.

Abstract: The paper deals with the study of ethnobotanical importance of 116 plant species fwewer than 97 genera belonging to 52 families of Bargarh district, Odisha.

Different plants available in the locality used by the tribes such as Barhia (Binjal), Sabar, Kond, Gond, Munda, Mirdha, Harijan, Shet, Barik, Majhi, Nayak, Oran and Pandey are summarized. Out of 13 tribes, Barhia, Sabar, Kond and Gond tribes are predominant in this district. The valid scientific names, vernacular names, habit, locality, plant parts used and their ethnobotanical uses are given.

783. Baul, A., Dhal, N.K. & Mukherjee, S.K. 2015. "Indigenous techniques of mango (*Mangifera indica* L.) processing and preservation by the Kondha tribes of Rayagada district, Odisha, India". *J. Trop. Med. Pl*. 15:16–18.

Abstract: Rayagada district is situated in the southern part of Odisha. The total geographical area is 7,584.7 km^2, out of which 4785.36 km^2 (63%) is forest areas. The district has been recognized as homeland of various tribal communities (56.04%), dominated by Kondha, Kutia, Jhodia and their sub-tribes, who are poor, backward, uneducated with hard struggling life. Their farming is subsistence-based and the grain yields from farming are not enough to meet the food needs of their family for the whole year. They suffer from periodic cycle of food grain shortages called the "lean period" or "lean season". During this lean period their main food is mango and its derivatives. From the study it has been noted that they have five different formulations from mango fruits, which reflect their rich ethnic culture.

784. Bebarta, P.C. 1959. "Concept of disease and therapeutic practices among the hill Saoras of Orissa". *Vanyajati* 7(2): 44–48.

785. Behera, D., Rath, C.C., Tayung, K. & Mohapatra, U.B. 2013. "Ethnomedicinal uses and antibacterial activity of two orchid species collected from Similipal Biosphere Reserve Odisha, India". *J. Agric. Technol.* 9(5):1269–1283.

Abstract: Ethnomedicinal uses of orchids among aboriginal tribes of Similipal Biosphere Reserve, India were surveyed. The result indicated that eight species were used as ethnomedicine for treatment of different ailments. Antibacterial activities of crude extracts of two orchid species (*Acampe praemorsa* and *Vanda tessellata*) obtained by four different solvents were studied against some clinically significant human pathogens. The result revealed that all crude extracts showed antibacterial activity in varying degree inhibiting at least one or more test pathogens. Among the solvents, di-ethyl ether extracts showed significant antibacterial activity against all the test pathogens followed by butanolic, chloroform and methanolic extracts. The MIC value of different extracts ranged from 3.5 to 25 mg/ml. The results indicated that the crude extracts were bactericidal in action. The antibiogram pattern of the pathogens revealed multiple antibiotic resistance indexes of 40%–60%. The activity of different extracts was compared with standard antibiotics, in terms of zones of sensitivity. The findings suggest that, ethno-medicinal orchids could be used as an alternative source of therapeutic agent in near future.

786. Behera, K.K. 2006. "Ethnomedicinal plants used by the tribals of Simlipal Bioreserve, Orissa, India: A pilot study". *Ethnobot. Leafl.* 10: 149–173.

Abstract: Herbal medicine has been widely practiced throughout the world since ancient times. These medicines are safe and environmentally friendly. According to WHO about 80% of the world's population relies on traditional medicine for their primary healthcare. India, being one of the world's 12 mega biodiversity countries, enjoys export of herbal raw material worth U.S. $100–114 million per year approximately. Currently the Government of India, realizing the value of the country's vast range of medicinal plants, has embarked on a mission of documenting the traditional knowledge about medicinal plants and herbs. This investigation, in a small way, takes up the enumeration of plants with potential medicinal value, which are used by the tribal groups, residing in and around Similipal Bioreserve of Mayurbhanj, Orissa. This report elucidates a rich and unique profile of phytodiversity of the area surveyed with 89 species belongs to 52 families and 79 genera of medicinal plants.

787. Behera, K.K. 2006. "Plants used for gynaecological disorders by tribals of Mayurbhanj district, Orissa, India". *Ethnobot. Leafl.* 10: 129–138.

Abstract: The present paper reports with 24 plant species belonging to 22 families, mostly used for various gynecological disorders by the tribal people of Mayurbhanj district, Orissa. The tribal population of the region primarily depends upon these plants for curing of various gynecological disorders. They are enumerated with binomial, family, vernacular name by different tribes, parts used and ethnomedicinal uses by different tribes. Further studies on chemical and pharmacological actions are suggested to validate the claims.

788. Behera, K.K., Mandal, P. & Mahapatra, D. 2006. "Green leaves for diarrhoel diseases used by the tribals of Keonjhar and Mayurbhanj district of Orissa, India". *Ethnobot. Leafl.* 10: 305–328.

Abstract: The paper reports with 49 plant species belonging to 30 families, mostly used by the tribal people of Kenojhar and Mayurbhanj districts of Orissa. The tribal population of the region primarily depends upon these plants for curing diarrhea. They are enumerated with binomial, family, local name, parts used and ethno medicinal uses. Further studies on chemical and pharmacological actions are suggested to validate the claims.

789. Behera, K.K., Mishra, N.M. & Rout, G.R. 2008. "Potential ethnomedicinal plants at Kaptipada forest range, Orissa, India and their uses". *J. Econ. Taxon. Bot.* 32(Suppl.): 194–202.

Abstract: A survey of potential ethnomedicinal plants occurring in Kaptipada forest range in Orissa, India was undertaken. A total of 120 species belonging to 51 families were found to have the potential ethnomedicinal value and are being used to cure various ailments by the local tribal communities and the pharmaceutical companies. The maximum ethnomedicinal plants were represented by Asteraceae, Euphorbiaceae, Fabaceae and Verbenaceae. Under enumeration, botanical name, family, uses of different parts by specific tribes (S- Santal, Ba – Bathudi, Ko – Kolha, K – Kondha, Bh – Bhumija, G – Gond, Lo – Lodha, Su – Saunti) and information about the diseases have been given.

790. Behera, K.K., Sahoo, S. & Patra, S. 2008. "Floristic and medicinal uses of some plants of Chandaka denudated forest patches of Bhubaneswar, Orissa, India". *Ethnobot. Leafl.* 12: 1043–1053.

Abstract: The paper reports 17 plant species belonging to 13 families, mostly used for various diseases and disorders by the local people and herbal healers of Chandaka areas of Bhubaneswar. The local population of the region primarily depends upon these plants for curing of various ailments and their disorders. They are enumerated with binomial, family, vernacular name and floristic study and medicinal uses of the plants and their parts. Further studies on chemical and pharmacological actions are suggested to validate the claims.

791. Behera, K.K., Mishra, N.M., Dhal, N.K. & Rout, N.C. 2008. "Wild edible plants of Mayurbhanj district, Orissa, India". *J. Econ. Taxon. Bot.* 32(Suppl.): 305–314.

Abstract: A total of 6000 medicinally important plant species have been reported from India (Warrier & al., 1993). The source of poly herbal drugs from plant is very essential to meet the challenges of recent allopathic therapy. Not only the therapy but also the source of food from plant origin is the need of the hour to meet the supplementary food requirements of the over growing global population. The paper deals with 124 edible plant species under 49 families belonging to 88 genera consumed as food supplement by the tribals of Mayurbhanj district apart from their seasonal crops and vegetables.

792. Behera, L.M. & Sen, S.K. 2007. "Traditional use of some plants against gynaecological disorders by the tribals of Ramkhol village forest of Barapahad hill range in Bargarh district (Orissa)". *Advances Pl. Sci.* 20: 555–557.

Abstract: Ramkhol village forest under Barapahad hills range of Bargarh district is situated adjacent to Hirakud dam water reservoir across river Mahanadi, having an interesting diversity of plant communities. The area is rich with varieties of plant species of economic and medicinal value. Several ethnomedicinal surveys have been conducted to collect the plant species having therapeutic application in the treatment of various ailments. This paper attempts to document the traditional knowledge of 24 ethnomedicinal

plants which are used against certain gynaecological disorders by the tribals and other rural people of Ramkhol village and adjacent areas. The binomials with family, local names, locality and collection number, methods of preparation, usage and mode of administration of drugs from the plants are discussed.

793. Behera, L.M. & Sen, S.K. 2008. Ethnobotany of Western Orissa, India. In: Patil, D.A. (ed.), *Herbal Cures: Traditional Approach*. Aavishkar Publishers, Jaipur.

794. Behera, M.C. & Nayak, S.K. 2012. "Phytotherapeutic claims of Kandha and Kolha tribes of district Boudh (Orissa)". *Indian Forester* 138(4): 313–318.

Abstract: Boudh is one of the centrally located backward districts of Orissa. Because of its location in the Eastern Ghats, the tropical dry deciduous flora is very heterogeneous and diverse. Kandha and Kolha are the two primitive tribes attributing for 12.47% to total population of the district. They use 44 numbers of wild plant species belonging to 30 family and 36 genera for curing different diseases and disorders. Out of these, Euphorbiaceae and Fabaceae are the most exploited families. However, further phytochemical, pharmacological and clinical investigation is essential for scientific validation of these ethno drugs which may help in discovering new drugs for mankind.

795. Behera, M.K. & Pradhan, T.R. 2015. "Sacred groves of Phulbani Forest Division of Odisha: Socio cultural elements and plant biodiversity". *Indian Forester* 141(6): 670–673.

Abstract: The sacred groves in the Phulbani Forest Division of Odisha were studied to understand the richness of plant biodiversity and traditional socio cultural elements of the local people. Sampling method was adopted to study the biodiversity and growth of trees followed by a questionnaire survey in the sacred grove areas with special interaction with the VSS and sacred grove committee members. Most of the sacred groves were named after the deity dwelling in the respective sacred groves. Trees such as sal (*Shorea robusta*) and rohini (*Soymida febrifuga*) are worshipped in the sacred places by the local people of the area. Apart from common festivals, Mati Yagna and Indra Yagna are also celebrated in the sacred grove areas of this division to obtain a good harvest and timely rain. It was found that various traditional customs associated with sacred groves were in practice by the Kondh tribe. From the sampling enumeration, it was confirmed that the sacred groves were rich in plant genetic diversity and were composed of many medicinally useful species, wild edible fruits, fodder, fuel wood and timber yielding species. The Shannon Weiner Index of individual sacred groves was calculated for knowing the weigtage of species by their frequencies.

796. Behera, P.C., Tripathy, D.P. & Parija, S.C. 2013. "*Shatavari*: Potentials for galactogogue in dairy cows". *Indian J. Tradit. Knowl.* 12(1): 9–17.

Abstract: Shatavari is a medicinal plant used for a variety of serious diseases as also impotency of both the sexes. Shatavari is a general tonic and also a female reproductive tonic. Shatavari is used as main ayurvedic rejuvenative tonic for females. Shatavari roots are not only used as drug acting on all tissues but also as a powerful anabolic. It is good for eyes, muscles, reproductive organs, increases milk secretion and helps to regain vigour and vitality. Augmentation of milk production is a nationwide demand of rapidly growing population. Use of herbal galactogogue for safe milk production is a necessity because indiscriminate and prolonged use of feed additives, vitamins, minerals, hormones, drugs and synthetic compounds develop adverse effects which open a detrimental platform to normal health. Presently, many herbs such as *Leptadenia reticulata, Asparagus racemosus, Withania somnifera, Arundo donax, Cissampelos pareira, Foeniculum vulgare, Eclipta alba, Solanum nigrum, Ipomea digitata, Tribulus terrestris, Lepidium sativum, Glycyrrhiza glabra, Cuminum cyminum, Cyperus rotundus, Nigella sativa, Foeniculum vulgare* and *Pueraria tuberosa* are used for augmenting milk production. *Asparagus racemosus* (Shatavari) is very common in several polyherbal formulations such as Galog, Ruchamax, Payapro, Lactare, Leptaden and Calshakti Platina that are marketed for augmenting milk production in cows. An attempt has been made to substantiate the galactopoietic use of *Asparagus racemosus* and to advocate its scientific validation as galactogogue in dairy cows.

797. Behera, S.K. & Misra, M.K. 2005. "Indigenous phytotherapy for genito-urinary diseases used by the Kandha tribe of Orissa, India". *J. Ethnopharmacol.* 102: 319–325.

Abstract: Studies on ethno-medicocobotany of Kandha tribe of Orissa are scanty. In view of this the original ethnobotanical information and plant specimens were collected from the Kandhamal district of Orissa by visiting the area several times. The paper reports 27 species belonging to 24 families used in the treatment of 17 diseases under the broad heading genito-urinary diseases by the Kandhas of Orissa. The use of these plants does not necessarily imply efficacy, but it does give a list of species that can be studied pharmacologically for its active principle and bioactive effect.

798. Behera, S.K., Panda, A., Behera, S.K. & Misra, M.K. 2006. "Medicinal plants used by the *Kandhas* of Kandhamal district of Orissa". *Indian J. Tradit. Knowl.* 5(4): 519–528.

Abstract: The paper deals with the ethnomedicinal information on the Kandha tribe of Kandhamal district of Orissa situated on the Eastern Ghats. Use of allopathic drugs by the Kandhas inhabiting in the remote part of the district is almost unknown. Several field trips were made to the area and information on the uses of plants was collected along with plant specimens. First-hand information on uses of 98 plant species under 93 genera and 59 families against 127 ailments were collected from the Kandha community of the district. There is a need for further critical phytochemical analysis and bioactive effects

of the information collected on plants used by the tribes. The uses that are recorded in the paper are almost new to the literature. Botanical name, local name(s), families and their medicinal uses have been enumerated.

799. Bhattacharya, A. 1953. "Some ailments and their remedies among the hill sora (Sawara) of Orissa". *Bull. Dept. Anthropol.* 4(1): 13–28.

800. Biswas, S., Sahu, D.K., Dhal, N.K. & Brahmam, M. 2009. "Ethnobotany of Gadaba tribe of Malkangiri district, Orissa, India". *J. Econ. Taxon. Bot.* 33(4): 910–914.

Abstract: Regular field surveys were undertaken during 2007–2008 to the forest patches and villages of Malkangiri, which are populated by Gadabas. By interacting with them a number of ethnomedicinally significant plant species and their uses were recorded. Out of those, 35 plant species of immense importance are enumerated with their uses in this communication.

801. Biswas, S., Sahu, D.K., Dhal, N.K. & Brahmam, M. 2009. "Indigenous phytotherapies among Koya tribe of Malkangiri district, Orissa". *Ethnobotany* 21: 99–102.

Abstract: Ethnobotanical survey on Koya tribe of Malkangiri district in Orissa was conducted during 2007–2008. This paper highlights 20 plants and their ethnic uses, which appear to be interesting and unreported so far. Botanical names, families, vernacular names, localities, voucher specimen numbers, diseases treated and mode of drug administration are enumerated. The new claims offer enormous scope for clinical trials and pharmacological evaluations in the pursuit of new drugs.

802. Biswas, S., Sahu, D.K., Dhal, N.K. & Brahmam, M. 2009. "Potential wild edible plants of Malkangiri district, Orissa". *Pl. Sci. Res.* 31(1&2): 87–90.

Abstract: Systematic floristic surveys were conducted on the underexplored Malkangiri district during ihe period 2007–2009. A total of 84 wild edible plants those supplement the substandard food habit of the local tribals are enumerated. These potential plants necessitate future value addition through their germplasm conservation.

803. Bondya, S.L. & Sharma, H.P. 2005. "Impact of biotic interference to the medicinal plants of Bharagora block of Jharkhand and its adjacent border areas of West Bengal and Orissa". *Advances Pl. Sci.* 18: 143–46.

Abstract: A survey has been done to study the impact of biotic interference on the ethnomedicinal plants of Bharagora block of Jharkhand and its adjacent border areas of West Bengal and Orissa. Plants on the basis of their status have been categorized into three types, namely (i) Medicinal plants depleting from adjacent border, (ii) medicinal plants of rare occurrence or on way to extinction and (iii) lost medicinal plants. A total of 43 taxa have been enumerated in the paper.

804. Brahmam, M. 2007. "Indigenous phyto-therapeutical leads from the tribals for asthma and respiratory disorders". *E-Planet* 5(1): 93–96.

Abstract: Many plants and their constituents have become chief ingredients of a number of pharmaceutical preparations used against a variety of human and animal diseases. Medico-ethno-botanical surveys coupled with interactions with the herbal healers and patients were undertaken for the last several years in the tribal belts of Orissa to identify plants used in folk medicine especially for asthma and associated respiratory disorders. It revealed that more than 20 species have been employed to cure. In all 16 herbal healers and 113 patients (87 males and 26 females) were interviewed and the data generated showed that out of 22 plant species employed 8, i.e., *Toddalia asiatica, Adhatoda vasica, Boswellia serrata, Solanum xanthocarpum, Tephrosia purpurea, Terminalia belirica, T. chebula* and *Tylophora indica* have potentiality and these were used either alone or in combination. Polyherbal preparations gave better results over single plants.

805. Brahmam, M. & Saxena, H.O. 1990. "Ethnobotany of Gandhamardan hills – Some noteworthy folk-medicinal uses". *Ethnobotany* 2: 71–79.

Abstract: Ethnobotanical studies in Gandhamardan hills of Orissa resulted in the recording of folk-medicinal uses for nearly 200 species. A scrutiny of the published literature has revealed that the medicinal uses in respect of 77 species are new or interesting. The paper enumerates these 77 species in alphabetical order with notes on their local names, uses, method of administration and dosage.

806. Brahmam, M., Dhal, N.K. & Saxena, H.O. 1996. Ethnobotanical studies among the Tanla of Malyagiri hills in Dhenkanal district, Orissa, India. In: Jain, S.K. (ed.), *Ethnobotany in Human Welfare.* Deep Publication, New Delhi. pp. 393–396.

Abstract: Ethnobotanical studies carried out on Tanla tribe of Malyagiri hills, Dhenkanal district, Orissa are presented in the paper. The survey resulted in recording interesting therapeutic and other folk uses in respect of 54 species.

807. Chakrabarty, F., Kisku, A.K. & Dolai, M.C. 2012. "Health maintaining and disease curative ethno-medicinal and religious practices by the sandals of Keonjhar district, Orissa". *IOSR J. Humanit. Soc. Sci.* 2(5): 35–45.

Abstract: Ethnomedicine is a subfield of medical anthropology and deals with the cultural interpretations of health, disease and illness and also addresses the healthcare seeking process and healing. The knowledge and use of medicinal plant species by the traditional healers as well as by the community members was investigated in a Santal village of Orissa. On the basis of the ethnographic fieldwork with the help of standard anthropological methods it has been revealed that although the Santal's concept of

disease and treatment is centered on religious beliefs and practices but they are regularly dependent on herbal medicines along with modern allopathic treatment. The paper revealed that the Santals of a particular village of Orissa were used 78 medicinal plants belonging to 35 families for the treatment of 53 human ailments. The paper also attempts to explore the source and method of collection of the medicinal plants by the villagers from their surrounding environment.

808. Choudhury, B. 1963. "Traditional methods of treatment of disease among the Dhenkanal". *Adibasi* 5: 35–40.

809. Choudhury, B.P., Biswal, A.K. & Subudhi, H.N. 1993. "Enumeration of some potential medicinal plants in the district of Cuttack (Orissa)". *Bio-Sci. Res. Bull.* 9(1&2): 11–16.

810. Das, B.M. & Behura, B.K. 1981. "Plant poisons used in homicide and suicide cases in Orissa – Their nature and detection". *Proc. 6th Annual Conf. Orissa Bot. Soc.* pp. 23–24.

811. Das, B.P. & Dash, P. 2014. "Assessment of diversity of ethnomedicinal plant species of Duburi industrial area in Odisha using Shannon Wiener Index". *Int. J. Eng. Res. Sci. & Technol.* 3(3): 147–151.

Abstract: This investigation was carried out to assess the distributional status of ethno-medicinal plants in the Duburi industrial area of Jajpur district in Odisha. The noteworthy features of the study area include the presence of many steel plants in various stages of developments. This area is present in the northeast Odisha in India. Many local tribes of the study area depend on the locally available medicinal plants and their extracts to get relief from common ailments. The species richness and diversity index of ethno-medicinal plants of the study area indicates the disturbance in their distribution and changes in the local environment. More study is needed in this area to conserve the valuable ethno-medicinal plants used by local tribes since long from extinction and to protect the environment from changes.

812. Das, H.S., Panda, P.C. & Patnaik, S.N. 1996. "Traditional uses of wetland plants of eastern Orissa". *J. Econ. Taxon. Bot., Addit. Ser.* 12: 306–313.

Abstract: Macrophytes and mangroves, as an integral part of inland and coastal wetlands, perform a number of diverse roles in determining the importance of these systems. Literature and field surveys identified 159 species of wetland plants in 9500 km^2 study area of coastal Orissa. A total of 105 species belonging to 41 families were considered valuable and described in this paper. The study describes the various uses of aquatic plant species as food, fodder, fibre, fuel, building, thatching material, medicine and green manure.

813. Das, K. 1964. "The plant in Orissa folklore". *Folklore* 5: 187–196.

814. Das, P.K. 1995. "Some medicinal plants used by the tribals of Koraput, Orissa". *Ancient Sci. Life* 14(3): 191–196.

Abstract: This paper deals with the ethnobotanical observations of the tribals of Koraput district of Orissa. A total of 49 species of plants and their mode of usage are mentioned.

815. Das, P.K. 2010. "Ethno-colour concept among some tribals inhabiting in selected villages of Ganjam district, Odisha, India". *Ethnobot. Leafl.* 14: 743–750.

Abstract: The paper reports 13 ethnobotanically important plant species belonging to 12 families being traditionally used by some tribals of Ganjam district, Odisha, for developing various aesthetic colours and their combinations used in household purposes sucha as decoration, heritage rituals, functions, festivals, dye making and traditional healthcare.

816. Das, P.K. 2013. "Indigenous knowledge of some wild plant resources used as food from Koraput district of Orissa". *J. Non-Timber Forest Prod.* 20(1): 61–62.

Abstract: This paper provides information about 51 wild plants and parts used as food (vegetables, fruits), which are cultivated and gathered near by forest by the rural people of Koraput district of Orissa. The studies brought to light many wild plants and its utilization among the people which also helps in their economic development.

817. Das, P.K. & Das, P. 2009. "Ethno-botany of the tribals of Koraput district of Orissa". *J. Non-Timber Forest Prod.* 16(3): 217–220.

Abstract: The paper deals with the ethnobotanical observations of the tribals of Koraput district of Orissa. A total of 28 species of plants and their mode of usage are mentioned.

818. Das, P.K. & Kant, R. 1988. "Ethnobotanical studies on the tribal belt of Koraput (Orissa)". *Bull. Med.-Ethno-Bot. Res.* 9(3&4): 123–128.

Abstract: The paper deals with the ethnobotanical observations of the tribal belt of Koraput district of Orissa, mentioning about 40 species used by them in everyday life. The mode of usage of the plant parts and various ailments are given briefly in the paper.

819. Das, P.K. & Misra, M.K. 1987. "Some medicinal plants used by the tribals of Deomali and adjacent areas of Koraput district, Orissa". *Indian J. Forest.* 10(4): 301–303.

Abstract: Deomali hill in the Koraput district with a height of 1,667 m was rich in indigenous medicinal plants, but it is now in a state of devastation. In the paper 20 species of medicinal plants belonging to 19 genera and 17 families to cure 19 diseases are recorded. Species are arranged alphabetically with their botanical name, family, local name (if available), method of use and locality with field numbers.

820. Das, P.K. & Misra, M.K. 1988. "Some ethnomedicinal plants of Koraput district, Orissa". *Ancient Sci. Life* 8: 60–67.

Abstract: The paper presents the ethnomedicinal uses of 35 plant species by the tribals of Koraput district to cure 25 diseases they suffer from. Apart from this, a note on the vegetation pattern, tribal population and geography of the district are given.

821. Das, P.K. & Misra, M.K. 1988. "Some medicinal plants among Kondhas around Chandrapur (Koraput)". *J. Econ. Taxon. Bot.* 12(1): 103–109.

Abstract: The paper deals with 27 species of medicinal plants used by the Kondhas of Chandrapur area (near Bisam, Cuttack) of the Koraput district of Orissa. Kondhas depend not only on the forest produce for their livelihood, but also to cure diseases they or their cattle suffer from. Use of allopathic drugs by the Kondhas is almost unknown. The purpose of this paper is to draw attention of pharmacologists and chemists to the ethnobotanical uses of such drug plants for further critical study. It should be mentioned that such ethnobotanical uses are not recorded in literature. The voucher specimens are deposited in the herbarium of the Department of Botany, Berhampur University.

822. Das, P.K. & Ramkant 1988. "Ethnobotanical studies of the tribal belt of Koraput (Orissa)". *Bull. Med.-Ethno-Bot. Res.* 9: 123–28.

823. Das, S. & Behera, S.K. 2015. "Ethnomedicina; study of Jajpur district, Odisha". *Asian Resonance* 4(1): 122–127.

Abstract: Jajpur is one of the major districts of Odisha. It was the capital of Odisha from 736 AD to 1110 AD during the rule of Bhauma and Somavamsi "Keshari" dynasty rulers. But it has a separate identify from ancient days in the temple culture of Odisha. The district is rich in plant resources, most of the tribal people dependent on forest and their product for livelihood. Ethnomedicinal study of some village of the Jajpur district, Odisha resulted in the documentation of therapeutic uses of locally available medicinal plant resources. The study deals with the ethnobotanical perception of 45 plant species belonging to 30 families of medicinal plants used by the tribal people in the rural area of Jajpur district (mostly Kolha, Munda, Bonda and Santal) for their primary healthcare facility is not accessible to the interior part of the district people still depend on the medicinal plants and traditional healthcare system for their healthcare. This paper illustrates some of the medicinal plants used by the tribals of the locality for their healthcare, ethno medicinal practices of Jajpur district has been documented with special reference to jaundice, gastrointestinal problems, cough and cold and fever.

824. Das, S., Dash, S.K. & Padhy, S.N. 2003. "Ethno-medicinal informations from Orissa state, India, a review". *J. Human Ecol.* 14(3): 165–227.

Abstract: The review reports ethnomedicinal uses of 421 plants by 24 tribal communities of Orissa state, living in 11 undivided districts. This covers the use of plants for 166 diseases. The plants so far reported are, 67 for diarrhoea; 50 for dysentery; 30 for rheumatism; 26 for fever; 24 for skin infection; 21 for cough and cold; 21 for toothache; 20 for headache; 19 as antidote for poisoning; 14 for bleeding piles; 14 for leucorrhoea; 13 for eye complaints; 12 for malaria are significant. Orissa being a diarrhoea dominated state as reported earlier also tops in ethnomedicinal exploration from diarrhoeal point of view. Interestingly plants are reported more than 7 times by different tribal communities for various diseases; but with a common utility against diarrhoea. Among the districts, the reports are from Phulbani and Boudh of 164 plants; Sundargarh 107; Bhadrak 83; Keonjhar and Mayurbhanj 82 each; Koraput 75; Bolangir 65; Dhenkanal 53; Ganjam 42; Sambalpur 40 and Kalahandi 30 in descending order. Among the tribals, the Kondh tribe is reported for 175 times; Santal 166; Munda 122; Oriya 106; Bhuinya and Kol 87 times each; Kolha, Bunda, Bathuri and Bhuian 82 times each; Tanla 53; Bondo 43; Oraon 42 and all other tribes less than 40 times with minimum report from Khariya 3 times. The medicinal values extracted from leaf are 212 times; root 210; stem bark/ whole stem/ stem sap/ bark leachate 138; whole plant 77; seed 68; fruit 53; flower 27; latex 25; rhizome 21 and other plant parts with minor use. 27 different plant parts are used by the tribes as reported. The plants such as *Abrus precatorius*, *Achyranthes aspera, Alstonia scholaris, Andrographis paniculata, Asparagus racemosus, Barleria prionitis, Calotropis gigantea, Careya arborea, Cissampelos pareira, Cuscuta reflexa, Datura metel, Elephantopus scaber, Hemidesmus indicus* and *Ficus benghalensis* are significant from cross cultural point of view.

825. Dash, P.K., Dhal, N.K. & Rout, N.C. 2007. "Phyto-therapeutic uses of mangroves for primary healthcare among the local inhabitants of Bhitarkanika Wildlife Sanctuary, Orissa, India". *Ethnobotany* 19: 49–54. 2007.

Abstract: The mangroves have manifold benevolent attributes with significant role in the economic status of the local people. Apart from socio-economic and commercial applications, mangroves are also used as folk medicines throughout the world. The paper emphasizes on therapeutic uses of 28 mangal species belonging to 27 genera and 19 families used in the treatment of 22 different diseases by the local inhabitants in and around Bhitarkanika Wildlife Sanctuary. The local names, habit, locality, mode of administration have been enlisted. The information gathered here would be used as primary clue for discovery of herbal drugs from plants.

826. Dash, P.K., Sahoo, S. & Bal, S. 2008. "Ethnobotanical studies on orchids of Niyamgiri hill ranges, Orissa, India". *Ethnobot. Leafl.* 12: 70–78.

Abstract: Niyamgiri hills, the abode of the primitive Dongria Kandha tribe in southwest

Orissa is a unique forest ecosystem harbouring a rich flora and vast natural resources. This ethnobotanical study concerns some 20 species of orchids including 16 epiphytes and 4 terrestrials that are used by the Dongarias of the Niyamgiri hill range to treat 33 kinds of diseases. This paper also discusses some of the threats to the orchids of this hill region, as well as some very serious problems regarding their conservation.

827. Dash, R.C. & Bisht, S.S. 2013. "Traditional heal care system of Odisha to cure cholera". *Int. J. Pharm. Biol. Sci.* 4(1): 534–539.

Abstract: Odisha state is rich in ethnomedicinal plants. This paper deals with ethnomedicinal uses and anti-cholerae properties of medicinal plants used by the rural tribal people of Odisha, India. The information about plants was collected by interviewing the local rural traditional practitioners. A total of 26 plant species consisting 26 genera belonging to 22 families that are currently used in folk medicines for treatment of cholera in Odisha are documented in the paper. The study reported six new ethnopharmacological plant species which are used and easily available but not documented by researchers of Odisha to cure cholera. This investigation will help the researchers to document the traditional knowledge on the treatment of cholera. More attempts should be made to authenticate and evaluate the efficacy of these plants and products used by the tribal communities of Odisha.

828. Dash, S.S. & Misra, M.K. 1996. "Tribal uses of plants from Narayanapatna region of Koraput district, Orissa". *Ancient Sci. Life* 15(3): 230–237.

Abstract: The paper reports the ethnomedicinal uses of 32 plants by the tribals of Narayanapatna area in Koraput district, Orissa. Besides, uses of other plants or plant products are dealt, with. Distribution of plants in the area, their field numbers, local and Oriya names are appended.

829. Dash, S.S. & Misra, M.K. 1999. "Taxonomic survey & systematic census of economic plants of Narayanapatna hills of Koraput district, Orissa". *J. Econ. Taxon. Bot.* 23(2): 489–514.

Abstract: This paper is the outcome of the ethnobotanical investigation and survey conducted during 1992–1994, revealed that 85 species belonging to 78 genera and 48 families occur in the Narayanapatna hills in Koraput district, Orissa having economic importance. The various uses of the plants and plant products lessen the expenditure of the tribal commmunities inhabitating inside the forest and also form a source of constant income. The paper also deals with 65 medicinal plants, which are used in the treatment to 22 diseases, 20 fodder plants, 24 edible plants and 11 timber valued plants.

830. Dash, S.S. & Misra, M.K. 2001. "Ecological and socio-economic profile of three Kondh villages of Phulbani district of Orissa, India". *J. Hum. Ecol.* 12(2): 101–107.

Abstract: The paper attempts at making a comprehensive ecological and socio-economic study of a traditional Kondh tribe living in the Eastern Ghats, taking three sample villages, viz., Rajikakhola, Nediguda and Badruguda of Phulbani district of Orissa.

831. Debta, M.R., Srivastava, S.K. & Patel, M. 2015. "Ethno-medicinal notes from Jamankira block of Sambalpur district, Odisha, Part – I". *Ethnobotany* 27: 99–101.

Abstract: This paper mainly highlights ethnobotanical uses of mango tree, *Mangifera indica* L. (Anacardiaceae) along with other ingradients administered by local medicine men to cure various ailments such as gastrointestinal and gynaecological disorders, urinary tract infections and chronic asthma affecting people inhabiting in three districts, namely Debgarh, Sambalpur and Sundargarh in the state of Odisha.

832. Devi, M. 2004. *Native food and fibre plants used by the tribals of Gajapati and Ganjam districts of Orissa: Its management & conservation.* Ph.D. Thesis, Berhampur University, Berhampur (unpublished).

Abstract: The native food and fibre plants used by the tribal people in the districts Gajapati and Ganjam were studied for the present thesis. Special emphasis was given on the management and conservation aspects of the different groups of native plants used by the ethnic people. The group of plants included both wild plants as well as the domesticated or cultivated plants. Those plants were grouped according to the nature of collection and consumption.

833. Dhal, N.K. & Rout, N.C. 2005. "*Cissus quadrangula* used for cough among the Gond tribes of Orissa, India". *J. Trop. Med. Pl.* 6(2): 317–318.

Abstract: *Cissus quadrangularis* L., locally known as "Pabari", a rambling shrub of Vitaceae (Ampelidaceae) is a common medicinal plant. It is used in indigenous system of medicine for wound healing, rheumatism, bone fracture and commonly known as Hadabhanga. A completely new use of the species among the Gond tribe has been reported in this communication which provides scope for further research.

834. Dhal, N.K., Panda, S.S. & Muduli, S.D. 2014. "Ethnobotanical studies in Nawarangpur district, Odisha, India". *Amer. J. Phytomed. Clinic. Therap.* 2(2): 257–276.

Abstract: Traditionally, plants have been used as a source of medicine in India by indigenous people inhabiting various terrains for the control of different ailments afflicting human. An ethno botanical survey was undertaken in Nawarangpur district, Odisha. The plants and their traditional use are part of the natural and cultural heritage of the region. The study was carried out on the medicinal plants used by the local peoples during 2000 to 2004. Finally, the data were assessed to which extent plants are vulnerable due to collection and habitat destruction. An ethnobotanical survey was

undertaken in the Nawarangpur district, Odisha. Data were collected through field assessments from traditional healers and locals by means of personal interviews and semi-structured questionnaires. Voucher specimens were collected following standard methods, identified with the help of pertinent floras and taxonomic experts and deposited in the Herbarium, RRL-B, India for future references. A total of 69 plant species belonging to 43 families are reported during the study. The major life-forms were herbs, trees, shrubs, climbers, small tree and creeper. Several medicinal plants recognized for the treatment of various diseases were collected. The root parts were widely used, followed by leaf, bark, seed and stem. This study reveals that medicinal plants still play a vital role in the primary healthcare of this local community. Traditional medicines also have the potential to form the basis of pharmaceutical drugs for the treatment of a range of diseases. Further, the information requires validation for further clinical usage.

835. Dhal, N.K., Panda, S.S. & Muduli, S.D. 2015. "Traditional uses of medicinal plants by native people in Nawarangpur district, Odisha, India". *Asian J. Pl. Sci. Res.* 5(2): 27–33.

Abstract: Medicinal plants still play a vital role in the primary healthcare of native people in Nawarangpur district, Odisha. The study deals with comprehensive ethnobotanical survey of the traditional uses of plants in Nawarangpur district, Odisha. Data were collected through field assessments from traditional healers and locals by means of personal interviews and semi-structured questionnaires. Voucher specimens were collected following standard methods, identified with the help of pertinent floras and taxonomic experts and deposited in the Herbarium, Regionl Research Laboratory, Bhubaneswar, for future references. A total of 51 plants belonging to 35 families were recorded out of which major life forms were in the order of herbs, trees, shrubs and climbers. The leaf parts were widely used followed by root, bark, whole plant, seed, fruit, rhizome, petiole and latex. Traditional medicines also have the potential to form the basis of pharmaceutical drugs for the treatment of a range of diseases. Further, the information requires validation for further clinical usage.

836. Dhal, N.K., Pattanaik, C. & Reddy, C.S. 2010. "*Bakhra* starch fermentation – A common tribal practice in Orissa". *Indian J. Tradit. Knowl.* 9(2): 279–281.

Abstract: Ethnobotanical studies were conducted among various tribes in different tribal districts of Orissa. It has been found that six plant species are used by the tribal people for preparation of Bakhar, which is generally used for the fermentation of rice. These plants are also used to prepare the local traditional drink, Handia. The uses of these six plant species are recorded for the first time.

837. Dhal, N.K., Thirunavoukkarasu, M. & Rout, N.C. 2002. "On the ethnobotanical uses of *Gymnema sylvestre". J. Trop. Med. Pl.* 3(1): 63-64.

Abstract: *Gymnema sylvestre* R. Br. (Retz.) ex Schult. (Asclepiadaceae) is an important traditional medicinal plant, used as a remedy for stomachic, diuretic, cough and diabetes. This paper describes the ethnobotanical notes collected from the different tribal people of Orissa.

838. Dhal, N.K., Thirunavoukkarasu, M., Mallavadhani, U.V. & Mishra, A.K. 2004. "Use of *Acorus calamus* by the Kondh tribes of Orissa, India." *J. Trop. Med. Pl.* 5(1): 80–81.

Abstract: *Acorus calamus* L. locally known as "Devasandha" (Bacha) among the Kondh tribes of Satkosia George Sanctuary, Orissa, has been known for its multipurpose uses to cure gastric, dysentery, rheumatism and bronchial asthma. Among the five tribes (Kondh, Kolha, Tanla, Kharia and Matia) located in the Sanctuary, Kondh tribe is the prominent one with 400 people in and around the areas. The paper is a specific folklore study among the Kondhs located in various forest pockets of the sanctuary. The botanical and vernacular names, plant parts used, modes of administration are discussed.

839. Dikshit, N., Sivaraj, N. & Dikshit, S. 2016. "Ethnobotany and traditional healthcare practices in Similipla Biosphere Reserve, Odisha". *Ecol. Environm. Conservation* 22(3): 1191–1197.

Abstract: Ethnobotanical uses and traditional healthcare practices followed among the tribal people of Similipal Bioshere Reserve of Odisha have been highlighted in this paper. Physiography, agro climatic condition of the area surveyed, botanical names, parts used, ethnomedicinal uses and distribution of families belonging to 45 genera and 49 species are discussed. Local indigenous knowledge using plant parts either in isolation or mixed with other ingradients to cure common ailments such as common cold, stomach disorder, rheumatism, asthma, urinary problem, menstrual disorder, detoxification, diabetes, skin diseases, improving memory power, gonorrhea, syphilis, cooling effect of stomach, snake bites, aphrodisiac, wormicide, abortion, mosquito repellent and treatment of cancer are mentioned.

840. Dubey, A.K. & Panigrahi, G. 1981. "Some useful grasses of Sambalpur (Orissa)". *Proc. 5th Annual Conf. Orissa Bot. Soc.* pp. 13–24.

841. Dutta, P.K., Paul, S.C., Sahoo, S. & Saxena, H.O. 1979. "Cultivation of medicinal and aromatic plants in Orissa region". *Pl. Sci. Res.* 1(1): 21–22.

Abstract: A number of useful compounds used in modern medicine, perfumes and flavours are derived from plant sources. In order to meet the increasing demand of their raw materials, large scale cultivation of aromatic and medicinal plants is required. Orissa having a wide variety of soils and climatic conditions provides good scope for cultivation of a number of such plants. The Regional Research Laboratory, Bhubaneswar has been conducting studies on their introduction and cultivation for the past ten years and

developed agro-technology for some plants. Besides, the laboratory is making all efforts to popularise cultivation of aromatic and medicinal plants in Orissa region, by supplying technical assistance and planting material. The following species have been found promising for cultivation in Orissa.

842. Franco, F.M. & Narasimhan, D. 2009. "Plant names and uses as indicators of knowledge patterns". *Indian J. Tradit. Knowl.* 8(4): 645–648.

Abstract: Cross-cultural comparison of ethnobotanical knowledge of various communities can bring out the different patterns of knowledge held by them. The paper looks into the knowledge patterns among the Kondh, Poraja, Hill Bonda and Gadaba of the Koraput region by comparing their knowledge on 20 different plants.

843. Girach, R.D. 1992. "Medicinal plants used by Kondh tribe of dist. Phulbani (Orissa) in eastern India". *Ethnobotany* 4: 53–66.

Abstract: This communication is an outcome of the survey carried out among Kondhs of district Phulbani in Orissa to record plants used by them in the treatment of diseases. The study deals with 51 folk drugs used by them in 13 diseases. The information presented in the paper has been gathered from medicinemen and other experienced informants among the Kondhs.

844. Girach, R.D. 2001. "Ethnobotanical notes on some plants of Mahendragiri hills, Orissa". *Ethnobotany* 13: 80–83.

Abstract: The paper deals with ethnobotanical uses of 31 plant species recorded from Saora tribal people in Mahendragiri hills (Eastern Ghats region of Orissa) of Gajapati district. Most of the uses of these plants have been found to be new or interesting, when compared with published literature on Indian ethnobotany. The paper enumerates these species in alphabetical order, followed by local names, locality, uses and method of administration.

845. Girach, R.D. & Aminuddin 1989. "*Madhuca latifolia* (Roxb.) Macbr. (Mahua) – A tree of socio-economic importance to tribals of south-eastern India". *Adibasi* 30(2): 42–44.

846. Girach, R.D. & Aminuddin 1992. "Addition to little known edible plants from Orissa". *J. Econ. Taxon. Bot.* 16(3): 589–594.

Abstract: An account of 146 wild edible plants recorded from tribal and rural population of Orissa, as a result of ethnobotanical surveys carried out by us was published earlier. This communication deals with additional 47 plant species consumed for edible purpose by the tribal and rural societies of Orissa.

847. Girach, R.D. & Aminuddin 1992. "Some little known edible plants from Orissa". *J. Econ. Taxon. Bot.* 16(1): 61–68.

Abstract: Authors are engaged in survey and ethnobotanical studies on the rural and tribal population of Orissa from 1982. An account of 78 wild edible plants chiefly consumed by tribal inhabitants of Orissa has been published earlier. This communication deals with additional 68 plants species used for edible purpose by the tribal and rural societies of Orissa.

848. Girach, R.D. & Aminuddin 1993. "*Hyptis suaveolens* (L.) Poit. (Lamiaceae) – A source of edible oil among tribals of Orissa, India". *J. Spices Aromat. Crops* 2(1&2): 75–76.

849. Girach, R.D. & Aminuddin. 1994. "Ethnomedicinal studies on *Elephantopus scaber* L.". In: Gupta, B.K. (ed.), *Higher Plants of Indian Subcontinent.* Vol. III (*Indian J. Forest., Addit. Ser.* VI). Bishen Singh Mahendra Pal Singh, Dehra Dun. pp. 167–172.

Abstract: Pluralistic uses of *Elephantopus scaber* L. recorded from several tribal communities of Orissa and Bihar during the last nine years are presented in this communication.

850. Girach, R.D., Ali, Z.A. & Abbas, A. 1989. "Thokrain: An indigenous lighter used by the tribals of Similipal, Mayurbhanj". *Adibasi* 29(2): 6–8.

851. Girach, R.D., Aminuddin & Ahmed, I. 1987. "Importance of some folk plant names". *Adibasi* 27(2&3): 41–46.

852. Girach, R.D., Aminuddin & Ahmed, I. 1988. "Observations on wild edible plants from tribal pockets of Orissa". *Pl. Sci. Res.* 10(1): 16–25.

853. Girach, R.D., Aminuddin & Khan, S.A. 1992. "Herbal remedies used for the treatment of oligogalactia". *J. Sci. Res. Pl. Med.* 13/14: 41–45.

854. Girach, R.D., Aminuddin & Khan, S.A. 1993. "Ethnobotanical studies on *Cassia fistula* from Orissa (India)". *J. Res. Educ. Indian Med.* July–Sept. 1993: 18–22.

855. Girach, R.D., Aminuddin & Khan, S.A. 1993. "Ethno-medicinal uses of *Achyranthes aspera* L. in Orissa (india)". *Int. J. Pharmacogn.* 30(2): 113–115.

856. Girach, R.D., Aminuddin & Khan, S.A. 1996. "Notes on less known oil yielding plants from Orissa". *J. Econ. Taxon. Bot.* 20(1): 111–114.

Abstract: Orissa has a rich and varied flora due to its diversified topography and variable climatic conditions. The state is inhabited by 63 tribal communities. A total of 17 unknown or less-known plant species used by the tribal communities for oil-yielding purposes (edible and medicinal) only are discussed in the paper. Some of these oil yielding species known among tribals of Orissa are *Argemone mexicana* L., *Butea parviflora* Roxb., *Combretum decandrum* Roxb., *Shorea robusta* C.F. Gaertn. and *Ventilago denticulata* Willd.

857. Girach, R.D., Brahmam, M. & Misra, M.K. 1997. "Some less known plant foods from Bhadrak district of Orissa". *J. Econ. Taxon. Bot.* 21(1): 107–111.

Abstract: This paper deals with 31 plant species consumed as wild edibles by the rural population of district Bhadrak with the view to document plant utilization for developmental process of rural inhabitants.

858. Girach, R.D., Brahmam, M. & Misra, M.K. 1998. "Folk veterinary herbal medicine of Bhadrak district, Orissa, India". *Ethnobotany* 10: 85–88.

Abstract: An ethnobotanical survey was carried out during 1994–1997 in Bhadrak district of Orissa. A total of 25 plant species used in folk veterinary medicine are enumerated. Parts used, vernacular name and voucher number of each plant are given. Most of the uses were found to be new compared with those reported in published literature on veterinary medicine from India.

859. Girach, R.D., Aminuddin, Brahmam, M. & Misra, M.K. 1997. "Observations on ethnomedicinal plants of Bhadrak district, Orissa, India". *Ethnobotany* 9: 44–46.

Abstract: This communication deals with new or less-known medicinal uses of 23 plant species recorded from knowledgeable persons of the rural areas in Bhadrak district of Orissa.

860. Girach, R.D., Aminuddin, Siddiqui, P.A. & Khan, S.A. 1994. "Traditional plant remedies among the Kondhs of district Dhenkanal (Orissa)". *Int. J. Pharmacogn.* 32(3): 273–283.

861. Girach, R.D., Brahmam, M., Misra, M.K. & Ahmed, M. 1998. "Indigenous phytotherapy for filariasis from Orissa". *Ancient Sci. Life* 17(3): 224–227.

Abstract: Filariasis is one of the major health problems in the coastal areas of Orissa, including district Bhadrak. This paper deals with eight plant species used in native phytotherapy for filariasis in this region with the view to provide clue for further research.

862. Girach, R.D., Brahmam, M., Misra, M.K. & Ahmed, M. 2001. "Some less known medicinal plants in relation to Unani system of medicine from district Bhadrak, Orissa". *Hamdard Med.* 44(3): 51–56.

Abstract: Plant-based medicaments have been man's prime therapeutic weapons to rescue him from the clutches of diseases. The materia medica of Unani system of medicine is a rich heritage of indigenous herbal drugs. Many of them have become out of use for various reasons. During a series of medicinal plants collection trips to Bhadrak district since 1994, two thousand plant species were collected and their uses in classical literature of Unani medicine recorded. Some of these drugs are very popular, while others are obsolete or discarded. A total of 25 plant species, less-known for their continuous use in Unani system of medicine or some new uses (not reported in Unani literature), have been

compared with the published reports on phytochemistry and pharmacology wherever available, with a view to justify their medicinal utility for their safe and wider application. Some of the worth mentioning little known Unani herbal drugs are *Aerva lanata* (Bisheri buti), *Alstonia scholaris* (Chatuan), *Barringtonia acutangula* (Samandarphal), *Cassia absus* (Chaksu), *Cissampelos pariera* (Petha), *Crataeva magna* (Barna), *Gymnema sylvestre* (Gurmar), *Paederia foetida* (Gandhali) and *Pergularia daemia* (Utran).

863. Girach, R.D., Singh, S., Brahmam, M. & Misra, M.K. 1999. "Traditional treatment of skin diseases in Bhadrak district, Orissa". *J. Econ. Taxon. Bot.* 23(2): 515–520.

Abstract: The paper deals with 38 plant species used by the natives of district Bhadrak in skin diseases such as eczema and scabies, and also for cuts, wounds and boils. Most of the information was found to be new or interesting when compared with ethnobotanical literature on skin diseases from India.

864. Girach, R.D., Aminuddin, Ahmed, M., Brahmam, M. & Misra, M.K. 1996. Native phytotherapy among rural population of district Bhadrak, Orissa. In: Jain, S.K. (ed.), *Ethnobotany in Human Welfare*. Deep Publications, New Delhi. pp. 162–164.

Abstract: Bhadrak is one of the 27 districts in Orissa. The paper deals with hitherto unknown or less-known medicinal uses of species recorded from the rural communities of Bhadrak. This forms the first ethnobotanical report from the district. The uses of some commonly available species such as *Caesalpinia bonduc* in filariasis, *Ficus hispida* in gonorrhea, *Glycosmis arborea* in cancer, *Mimosa pudica* in burning micturition, *Nerium indicum* in leprosy, *Stephania japonica* in fish sting and *Thespesia populnea* in dental care, are worthy of mention. The authors emphasize the need for incorporating some herbal remedies in rural healthcare programmes.

865. Girach, R.D., Aminuddin, Siddiqui, S.A., Siddiqui, P.A. & Khan, S.A. 1994. "Ethno-medicinal studies on Harsinghar (*Nyctanthes arbor-tristis* L.) – A less known medicinal plants in Unani medicine". *Hamdard Med.* 37(2): 60–66.

866. Girach, R.D., Singh, S., Ahmed, M., Brahmam, M. & Misra, M.K. 1998. "Euphorbiaceae in native health practices of district Bhadrak, Orissa, India". *Fitoterapia* 69(2): 24–28.

Abstract: An account of 19 species of the family Euphorbiaceae known to be of ethnomedicinal importance in Bhadrak district (Orissa) is presented with local name(s), locality and uses recorded from native health practitioners.

867. Gopal, G.V. 1991. "'Kauncha Beej' an ingredient of 'Vita-ex' – Its botany, chemistry and folklore uses in Orissa". *J. Econ. Taxon. Bot.* 15(3): 677–682.

Abstract: The paper provides the folklore uses, botany and chemistry of 'Kauncha Beej' in Orissa. The phytotherapy and phytochemical investigations and bio-active substances, viz., flavonoids, steroids, cumarins, cardenolides are identified.

868. Gopal, G.V. & Sinha, M.P. 1999. "Medicinal uses of various beads used in rosaries". *J. Econ. Taxon. Bot.* 23(1): 131–133.

Abstract: The paper deals with the medicinal uses of various seeds used commonly as beads in rosaries in Rajgir areas of Bihar and and Puri district of Orissa. Nearly nine plants species, viz., *Ocimum sanctum* L. (Lamiaceae), *Pterocarpus santalinus* L.f. (Fabaceae), *Drypetes roxburghii* Wall. (Euphorbiaceae), *Elaeocarpus sphaericus* (Gaertn.) K. Schum., *E. tuberculatus* Roxb. (Elaeocarpaceae), *Nymphaea nouchali* Burm.f. (Nymphaeaceae), *Ficus religiosa* L. (Moraceae), *Ziziphus mauritiana* Lam. (Rhamnaceae) and *Aegle marmelos* Corrêa (Rutaceae) were used in preparing various rosaries commonly sold in markets.

869. Hemadri, K. & Rao, S.S. 1983. "Leucorrhoea and menorrhagia: Tribal medicine". *Ancient Sci. Life* 3: 40–41.

Abstract: Information on eleven claims of folklore medicine on leucorrhoea and menorrhagia gathered from the tribals of Dandakaranya [living in parts of Andhra Pradesh, Odisha, Madhya Pradesh (Bastar district) and Maharashtra (Chadrapur district)].

870. Hemadri, K. & Rao, S.S. 1989-91. "Folklore claims of Koraput and Phulbani districts of Orissa state". *Indian Med.* 1(4): 11–13; 2: 4–6; 3:10–14.

871. Jain, S.K. 1971. "Some medico-religious beliefs about plants among Adibasis of Orissa". *Adibasi* 12: 39–44.

872. Jain, S.K. & Banerjee, D.K. 1973. "Medicinal plants among certain Adibasis in India". *Bull. Bot. Surv. India* 15: 85–91.

Abstract: The authors are engaged in ethnobotanical studies among certain tribal populations of India. Field work was done among the Chenchu, Reddi, Valmiki and Gond tribes in Andhra Pradesh and Saora and Kondh tribes in Odisha State. The indigenous plants used by the Adibasis for food and medicine were particularly studied. The paper deals with some more important medicinal plants encountered in the area of study. A total of 32 species belong to 29 genera and 21 families of angiosperms are discussed. The botanical name, family name, habit, local names (in Telugu, Kui, Saora or Odiya language), tribal medicinal uses, locality of observation and voucher herbarium specimens are given. Those tribal uses which do not seem to be recorded in familiar published literature have been marked with an asterisk. An index to 40 diseases referred in the paper is given.

873. Jena, M., Sahoo, S. & Sahu, R.K. 2011. "Some ethno medicinal plants for the treatment of common health problems in Mayurbhanj district, Orissa". *New York Sci. J.* 4(4): 87–92.

Abstract: Mayurbhanj is one of the largest districts of Orissa, famous for the Similipal Tiger Reserve. It is also well-known for the highest number of tribal population in the state. Most of the tribal people depend on the forest and forest product for their life and livelihood. Ethnomedicinal studies in some villages of the Mayurbhanj district resulted in the documentation of many therapeutic uses of the locally available medicinal plant resources. The study deals with the ethnobotanical perception of 48 plant species belonging to 29 families of medicinal plant used by the tribal people in the rural area of Mayurbhanj district (mostly Santal and Kolha) for their primary healthcare problems. As the healthcare facility is not accessible to the interior part of the district, people still depend on the medicinal plants and traditional healthcare system for their healthcare. This paper illustrates some of the medicinal plants used by the tribals of the locality for their healthcare. The common diseases for which they are using these plants are cough, cold, diarrhoea, gynecological disorders, sexual debility, malaria and other common fevers and anemia.

874. Kandi, B., Sahu, S.C., Dhal, N.K. & Mohanty, R.C. 2011. "Ethnomedicinal plant wealth of Sunabeda Wildlife Sanctuary, Nuapada, Odisha." *Ethnobotany* 24: 108–113.

Abstract: The paper deals with the ethnomedicinal plants used by the tribal people from Sunabeda Wildlife Sanctuary, Nuapada, Odisha. The predominant tribes living in this region are Gond, Bhunjia, Binjhals and Sabars. Ethnomedicinal uses of 52 angiosperms belonging to 33 families and 49 genera have been documented. Among the documented plants, Euphorbiaceae and Fabaceae are the two dominant families accounting for five species each. Documented medicinal plants are tabulated alphabetically with their local names, family, parts used, mode of uses and the ailments for which they are used.

875. Kumar, M., Butt, T.A., Hussaini, S.A., Kumar, K., Khan, H., Aminuddin & Samiulla, L. 2014. "Ethnomedicines in the Khordha forest division of Khordha district, Odisha, India". *Int. J. Curr. Microbiol. Appl. Sci.* 3(1): 274–280.

Abstract: Based on an ethnopharmacological survey of Khordha Forest Division of Khordha district in Odisha conducted during 2012, the paper presents some 54 contemporary folk recipes comprising 43 taxa of folk medicinal plants used by Kondh, Sabra, Naik tribes of the area, for treatment of various common and chronic diseases and conditions. Botanical name, family in bracket, locality with field book number, local name, Unani name, part(s) used, name of the disease against which used, mode of administration and informant is given for each recipe discussed in the text. The need for their phytochemical and pharmacological investigations in the context of claims reported has been suggested in an effort to discover new drugs of natural origin for many of the diseases for which modern medicine has, thus far, no satisfactory cure.

876. Kumar, M., Hussaini, S.A., Samiulla, L., Kumar, K., Khan, S.A., Aminuddin & Jamil, Syed Shakir. 2012. "Ethnomedicinal Observations from the Anantprasad and Jeypur tribal villages of district Cuttack, Odisha, India". *J. Appl. Pharmaceut. Sci.* 2 (11): 127–130.

Abstract: Ethnobotanical survey tours were conducted during year 2010–2011 to document the ethnomedicinal remedies for various ailments of the Kondh tribe inhabiting in the Anantprasad and Jeypur villages of district Cuttack, Odisha under Athagarh Forest Division. The paper presents 24 plant species belonging to 23 genera and 16 families used by Kondh tribes of this area and other local inhabitants for the treatment of various diseases, i.e., boils, cuts and wounds, joints pain, jaundice, constipation, earache, headache, dysentery, menstrual problems and snakebite. The plants are arranged alphabetically with their botanical name, family in bracket, local name(s), Unani name wherever available, locality with collection number, part used, name of the disease(s) against which used, mode of preparation and administration and Informant who shared his valuable information is given for each recipe discussed. The information provided will help to discover new herbal drugs for many of the diseases, thus far, incurable in modern medicine.

877. Kumar, S. & Satapathy, M.K. 2011. "Medicinal plants in an urban environment, herbaceous medicinal flora from the campus of Regional Institute of Education, Bhubaneswar, Odisha". *Int. J. Pharm. & Life Sci.* 2(11): 1206–1210.

Abstract: Bhubaneswar popularly known as the Temple City is one of the oldest continuously inhabited regions of the world, and one of the most important Lord Shiva, Goddess Bhubaneswari, Lord Mahavir and Lord Buddha pilgrimage sites of the country. Despite its importance, very little information is available on the city's herbaceous flora in general, and the medicinal species found within its limit in particular. As traditional medicine plays an important role in Indian society and in Oriya culture, this study attempts to investigate the availability and the traditional uses of medicinal plant species. The paper presents information on the traditional uses of 72 plant species collected from the campus of Regional Institute of Education, Bhubaneswar, Odisha, and highlights the uses of these plants by the local inhabitants for healthcare and the students of the institute for the study of ethnobotany, medicinal importance and conservation.

878. Kumar, S., Jena, P.K., Sabnam, S., Kumari, M. & Tripathy, P.K. 2012. "Study of plants used against the skin diseases with special reference to *Cassia fistula* L. among the king (Dongaria Kandha) of Niyamgiri: A primitive tribe of Odisha, India". *Int. J. Drug Developm. & Res.* 4(2): 256–264.

Abstract: Fungi causing skin infections are treated by the Dongaria Kandha residing at Niyamgiri hills, Odisha, since thousand years back using plant parts of local flora of

Niyamgiri as traditional medicine. Keeping this in view it was conceptualized to study the ethnobotany of species used as traditional medicines among them in order to validate their therapeutic claims against eczema and other skin diseases. Through questionnaire it was ascertained that 19 plant species are being used in the treatment of skin diseases, particularly eczema. Among 19 plant species, *Cassia fistula* L., which tops in the priority list was tested against *Aspergillus niger* using disc diffusion method. Antimicrobial and qualitative analysis of bioactive compounds from the leaf of *C. fistula* showed that the antifungal activity of leaf of *C. fistula* was excellent against the test fungus as reflected through fungal inhibition. Bioactive compounds present in plant extracts showed the potent medicinal value of *C. fistula* against skin diseases. The study recommends for using these plants, particularly *C. fistula* against fungal infections and the study further emphasizes upon detailed analysis of the bioactive compounds in different plant parts and their possible use in preparation of medicines.

879. Kumari, M. & Kumar, S. 2012. "Medicinal properties of *Passiflora foetida* L.: An exotic vine in a sub-urban area of Bhubaneswar, Odisha, India". *Emerg. Sci.* 4(5): 35–37.

Abstract: *Passiflora foetida* (Passifloraceae), popularly known as stinking passion flower, is an herbaceous climber that found throughout the suburban area of Bhubaneswar, which has been widely used in Odiya traditional medicine for the treatment of different disorders. It has rich pharmacological values particularly in mental disorder with numerous bioactive compounds such as vitexin, luteolin and apigenin, which may be responsible for bacteriocide, antidysentric and antilithic activity.

880. Mahalik, G., Sahoo, S. & Satapathy, K.B. 2015. Ethnobotanical survey of plants used in treatment of urinary disorders in Dhenkanal district of Odisha, India. *IOSR J. Environm. Sci., Toxicol. & Food Technol.* 9(8): 58–63.

Abstract: The tribal population of Dhenkanal district has traditionally depended on folk medicinal healers for treatment of their ailments. These tribal healers use medicinal plants as their primary source of medicinal formulations. Various tribal rich forest pockets of the district were identified and field trips were conducted at regular intervals in different seasons. Tribal uses of plants were studied *in situ* by establishing close intimacy with the tribal healers. During the survey 315 plant species belonging to 295 genera and 75 families have been collected, critically studied, identified and incorporated in the herbarium. But UTIs-related ethno-medicinal data when analyzed were found to be from 26 species. Though 265 ethnobotanical records were made from 25 tribes of the district during the present field work, only 26 are found to be interesting and useful against urinary tract infections or related diseases. The rest were deleted due to various unclassified reasons like wrong attribution, wrong identification, misinterpretation, non-confirmation in the cris-cross checking, mounted on baseless faiths. It can be concluded

that ethnobotanical plants can be used to discover natural products that may serve as lead for the development of new pharmaceuticals addressing the major therapeutic needs.

881. Mahapatra, A.K. & Panda, P.C. 2012. "Wild edible fruit diversity and its significance in the livelihood of indigenous tribals: Evidence from Eastern India". *Food Security* 4(2): 219–234.

Abstract: A number of wild plants, used by rural and tribal populations and contributing significantly to their livelihood and food security have escaped recognition and scientific inquiry. Their distribution, conservation, mode of harvest by locals and optimal use require region-specific assessment in order to integrate them into developmental interventions. This study analyzed the collection, consumption, sale and income from edible forest fruits in 49 tribal villages spread over five districts of Orissa State in eastern India. Density, dominance and diversity of species yielding wild fruits were measured by studying ecological parameters in the sample plots. An average of 48 fruit plants per hectare of deciduous forests was estimated during the study. A total of 56 wild edible fruit species belonging to 40 genera in 26 families were recorded in the study region, many of which have multiple uses. Indigenous fruits formed part of the family diet with average annual consumption of 73 kg per household. Sale of wild fruits contributed 15% of income for tribal households. Despite their good knowledge of indigenous fruits, the tribal populations have not adopted fruit tree farming which would enhance their nutrition and income.

882. Mahapatra, A.K. & Panda, P.K. 2002. "Ethno-pharmacological knowledge of Juang and Munda tribes of eastern India". *Int. J. Sustain. Developm. World Ecol.* 9: 151–158.

Abstract: An inventory of medicinal plants used by the Juang and Munda tribes of the Keonjhar district of eastern India resulted in identification of 215 plants, belonging to 150 genera and 82 families. The preparation, utilisation and the Juang name for the plants are documented. This reveals a wealth of traditional knowledge of herbal care in one primitive and widely distributed tribe of eastern India. Three new records of plants having therapeutic value are identified and 29 plants having a new use were found. The dependence of tribes on forests was most evident in the study region, as species of mushrooms, wild berries, tubers, and flowers constituted the tribe's diet. Cooking oil demand of households was entirely met from the forest oil seeds, while the flora of the region provided medicine for most, if not all, common ailments. Understanding of ethnobiology in the changing dynamics of a people-forest relationship in the region is important for ensuring sustainable forest management.

883. Mallick, S.N., Ram, J.P. & Parida, N. 2014. "Study of ethnomedicinal values of some shrubs in Rourkela Steel city and its surroundings, Sundargarh, Odisha". *Int. J. Appl. Biol. Pharmaceut. Technol.* 5(3): 123–130.

Abstract: During the survey it was found the 30 species of shrubs found locally available in and around Rourkela are used by the people of the villages. All the 30 dicot shrubs belong to 18 families. Among the shrubs studied, *Calotropis gigantea, Vitex negundo* and *Lawsonia inermis* were of highly medicinal values. The other remaining shrubs were also found with medicinal values for different diseases. Out of the 30 shrubs, most of the plants were used for cough, cold and fever. These shrubs are also used for malaria, dysentery, skin diseases, eye problems, and also for other diseases.

884. Mallik, B.K., Panda, T. & Padhy, R.N. 2012. "Traditional herbal practices by the ethnic people of Kalahandi district of Odisha, India". *Asian Pacific J. Trop. Biomed.* 2012: S988–S994.

Abstract: This communication consists of uses of parts of 111 plant species belonging to 105 genera of 59 plant families, against 68 human ailments by the ethnic people of Kalahandi district of Odisha. These plants are used as herbal healing sources, as a part of cultural practices of aborigines down the ages. Among these plants, many are specific to the climate identified zone of the hilly forest patches of the district.

885. Franco, F.M. & Narasimhan, D. 2012. *Ethnobotany of the Kondh, Poraja, Gadaba and Bonda of the Koraput region of Odisha, India*. D.K. Printworld, New Delhi.

Abstract: Understanding the ecological knowledge of tribal and rural societies is necessary to conserve and sustain natural resources. This volume discusses the history and importance of ethnobotany with specific reference to four tribal communities of Odisha. It begins with an account of the nature of the tribes involved in the study. Based on participatory fieldwork, the book presents an insider's account of the tribal culture and its relationship with plants. It provides the ethnobotanical descriptions of 210 species of plants belonging to 77 families, presenting their local names, origin and the medicinal, cultural, culinary, economic, ecological uses of the species. It takes up study of the plants used by tribes in the drug-based and spiritual healing processes elaborating the philosophies behind knowledge transmission such as divination, hereditary, discipleship and kinship. Related aspects such as disease diagnosis, diet restrictions and rituals are depicted in detail. There is a special chapter on forests and non-timber forest products (NTFPs) that details the efforts of communities in forest conservation, their land use patterns, forest classification systems, list of NTFPs and their harvest-consumption patterns. It also deals with the role of NGOs, middlemen and government agencies in this. Throughout, the emphasis is on the philosophical relationship of the communities with their ecosystem.

886. Mishra, D. 2013. "Cattle wounds and ethnoveterinary medicine: A study in Polasara block, Ganjam district, Orissa, India". *Indian J. Tradit. Knowl.* 12(1): 62–65.

Abstract: The study examined the information seeking behaviour of traditional medical practitioners in the treatment of cattle wounds as well as level of acceptance of indigenous

systems of medicine in the treatment of the disease. Data were collected using an interviewer-administered, self-constructed, structured-questionnaire. On spot experiment technique was adopted for analysis of accuracy of the preparations. Analysis revealed that traditional medical practice in the study area was with the elderly people. Knowledge of traditional medical practices was revealed to be orally preserved and transmitted by word of mouth from generation to generation and the level of integration with orthodox medicine was found to be very low. The uses of whole plant and/or plant parts along with the mode of administration revealed that 35 plant species were used for treatment of cattle wounds. Modern scientific techniques need to be adopted for validation of the ethnoveterinary medicines at a larger scale.

887. Mishra, R.C., Panda, P.C. & Das, P. 1994. *Lesser known medicinal uses of plants among the tribals of Gandhamardan hill ranges, Orissa*. In: Gupta, B.K. (ed.), *Higher Plants of Indian Subcontinent*. Vol. III (*Indian J. Forest., Addit. Ser.* VI). Bishen Singh Mahendra Pal Singh, Dehra Dun. pp. 135–142.

Abstract: A note on the medicinal uses of 28 plant species among the tribals of Gandhamardan hill ranges of Orissa is provided in the paper. The species are arranged alphabetically with name of the family within parenthesis, synonym, collection number and date, local name, uses and other peculiar observations have been provided.

888. Mishra, R.K. & Satapathy, K.B. 2004. "Life supporting food and food-drink plants among tribes of Kandhamal district of Orissa". *Pl. Sci. Res.* 26(1&2): 83–88.

Abstract: Ethnobotanical information collected from Kandha and Kutia-Kandha tribes of Kandhamal district of Orissa are presented in the paper. These tribes face shortage of food materials due to very limited area under 'Podu cultivation' or 'Shifting cultivation' and extreme environmental conditions prevailing in the district. The survey has resulted in bringing out a document on folk uses of eleven wild food plant species as life-supporting ones during scarcity of food. Besides, information on the traditional and popular health-drinks prepared from flowers of 'Mahula' (*Madhuca longifolia),* stem juice of 'Salapa' (*Caryota urens)* and 'Chhota Khajuri' *(Phoenix acaulis)* are consumed regularly as a part of their diet is provided in the paper. The role of certain plants in providing nutrition is also described. The enumeration contains botanical names in alphabetical sequence, local names, usage in brief and is presented in tabular form.

889. Mishra, S., Pani, S.R. & Sahoo, S. 2014. Anti-nephrotoxic activity of some medicinal plants from tribal rich pockets of Odisha. *Pharmacogn. Res*. 6: 210–217.

Abstract: Gentamicin, a strong cationic drug accumulated at biological membranes causes net increase in oxidative stress and lipid peroxidation leading to necrotic changes in renal tubules and consequently precipitates acute nephrotoxicity. Several phytoconstituents

and plants extracts demonstrated significant anti-oxidant and cyto-protective activities. *Vitex negundo* L., *Oroxylum indicum* Vent and *Barringtonia acutangula* L. are widely found throughout the Asian subcontinent including India, used extensively in different forms of Indian traditional medicine systems such as Ayurveda and Unani. The nephroprotective activity of extracts of roots of *Vitex negundo*, whole plant of *Oroxylum indicum* and leaves of *Barringtonia acutangula* were investigated against experimentally induced acute nephrotoxicity [Gentamicin (i.p; 80mg/kg for 7 days)] in Wistar rats as test animals. The findings suggested the significant nephroprotection of *Vitex negundo* roots followed by *Oroxylum indicum* whole plant and *Barringtonia acutangula* leaves.

890. Misra, M.K. 1999. "Need for conservation of Indigenous medicinal knowledge and the herbs". *J. Human Ecol.* 10(5&6): 403–406.

Abstract: Rural people prefer the traditional and culture-rooted cures practiced by the indigenous healers, because of easy accessibility, low cost, cultural acceptability, elaborate patient and healer interaction, long-term family association, friendly attitude of the healer and so on. During the study the reasons stated are found true with the tribals of southern Orissa.

891. Misra, M.K. & Dash, S.S. 1998. "Veterinary use of plants among tribals of Orissa". *Ancient Sci. Life* 17(3): 214–219.

Abstract: The paper reports the uses of 20 plant species against 10 animal diseases in Ganjam district of Orissa. Besides, plants used for milching of cattle are described.

892. Misra, M.K. & Dash, S.S. 1997. "Medicinal plants used by the tribals of Koraput district, Orissa". In: Mohapatra, P.M. & Mahapatro, P.C. (eds.), *Forest Management in Tribal Areas: Forest Policy and Peoples Participation*. Concept Publishing Company, New Delhi. pp. 160–182.

Abstract: The paper reviews the medicinal uses of plants of Koraput district (undivided) by the tribals. Most of the ethnomedicinal information on plants collected by the scholars of Ecology and Floristics Laboratory of Botany Department, Berhampur University are documented and incorporated in the paper. There are 89 plant species described in this paper. Conservation for the medicinal plants of the district is suggested.

893. Misra, M.K., Mohanty, M.K. & Das, P.K. 1993. "Studies on the medico-ethnobotany of *Calotropis gigantea* and *C. procera*". *Ancient Sci. Life* 13: 40–56.

Abstract: The paper reviews the economic and traditional medicinal uses of the plants, *Calotropis gigantea* and *C. procera* published in various published literature from India. The ethnomedicinal uses of the former species in Orissa are also incorporated. Their distribution in India and botany, physical and chemical properties of the plant parts are

provided. Uses of the traditional medicines and their authentication as evidence by the available clinical trials are discussed. Besides, uses and standardization of doses against various ailments are suggested.

894. Misra, N., Panda, T., Mohanty, R.B., Kishor, A. & Singh, R.R. 2015. "Traditional phytotherapy in Bhadrak district of Odisha, India". *Life Sci. Leafl.* 60: 26–40.

Abstract: Human healthcare is a major challenge in India constrained by meager economic resources and lack of trained manpower. Traditional medicine practiced from ancient period in rural India could be an alternative and sustainable solution to this challenge. The main objective of the present investigation was to document the phytotherapeutic knowledge and healthcare management practices in the interior of Bhadrak district, Odisha. The field study was carried in from July 2013 to June 2014 using structured questionnaires, complemented by unstructured interviews and informal conversations with local people engaged in traditional healthcare practices. Therapeutic uses of 53 plant species belonging to 33 families were recorded. Different plant parts such as leaf, root, bark, flower, seed and whole plant were found used in raw or cooked form against 46 specific diseases. Prominent among them were cardiovascular ailments, diarrhoea, jaundice, skin ailments and rheumatism. The reported species may be tried clinically for their efficacy and can be used for the development of new, cheep, effective, and eco-friendly herbal formulations for human healthcare management.

895. Misra, R.C. 1990. "Ethnobotanical studies on some plants of Nrusinghanath-Harishankar complex, Orissa". *J. Environm. Sci.* 3(2): 36–42.

896. Misra, R.C. 1992. "Medicinal plants among the tribals of upper Bonda region, Koraput, Orissa". *J. Econ. Taxon. Bot., Addit. Ser.* 10: 275–279.

Abstract: The inhabitants of Upper Bonda region predominantly belonging to Bonda tribe use a number of native plants and plant products to cure their ailments. The paper deals with 20 folklore medicinal and food plants being used by the local tribals. In this report, an alphabetical arrangement of plants, their local name, locality of collection and mode of administration have been provided.

897. Misra, R.C. 2004. "Thrapeutic uses of some seeds among the tribals of Gandhamardan hill range, Orissa". *Indian J. Tradit. Knowl.* 3(1): 105–115.

Abstract: The traditional use of seeds in different forms, viz., raw, seed-paste, powder, decoction, infusion or oil as medicines for ameliorating diseases is still prevalent among the tribal communities inhabiting the forest areas of western Orissa. This investigation highlights manifold uses of 33 species whose seeds are used on a minor scale by the tribal inhabitants of Gandhamardan hill range for the treatment of various ailments.

898. Misra, R.C., Kumar, S., Pani, D.R. & Bhandari, D.C. 2012. "Empirical tribal claims and correlation with bioactive compounds: A study on *Celastrus paniculata* Willd., a vulnerable medicinal plant of Odisha". *Indian J. Tradit. Knowl.* 11(4): 615–622.

Abstract: The study elucidates the indigenous use of various parts of *Celastrus paniculata* Willd. as divulged from the structured interviews and cross verification with 26 tribal informants of 19 villages of 6 dominant tribes of Odisha. Further, it highlights the establishment of correlation between the reported tribal claims and presence of such causal bioactive compounds to justify their rationale through phytochemical testing and published literature.

899. Misra, R.C., Sahoo, H.K., Pani, D.R. & Bhandari, D.C. 2013. "Genetic resources of wild tuberous food plants traditionally used in Similipal Biosphere Reserve, Odisha, India". *Genet. Resources Crop Evol.* 60: 2033–2054.

Abstract: The subterranean parts of many wild plants from an important constituent of traditional diet of the tribal inhabitants of Similipal Biosphere Reserve, Odisha especially in times of food scarcity during critical periods. However, no specific study has been made so far on this aspect. The study was conducted during 2008–2012 as a search for sources of food and to assess the dietary diversity, consumption pattern, culinary uses and prioritized species of wild tuberous plants sustained by local tribes. The exploration and germplasm collection missions along with intensive botanical survey, focus group discussions, structured household interview and market survey were conducted in 30 villages interacting with 102 key informants of core and buffer zones. A total of 55 wild edible tuberous species representing 37 genera and 24 families were inventoried including 17 species used during food deficiency to meet seasonal shortages. The analyzed data contributed 5 use categories, 4 preparations methods, 7 kinds of food items, 10 species as children snacks, 35 species of pharma-foods and 20 prioritized species. Ten species were domesticated by tribes thus reducing threats on wild tubers and 20 species were traded in local markets to generate additional income exemplifying economic benefits from wild tubers. A total of 17 species were identified as novel uses of food items from India. The findings suggested that the nutritional profile along with pharmaceutical attributes of preferred wild food plants be analyzed for recommending suitable species for better nutrition and development of nutraceuticals. Further, many genetic resources of these wild tuberous species of agri-horticultural importance constitute the wild genepool hence their economic and breeding potential along with desirable attributes need to be investigated for utilization in crop improvement programmes.

900. Mohanta, R.K., Rout, S.D. & Sahu, H.K. 2006. "Ethnomedicinal plant resources of Similipal Biosphere Reserve, Orissa, India". *ZOO's Print* 21(8): 2372–2374.

Abstract: Similipal Biosphere Reserve with an area of 5569 km^2 is situated in the Mayurbhanj district of Orissa state. The tribal communities namely, Kharia, Mankadia, Bhumija, Santals, Gonds, Kols and Mahalis inhabit in this region. Ethnobotanical investigation in the biosphere reserve and documentation of plants used by the tribes were carried out. This note deals with 27 plant species used in medicine.

901. Mohanty, R.B. 1997. "Tree marriage in rural Orissa". *Ethnobotany* 9(1&2): 130.

Abstract: The marriage of some specific trees among themselves and also with human beings is a typical religious practice in rural Orissa, which adds to the conservation of those species.

902. Mohanty, R.B. 1999. "Ethnobotanical studies on traditional washing of garments in rural Orissa, India". *Ethnobotany* 11: 122–124.

Abstract: An ethnobotanical survey was carried out during 1995–1997 among the traditional washermen of rural Orissa to identify the plants used by them for washing garments. Altogether 18 plant species belonging to 16 families were recorded in the process of investigation. Method of preparation and use of these plant-based cleaning agents were ascertained. The impact of this ancient system on the surrounding vegetation and ecology of the state is analysed.

903. Mohanty, R.B. 2003. "Oral and dental healthcare in folklores of Orissa: An ethnobotanical observation". *Ethnobotany* 15: 125–126.

Abstract: Folk songs concerning the ethnomedicinal utility of eight different plant species as tooth brush for dental and oral healthcare in Orissa are highlighted in the paper.

904. Mohanty, R.B. 2005. "Indigenous use of *Atalantia malabarica* (Rutaceae) to treat lumbago". *Ethnobotany* 17: 205.

Abstract: This communication is a short report about the plant species, *Atalantia malabarica* (Raf.) Tanaka finding a unique use as walking sticks to treat lumbago in Orissa.

905. Mohanty, R.B. 2010. "New wild edible plants from some tribal pockets of Dhenkanal district, Odisha". *Ethnobotany* 22: 111–113.

Abstract: Ethnobotanical exploration of some less-known wild edible plants available in the forested localities of Dhenkanal district was undertaken from 1999 to 2001. Seasonal field studies along with weekly village market surveys were conducted regularly. A total of 38 less-known wild edible species belonging to 27 genera and 22 families were collected and identified. Detection of five types of edible fleshy roots, rhizomes or tubers belonging to Dioscoreaceae is the significant findings of this study. These serve as an alternative and viable source of food for the people in the study area during the time of scarcity.

906. Mohanty, R.B. & Padhy, S.N. 1996. "Traditional phytotherapy for diarrhoeal diseases in Ganjam and Phulbani districts of south Orissa, India". *Ethnobotany* 8: 60–65.

Abstract: Medico-ethnobotanical studies carried out in the districts of Ganjam and Phulbani in South Orissa during 1993–1995 revealed that people use 49 plant species for the treatment of diarrhoeal diseases. The method of preparation of medicine and details of application are provided in the paper.

907. Mohanty, R.B. & Rout, M.K. 1999. "Ethnobotany of *Careya arborea* Roxb. – Some noteworthy folk uses in Orissa". *J. Econ. Taxon. Bot.* 23(2): 521–524.

Abstract: *Careya arborea* Roxb. is used for religious and medicinal purposes from ancient times in India. But the utilization of this plant for garment and safe abortion of unwanted pregnancy is unique among the tribal and rural people of Orissa.

908. Mohanty, R.B. & Rout, M.K. 2001. "Indigenous rice germplasm and their cultivation technique in folklores of Orissa: An ethnobotanical study". *Ethnobotany* 13: 24–28.

Abstract: Fifteen folklores concerning some indigenous varieties of rice germplasm and their traditional cultivation methods followed in rural Orissa are highlighted. The relevance of such ancient folk science regarding the genetic diversity and germplasm heritage of this crop during the present hybrid revolution in agriculture is analysed.

909. Mohanty, R.B. & Rout, M.K. 2001. "Traditional phytotherapy for diarroeal diseases in Dhenkanal district of Orissa, India". *Ancient Sci. Life* 20(3): 51–53.

Abstract: Medico-etnobotanical exploration carried out in Dhenkanal district of Orissa during 1996–1998 reveal that people use 21 plant species belonging to 20 genera and 17 families on 10 different combinations for the treatment of diarrehoeal diseases. The method of preparation of medicine and details of application care recorded.

910. Mohanty, R.B., Dash, S.K. & Padhy, S.N. 1998. "Traditional phytotherapy for diarrhoeal disease in India: A review". *Ethnobotany* 10(1&2): 103–111.

Abstract: The paper highlights the phytotherapy of diarrhoeal diseases among different tribal and rural masses of India. Scrutiny of literature reveals the use of 151 plant species in different parts of India. For each species, botanical name, local name, locality, parts used and tribe or group using the plant are enumerated in alphabetical order.

911. Mohanty, R.B., Mahapatra, B.K. & Padhy, S.N. 1997. "Ethnobotanical study on plant conservation in temple yards of Orissa". *Ancient Sci. Life* 17(2): 94–99.

Abstract: This paper is a brief survey of the role of temples and holy places in nurturing the surrounding flora and its habitat. A total of 86 species belonging to 76 genera and 44 families in temple yards and gardens of Orissa have been enlisted where they are cultivated and preserved for different temple rituals. These plants are seen rarely in wild but are saved from extinction by their association with temple rituals and ceremonies.

912. Mohanty, R.B., Tripathy, B.K. & Panda, T. 2012. "Utilization of pith plant *Aeschynomene aspera* (Leguminosae: Papilionoideae) by traditional florists cum craftsmen in Jajpur district, Odisha, India". *Nelumbo* 54: 168–171.

Abstract: Pith plant (*Aeschynomene aspera* L., Leguminosae: Papilionoideae) is found abundantly in the wetlands of Jajpur district, Odisha. The traditional florists and many craftsmen attached to various temples make good use of this plant for decoration purposes. The soft stem of the plant are used in many religious and socio-cultural functions in the district and has been instrumental in providing livelihood to this section of people. But with rapidly shrinking water bodies and loss of its natural habitat, the availability of this species is getting scarce. The fate of this traditional craft and of the craftsmen in the changing scenario is analysed.

913. Mohapatra, A. & Satapathy, K.B. 2004. "A study on ethnomedicinal plants with reference to dental-care in Jajpur district of Orissa". *Pl. Sci. Res.* 26(1&2): 56–62.

Abstract: Ethnobotanical studies in Jajpur district of Orissa has resulted in recording folk-medicinal uses of 70 plant species for dental-care distributed over 31 angiospermic families. A scrutiny of the published literature has revealed that the medicinal uses in respect of 44 species are new or interesting. The enumeration contains botanical names in alphabetical sequence, local names and local uses in brief.

914. Mohapatra, A.K. 1991. "Ethnopharmacological notes on Pauri-Bhuinya tribe of Orissa". *Indian Forester* 117(2): 126–130.

Abstract: Plants in forests provide useful drugs for several common ailments. This paper lists 46 such plant species used by the Pauri-Bhuinya tribes of Orissa. As tradition and beliefs are the only basis of the use, the specimens identified, need chemical analysis to provide its efficacy of new drugs for mass use.

915. Mohapatra, H.K. & Behera, L.M. 2011. "Ethnomedicinal plants used against diarrhoea and dysentery in Deogarh district of Orissa (India)". *Advances Pl. Sci.* 24: 687–690.

Abstract: This paper attempts to document the traditional knowledge of 21 ethnomedicinal plants belonging to 17 families. The binomials with their local names, family, methods of preparation, usages and mode of administration of drugs from the plants are discussed.

916. Mohapatra, H.K. & Behera, L.M. 2011. "Medicinal plants along the water stream of Pradhanpat waterfall of Deogarh Forest Range in Deogarh district (Orissa)". *Advances Pl. Sci.* 24: 351–356.

Abstract: The paper deals with the medicinal flora found along the catchments of the stream of Pradhanpat waterfall of Deogarh Forest Range in Deogarh district of Orissa.

This range is rich with a variety of flora some of which with medicinal values. Survey was conducted by the authors along the stream during 2007–2009 to find out the present status of medicinal flora. A total of 48 medicinal plants belonging to 45 genera and 29 families have been recorded. The medicinal uses by the local inhabitants of these plants have been discussed.

917. Mohapatra, N.K. & Ghosh, G.R. 1981. "Studies on ethnobotany of Orissa – II. Observations on some less-known uses of common plants from the Juang tribe of Keonjhar, Orissa". *Proc. 5th Annual Conf. Orissa Bot. Soc.* pp. 35–36.

918. Mohapatra, S.P. & Sahoo, H.P. 2008. "An ethno-medico-botanical study of Bolangir, Orissa, India: Native plant remedies against gynaecological diseases". *Ethnobot. Leafl.* 12: 846–850.

Abstract: The paper enumerates 33 plant species belonging to 24 families used by the tribal of Bolangir district of Orissa for the cure of gynaecological diseases. Tribals generally collect these plants from the nearby forest and prepare the medicine under the guidance of vaidya or village medicine man in a traditional way. These medicinal plants are becoming extinct day by day by heavy use of such plants and transport to urban areas for commercial purposes. These plants definitely help the pharma industry for developing medicines in a hygienic way.

919. Mohapatra, S.P. & Sahoo, H.P. 2008. "Some lesser known medicinal plants of the Kondha and Gond tribes of Bolangir, Orissa, India". *Ethnobot. Leafl.* 12: 1003–1006.

Abstract: The paper enumerates about 25 plant species used by the Gond and Kondha tribes of Bolangir district, Orissa, against human ailments and livestock diseases. These plants are used as folk medicines in the treatment of various diseases. These plants were collected from nearby forest. The medicines prepared from these plants are used against various common and serious diseases in human and also against animal diseases.

920. Mohapatra, S.P. & Sahoo, H.P. 2010. "Energy consumption pattern in rural tribal households of Bolangir district, Orissa". *Advances Pl. Sci.* 23: 275–277.

Abstract: People in the rural tribal villages of Bolangir district of Orissa depend much on non-commercial energy sources. The different sources of cooking fuel in these tribal areas are firewood, branches, crop residues and roots, among which firewood is used in large scale due to its easy availability in near by forest. The tree biomass is under tremendous pressure by the energy consumption pattern in the tribal areas of Bolangir district. It is also observed that a positive association exists between per capita income and per capita consumption of energy in these areas. The average use of fire wood as cooking fuel is about 10.24 kg/day/household.

921. Mohapatra, S.P. & Sahoo, H.P. 2011. "An ethno-medico-botanical study of Bolangir district, Orissa: Native plant remedies against gynaecological diseases". *Advances Pl. Sci.* 23: 297–299.

Abstract: The paper enumerates 33 plant species belonging to 24 families used by the tribals of Bolangir district of Orissa for the cure of gynaecological diseases.

922. Mohapatra, S.P., Prusty, G.B. & Sahoo, H.P. 2008. "Ethnomedicinal observations amongst forest dwellers of the Daitari range of hills of Orissa, India". *Ethnobot. Leafl.* 12: 1116–1123.

Abstract: Studies on hill tribes' dependence on forest for their livelihood security are few for Orissa. Ethnomedicinal observations in the state with a rich diversity of medicinal plants are still meager. The study enumerates 21 plant species belonging to 18 families used in the treatment of various diseases among the tribes of Daitari hill ranges of Orissa. The forest dwellers usually collect those rare plants from the nearby forest which is easily accessible and the medicines are prepared under the guidance of Vaidya or the village medicine man and are applied according to the dosage prescribed by the Vaidya. So this article gives an idea about the application of traditional medicines against various common and serious diseases.

923. Mondal, P. & Mukherjee, P.K. 1992. "Notes on ethnobotany of Keonjhar district, Orissa". *J. Econ. Taxon. Bot., Addit. Ser.* 10: 7–18.

Abstract: The paper deals with the uses of plants practiced by the tribals of Keonjhar district of Orissa. Plants used as vegetables, fruits, beverages, medicines for various ailments of men and animals, fodder, house building and thatching, religious ceremonies, for making agricultural implements, cordage, mats, baskets, water bottles and containers, umbrella have been dealth in this paper. Plants used for hair dressing, detergents and colour are also mentioned.

924. Mudgal, V. & Pal, D.C. 1980. "Medicinal plants used by the tribals of Mayurbhanj (Orissa)". *Bull. Bot. Surv. India* 22: 59–62.

Abstract: The traditional uses of medicinal plants by tribals of Mayurbhanj (Orissa) have been compared with the biological activity reported in experimental reports. While some of the tribal claims are supported by the experimental reports some require to be studied experimentally as well as clinically.

925. Mukesh, K., Butt, T.A., Hussaini, S.A., Kumar, K., Khan, H.A. & Samiulla, L. 2014. "Ethnomedines in the Khordah Forest Division of Khordah district, Odisha, India". *Int. J. Curr. Microbiol. Appl. Sci.* 3(1): 274–280.

Abstract: Based on an ethnopharmacological survey of Khordah Forest Division of Khordah district of Odisha conducted during 2012, the paper presents some 54 contemporary folk recipes comprising 43 taxa of folk medicinal plants used by 'Kondh, Sabra, Naik' tribes of the area, for treatment of various common and chronic diseases and conditions. Botanical name, family name in brackets, locality with fieldbook number, local name, Unani name, part(s) used, name of the disease against which used, mode of administration and informant is given for each recipe discussed in this paper. The need for their phytochemical and pharmacological investigations in the context of claims reported has been suggested in an effort to discover new drugs of natural origin for many of the diseases for which modern medicine has, thus far, no satisfactory cure.

926. Mukherjee, A. & Namhata, D. 1990. "Medicinal plantlore of the tribals of Sundargarh district, Orissa". *Ethnobotany* 2: 57–60.

Abstract: During botanical exploration of Sundargarh district, Orissa, in eastern India, medico-ethnobotanical information concerning 22 plants were collected from tribals, namely Oraon, Munda, Bhuiyan, Gond, Dhanuar and Routia. The uses along with other details such as mode of drug preparation and plant names are given in the paper. Sundargarh district remained botanically unexplored prior to the present work.

927. Murthy, K.S., Narayanappa, D. & Sharma, P.C. 1989. "Some unknown narcotic folk claims from Orissa". *Bull. Med.-Ethno-Bot. Res.* 10: 199–200.

Abstract: The paper deals with six plants, viz., *Anthocephalus chinensis* (Lam.) A. Rich. ex Walp., *Ardisia solanacea* Roxb. (Mysinaceae), *Clerodendrum indicum* (L.) Kuntze (Verbenaceae), *Holarrhena antidysenterica* Wall. (Apocynaceae), *Hedyotis diffusa* Willd. (Rubiaceae), *Musa paradisiaca* L. (Musaceae) being used as narcotics by the folk people of Orissa.

928. Murthy, K.S., Sharma, P.C. & Kishore, P. 1986. "Tribal remedies from snake bite from Orissa". *Ancient Sci. Life* 6: 122–123.

Abstract: This paper presents an account of usage of 13 species of plants in the treatment of snakebites by the tribals of Orissa. Botanical name, family name, local name(s) and Sanskrit name, if available of the plants along with mode of administration and place of collection of the claims are enumerated in the paper.

929. Murthy, K.S., Sharma, P.C. & Kishore, P. 1988. "Certain oral contraceptive folk claims from Orissa". *Bull. Med.-Ethno-Bot. Res.* 9: 28–30.

Abstract: Recent ethno-botanical studies in different states of India by the CCRAS have unfolded hidden treasures of folklores for various physical ailments that human beings come across. Hitherto unrecorded curious claims for various ailments necessitate a continuous in-depth probe into this traditional science governed by nature's laws. Orissa

state with high percentage of tribal population and dense forests possess curious remedies practices by the tribals living in remote regions. In this paper the information on the four plant species used as oral contraceptives/abortifacients by tribals of Orissa are recorded.

930. Nayak, P. & Kalidass, C. 2016. "Ethnobotany, phytochemistry, pharmacognostic and pharmacological aspects of *Cordia macleodii* Hook.f. & Thoms. – A review". *J. Non-Timber Forest Prod.* 23(2): 67–71.

Abstract: *Cordia macleodii* Hook.f. & Thomson is an important ethnomedicinal plant of India. It is found in the moist and dry deciduous forests of Odisha, Madhya Pradesh, Chhattisgarh and Tamil Nadu. Its pharmacological activities include anti-microbial, wound healing, anti-oxidant and hepatoprotective, anti-snake venom, analgesic and anti-inflammatory activity. Many phytocompounds such as quercetin, p-hydroxyphenylacetic acid and phytosterol such as â-sitosterol, stigmasterol, camphesterol and cholest-5-EN-3OL(3â)-carbonyl chlorinated are isolated from this plant. This work aims at presenting a comprehensive account on the plant's botany, ethnomedicinal uses, chemical constituents, pharmacognostic and pharmacological uses. The information reported in this work will aid to scientifically recognize the importance of *Cordia macleodii* as a target in the search for new biotechnological investiments.

931. Nayak, P.K. & Choudhury, B.P. 1999. Potential medicinal plants of western Orissa with special reference to Kalahandi district. In: Sivadasan, M. & Mathew, P. (eds.), *Biodiversity, taxonomy and conservation of flowering plants*. Mentor Book, Calicut. pp. 315–326.

932. Nayak, P.K., Nayak, R.K. & Choudhury, B.P. 2003. "A check list of medicinal plants of Kalahandi district in Orissa". *J. Econ. Taxon. Bot.* 27(3): 519–532.

Abstract: The undivided Kalahandi district was a grand repository of vegetable wealth, of which medicinal plants were plentiful. Of the 62 tribes inhabiting in Orissa, about 54 tribes are present in this region since they are utilizing various forest products to meet the necessities of life sustenance. However, in course of time the forest cover has been reduced mostly due to overexploitation of woody elements. One of the important aspects of tribal lifestyle is utilization of indigenous medicinal plants to cure various ailments. Due to depletion of medicinal plants there is also shrinkage of this knowledge among them. Hence, a floristic exploration of medicinal plants has been launched upon during 1997–1999. This has yielded 229 angiospermic species under 197 genera belonging to 76 families. These have been properly identified and are preserved in the form of herbarium specimens in the P.G. Department of Botany, Utkal University, Bhubaneswar. Their nomenclature has been updated. The species are arranged alphabetically along with family name and local Oriya names in the checklist. Different parts used to cure diseases have also been appended. Need for the conservation of rare and less known medicinal plants has been highlighted.

933. Nayak, R.K. & Choudhury, B.P. 2001. "Conservation and utilisation of some potential medicinal plants in Mahanadi delta". In: Sahoo, S., Ramesh, D.B., Rao, Y.R., Debata, B.K. & Misra, V.N. (eds.), *Conservation and utilization of Medicinal and Aromatic Plants*. Allied Publishers Ltd., New Delhi. pp. 46–52.

Abstract: The paper gives an exhaustive idea about the distribution and utilization of 41 potential medicinal plants from different areas of Mahanadi delta, their present status and strategies of conservation.

934. Nayak, R.K., Nayak, P.K. & Choudhury, B.P. 2003. "Some medicinal weeds of Mahanadi delta". *J. Econ. Taxon. Bot.* 27(3): 533–538.

Abstract: Mahanadi delta occupies a significant position in the phytogeography of India as it harbours an important mangal formation in the Indian subcontinent. Along with mangroves, it harbours diverse group of floristic elements. Of these, the weed flora constitutes a significant portion of the vegetation. From an extensive survey programme, as many as 114 weed species have been collected, identified and preserved as herbarium specimens. Out of these, 30 species have been screened out as plants having potential medicinal values. Various medicinal uses of these species have been given in the enumeration after the nomenclatural citation.

935. Nayak, R.K., Nayak, P.K. & Choudhury, B.P. 2003. "Enumeration of some potential economic plants of Paradeep in Mahanadi delta". *J. Econ. Taxon. Bot.* 27(3): 539–545.

Abstract: Paradeep in the east coast of India was a potential site of mangroves and other plants of various socio-economic importances in remote past. In course of time, the vegetation of Paradeep and its adjoining regions have been interfered by a number of biotic factors such as the establishment of Paradeep Port, Paradeep Phosphate Ltd., settlement of immigrants as a result of which the present vegetation is extant in most denuded conditions. The present investigation reveals that this area still harbours considerable number of plants of various socio-economic importances. As such, the vegetation in this region needs an urgent attention for protection. In the enumeration, 32 plant of medicinal and other economic importance have been alphabetically arranged.

936. Nayak, S., Behera, S.K. & Misra, M.K. 2004. "Ethno-medico-botanical survey of Kalahandi district of Orissa". *Indian J. Tradit. Knowl.* 3(1): 72–79.

Abstract: The paper provides information on the use of plant crude drugs for various diseases prevalent in tribal communities of 8 villages under Thuamul Rampur block of Kalahandi district, Orissa. It deals with 39 plant species in 36 genera belonging to 26 families. The local names, the method of preparation and mode of use of the medicine are mentioned. The tribal communities of the area totally depend on the herbal drug for their primary healthcare, which is attributed partly to their socio-economic and cultural conditions.

937. Padal, S.B. & Raju, J.B. 2013. "Ethnomedicinal plants used by tribals of Rayagadda district, Odisha state, India". *Int. J. Innov. Res. & Developm.* 2(5): 1299–1309.

Abstract: Ethnobotanical study was carried out in the Rayagadda districts of Odisha during 2012–2013 to document the medicinal utility of plants. The paper deals with traditional uses of 50 plant species belonging to 41 genera and 27 families along with correct botanical identification, local names, parts used and mode of administration in respect to different diseases. The documented ethnomedicinal plants are mostly used to cure sciatica, bone fracture, asthma, rheumatism, hiccups, galactogauge, jaundice, boils, skin disease, centipede bite, wounds, snake bite, anthelmintic, headache, anemia, gonorrhea, vigour and vitality, ear pain, dysentery, fertility, chickenpox and tooth decay are listed.

938. Padhee, D.K. 2001. "Medicinal plants of Orissa". In: Sahoo, S., Ramesh, D.B., Rao, Y.R., Debata, B.K. & Misra, V.N. (eds.), *Conservation and utilization of Medicinal and Aromatic Plants*. Allied Publishers Ltd., New Delhi. pp. 22–26.

Abstract: The paper discusses about the medicinal plants available in Orissa and how they are helpful to mankind. In Orissa, the Gandhamardan range of forests in districts of Bargarh (Nrusinghnath) and Bolangir (Harishankar), in forests of Mayurbhanj, Keonjhar and other hills, plateaus, plains, there are enormous medicinal plants, which are nature's gift to the mankind. A total of 132 medicinal plants have been identified from Orissa along with local name and uses.

939. Padhy, R. & Dash, S.K. 2015. "Medico-folklore study on some pteridophytes from Kerandimal hills of south Odisha with emphasis on *Drynaria quercifolia* (L.) J. Smith". *Res. J. Pharmaceut. Biol. & Chem. Sci.* 6(4): 2029–2035.

Abstract: Therapeutic data pertaining to pteridophytes are extremely meager. The medico-folklore use of such plants took an emerging trend of research due to presence of important phytochemical potential used as source for preparation of medicaments. The study was conducted during 2010–2013 in the Kerandimal regions encompassing Ganjam and Gajapati districts of south Odisha. The data so collected through interviews with well-structured questionnaire to aboriginals and tribals (informants) of the localities, were taken into account. The reported eight species were under eight genera and seven families of pteridophytes with focused medico-folklore use amongst which *Drynaria quercifolia* of family Polypodiaceae, a new report from south Odisha itself, found with highest therapeutic claim. However, some of the enlisted plants also found to be of multifaceted use, i.e., as food, aesthetic and ornamental, mythological iconic and somewhere as protection from reptiles etc apart from their therapeutic uses. In view of massive exploitation including destruction of habitat, the species tends to be endangered and hence conservation of it, being suggested.

940. Padhy, R., Dash, S.K. & Padhy, S. 2016. Pteridophyta diversity of south Odisha, India, with special reference to medico folklore claims: A brief review. *J. Biodivers.* 7(1): 25–32.

Abstract: This paper focuses on the ethno-medicinal utility of eight Pteridophyte species from Kerandimal hills of Ganjam and Gajapati districts of south Odisha, also includes three new reports including *Drynaria quercifolia* (L.) J. Sm., which has extensive laboratory-tested medicinal property as per its folklore claim.

941. Padhy, S.N. & Dash, S.K. 2000–2001. "Ethnobotanical survey of insect repellent plant species in lore and literature of Orissa state". *Sabujima* 2000–2001: 119.

Abstract: Seventeen different plant species pertaining to insect repellent activities from various regions of Orissa are enlisted in the paper. The application of most of the plants made for protecting the crop species in cultivated fields and also for the preservation of seed crops based on tantric philosophy as also discussed in the paper.

942. Padhy, S.N. & Dash, S.K. 2003. "Ethnobotanical survey of insect repellent plant species in folklore and literature of Orissa state, India". *J. Econ. Taxon. Bot.* 27(3): 505–512.

Abstract: A survey conducted to elucidate the different plant species (32 numbers) pertaining to their insect repellent activities from the folklore and literature of Orissa state based on medicinal, ecological and tantric philosophy. The paper highlights the use of root, stem bark, leaf, flower, raw juice, fumigant and contact keeping of plants/ plant parts in various agricultural, medicinal, veterinary and household uses, as insect repellent species.

943. Pal, D.C. 1973. "Tribal folklore about some plants associated with eye treatments". *Folklore* 14: 446–447.

944. Pal, D.C. 1980. "Observations on folklore about plants used in veterinary medicine in Bengal, Orissa and Bihar". *Bull. Bot. Surv. India* 22: 96–99.

Abstract: During the exploration in Bihar, Orissa and West Bengal, ethnobotanical information was collected from the tribes of Kondh, Munda, Oraon, Santhal and Lodha along with plants. It is found that 20 species under 19 genera and 16 families are used by them for veterinary medicine. It is further discovered that most of them are new to the present day knowledge. Hence, an attempt has been made to enumerate all such folklore plants in the present work incorporating its botanical name, local name, locality, traditional uses with voucher specimens deposited in Economic Botany Section of Botanical Survey of India.

945. Pal, D.C. 1981. "Plants used in the treatment of cattle and birds among tribals of Eastern India". In: Jain, S.K. (ed.), *Glimpses of Indian ethnobotany.* Oxford & IBH Publ. Co., New Delhi. pp. 245–257.

Abstract: A total of 25 species belong to 18 families and 25 genera of angiosperms and pteridpohytes are used in the treatment of domestic animals (cattles and birds). The botanical name, habit, local names, probability of the origin of some local names and tribal medicinal uses are also given.

946. Pal, D.C. 1992. "Observation on folklore plants used in veterinary medicine in Bengal, Bihar and Orissa – II". *J. Econ. Taxon. Bot., Addit. Ser.* 10: 137–141.

Abstract: During ethnobotanical exploration of Bihar, Orissa and West Bengal, and consultation of old literature (*Puranas*) and herbaria informations on plants used in veterinary medicine have been collected. It is found that additional 24 species under 24 genera and 22 families are used in veterinary medicine. Almost all the information are new to present day knowledge.

947. Pal, D.C. & Banerjee, D.K. 1971. "Some less known plant foods among the tribals of Andhra Pradesh and Orissa state". *Bull. Bot. Surv. India* 13: 221–223.

Abstract: Twenty-two unknown or less-known food plants used by the tribes such as Saoras and Kondhs of Odisha and Chenchu, Reddi, Gonds, Koya, Bagata and Valmiki of Andhra Pradesh are discussed in this paper. Most of the uses of the plants reported by the tribes are not recorded earlier.

948. Pal, D.C. & Banerjee, D.K. 1973–74. "Plants used by the tribal people in Orissa for hair and scalp preparation". *Adibasi* 15: 28–32.

949. Pal, D.C., Soren, A.M. & Sen, R. 1989. "Ethnoinsecticides". *J. Econ. Taxon. Bot.* 13(2): 377–379.

Abstract: The paper presents an account of different means of killing or repelling insects by ethnic tribes of Bihar, West Bengal and Orissa. Special mention of plants which are used as insecticide or insect repellent or the ash of plant parts or plant products has been made.

950. Panda, A. & Misra, M.K. 2011. "Ethnomedicinal survey of some wetland plants of south Orissa and their conservation". *Indian J. Tradit. Knowl.* 10(2): 296–303.

Abstract: Results of ethnomedicinal survey of wetlands of Eastern Ghats region of Orissa are presented. Data and specimens were collected during 2005–2008 on field study. Field study consisted of plant collection and interview with the local traditional healers. The result revealed that 48 wetland plants under 40 genera and 23 families were under use by the local inhabitants against 47 different ailments. The communication reports for the first time 29 taxa with new medicinal uses. The survival of these native wetland species is threatened and hence attention on the wetland resources especially those having economic value is warranted.

951. Panda, B.K. 2007. "Some ethnomedicinal plants of Karlapat Reserve Forest, district Kalahandi, Orissa". *Ethnobotany* 19: 134–136.

Abstract: This paper deals with less-known ethnomedicinal uses of 17 plant species recorded from the tribal healers of Karlapat Reserve Forest in the Kalahandi district of Orissa, during the year 2003–2004.

952. Panda, M.K. & Tayung, K. 2015. "Documentation and ethnomedicinal knowledge on wild edible mushrooms among ethnic tribes of northern Odisha, India". *Asian J. Pharmaceut. Clinic. Res.* 8(4): 139–143.

Abstract: The study revealed that more than 12 ethnic tribes of northern Odisha were found to be mycophilia and have extensive traditional mycological knowledge. A total of 24 fleshy mushroom species were collected through field visits, out of which 19 species were found to be edible and were represented by 11 families and 11 genera. Among them, 14 species have been documented to have ethnomedicinal uses. The dominant mushroom species belonged to genera of *Volvariella*, *Termitomyces*, and *Russala*. The study indicated that urbanization and changing lifestyles among the tribes have declined the uses and consumption of wild mushrooms.

953. Panda, P.C. & Das, P. 1999. "Further additions to the bibliography of floristic and ethbotanical studies in Orissa". *J. Econ. Taxon. Bot.* 23(2): 539–542.

Abstract: A total of 85 references have been compiled as a further addition to the bibliography of floristics and ethnobotany of Orissa by Mondal & al. (1987) and its supplement by Panda & Das (1992).

954. Panda, P.C. & Das, P. 1999. "Medicinal plant-lore of the tribals of Baliguda sub-division, Phulbani district, Orissa". *J. Econ. Taxon. Bot.* 23(2): 515–520.

Abstract: During ethnobotanical studies of Baliguda subdivision of Phulbani district, Orissa, folk-medicinal uses of 60 plant species have been recorded from Kondh, Gond, Lodha, Amanatya and Saura tribes inhabiting the area. The paper enumerates these species in alphabetic order with notes on their uses, local name, collection locality, field number, method of administration and dosage.

955. Panda, P.C. & Das, P. 1999. "Medicinal plant-lore on the tribals of Baliguda sub-division, Phulbani district, Orissa". *J. Econ. Taxon. Bot.* 23(2): 531–537.

Abstract: During ethbotanical studies of Baliguda subdivision of Phulbani district, Orissa, folk-medicinal uses of 60 plant species have been recorded from Kondh, Gond, Lodha, Amanatya and Saura tribes inhabiting the area. The paper enumerates these species in alphabetic order with notes on their uses, local name, collection locality, field number, method of administration and dosage.

956. Panda, S.K., Rout, S.D., Mishra, N. & Panda, T. 2011. "Phytotherapy and traditional knowledge of tribal communities of Mayurbhanj district, Orissa, India". *J. Pharmacogn. & Phytotherapy* 3(7): 101–113.

Abstract: The paper documents phytotherapeutical practices in Mayurbhanj district of Orissa, eastern India. It is primarily based on field surveys and taxonomic identification of plants carried out in villages, where dwellers provided information on plant species used as medicine, parts used to prepare the remedies, and the illnesses to which the remedies were prescribed. A total of 112 plant species from 62 families were described, which are therapeutically used against different ailments such as cough, diarrohea, chronic dysentery, chronic constipation, jaundice, menstrual problem, piles, snakebites, rheumatism, tuberculosis, diabetes, leprosy and skin diseases. The plant parts, namely leaf, bark, seed, root, tuber, fruit and whole plant were used in raw or cooked forms. The most important medicinal plant families were: Asteraceae, Euphorbiaceae, Fabaceae, Rutaceae, Solanaceae and Zingiberaceae. These phytotherapeutical resources are used for the cure of 45 illnesses.

957. Panda, S.K., Patra, N., Sahoo, G., Bastia, A.K. & Dutta, S.K. 2012. "Anti-diarrheal activities of medicinal plants of Similipal Biosphere Reserve, Odisha, India". *Int. J. Med. Aromat. Pl.* 2(1): 123–134.

Abstract: This paper deals with ethnomedicinal uses and anti-diarrhoeal properties of medicinal plants used by the tribal people of Mayurbhanj district, Odisha. Aqueous and methanol extract of 72 plants were tested for antibacterial activity using agar well diffusion (sample concentration of 100 mg/ml) against eight pathogenic bacteria responsible for diarrheal diseases. The results indicated that out of 77 plants species, 47 species exhibited antibacterial activity against one or more test organisms. Out of 168 extracts, 54 methanolic and 43 aqueous extracts expressed antibacterial properties. Nineteen plants are newly reported to have ethnomedicinal uses to treat diarrheal diseases. Among these, *Bombax ceiba, Buchanania lanzan, Butea superba, Coccinia grandis, Curculigo orchioides, Eleutherine bulbosa, Ficus racemosa, Flemingia nana, Helicteres isora, Lannea coromandelica, Mesua ferrea, Semecarpus anacardium* and *Smilax zeylanica* are experimentally proved to inhibit the diarrhoea causing bacteria. *Salmonella typhi, Escherichia coli* and *Vibrio cholera* were the most sensitive strains. *Shigella dysentriae* showed least activity compared to all other test strains.

958. Panda, S.P., Sahoo, H.K., Subudhi, H.N. & Choudhury, B.P. 2006. "Some potential medicinal plants of Anugul district of Orissa and its conservation". *Pl. Sci. Res.* 28(1&2): 27–29.

Abstract: Anugul, one of the centrally located districts of Orissa, lies between 20°37'–21°10' N and 84°53'–85°28' E in the Indian subcontinent. This district is endowed

with rich vegetable wealth, of which the medicinal plants deserve special mention. There is a large depletion of plant wealth due to rapid industrialization and anthropogenic interferences as well. Hence, the urgent need is to conserve the plants from the threat of extinction. This paper deals with 40 angiospermic plant species along with their medicinal utility and family and their conservation.

959. Panda, S.P., Sahoo, H.K., Subudhi, H.N. & Sahu, A.K. 2014. "Potential medicinal plants of Odisha used in rheumatism and conservation". *Amer. J. Ethnomed.* 1(4): 260–265.

Abstract: Odisha, one of the coastal states of Indian subcontinent is endowed with potential medicinal plants owing to its peculiar topography and geographically distributed various microclimatic locations. But due attention was not paid to explore these life forms and alkaloids present in them having need specific chemical constituents. These natural resources are neither being properly exploited and nor even utilized their economic benefits from these Godly life-forms. Due to anthropogenic over exploitation, many of such life-forms are on the verge of being extinct or rare or vulnerable. It is high time to get rid of this ignorance and to plan for an optimal utilization of our nature given resources. To take such an endeavour, this paper deals with 68 medicinal plant species having significant role in curing rheumatism under 62 genera and belonging to 37 families collected from various parts of the state. The species are arranged alphabetically with their family name, vernacular names and usable parts in table. Concurrently some conservational strategies have also been suggested before it becomes endanger or rare or extinct.

960. Panda, S.P., Sharief, M.U., Hameed, S.S. & Pramanik, A. 2015. "Traditional phytotheraphic record of orchids of Odisha and their conservation strategies". *J. Non-Timber Forest Prod.* 22: 209–213.

Abstract: Odisha being the coastal state of Indian subcontinent records rich medicinal plant diversity in general and orchids in particular. Since time immemorial, these important plant resources remain in a neglected state leading to an alarming situation in near future. Virgin forests of Odisha spreading in areas such as Gandhamardan hills, Niyamgiri hills, Deomali hills, Mahendragiri hills and Similipal Biosphere Reserve hoard rich orchid diversity enduring luxuriant growth. Out of 137 species of orchids recorded so far, Similipal area alone harbours 94 orchid species possessing high aesthetic and medicinal values. Unfortunately, the medicinal importance of orchids of this region has drawn least attention from both the scientific fraternity as well as general populace compared to their role in horticulture field. Orchid species of Odisha such as *Acampe carinata* (Griff.) Panigrahi, *A. praemorsa* (Roxb.) Blatt. & McCann, *Geodorum recurvum* (Roxb.) Alston, *Habenaria marginata* Coleb., *Rhynchostylis retusa* (L.) Blume and *Vanda testacea*

(Lindl.) Rchb.f. are used to cure rheumatism, arthritis, dysentery, asthma and snakebite. However, the medicinal potentialities of these orchids are not so well-exploited though they possess immense curative values. Further, as the forests of Odisha are experiencing various anthropogenic as well as abiotic pressures, many of the orchid populations are fast shrinking leading to their mass depletion. Realizing this, the current communication highlights the importance of 26 medicinal orchids very often used by the tribal populace of Odisha to get relief from various ailments. Concurrently, some major conservational strategies have also been projected.

961. Panda, S.S. & Dhal, N.K. 2014. "Plants used in ethno-veterinary medicine by native people of Nawarangpur district, Odisha, India". *World J. Pharm. Pharmaceut. Sci.* 3(7): 787–798.

Abstract: An ethnobotanical study of veterinary medicinal plants of Nawarangpur district of Odisha was conducted during 2000 to 2004 in order to generate ethno-veterinary data. Ethnobotanical uses of 48 plants belonging to 31 families have been documented in the study for their interesting therapeutic properties for various veterinary ailments such as constipation, cough and cold, diarrhoea, lactation, foot and mouth disease, flatulence, appetizer, neck swelling. Leaves (33%) followed by whole plant, bark and latex were most frequently used plant parts for ethno-veterinary medicine. Usually fresh materials were used for medicinal preparation. The most frequently used routes of drug administration have been oral followed by dermal. The study suggested that documenting the medicinal plants and associated indigenous knowledge can be used for conservation and sustainable use of medicinal plants in the area and for validation of these plant preparations for veterinary treatment.

962. Panda, S.S., Sahu, S.C. & Dhal N.K. 2014. "Documentation of tribal claims for rheumatism in Odisha, India". *Int. J. Pharm. & Pharmaceut. Sci*. 7(1): 379–384.

Abstract: A total of 144 plant species belonging to 57 families and 130 genera have been documented. The dominant families are Fabaceae, Acanthaceae, Apocynaceae, Euphorbiaceae and Malvaceae. Shrubs (34%) were the primary sources of medicine, followed by herbs (32%) and trees (22%). High rate of frequency citation (Fc) of different medicinal plants species reveals that the current ethnobotanical claims are strongly authenticated and needs to be further phytochemical and pharmacological investigation of herbal drug development program. Immediate steps should be taken not only to protect the medicinal flora of the state, but also to conserve the valuable traditional knowledge prior to extinction.

963. Panda, T. 2010. "Preliminary study of ethno-medicinal plants used to cure different diseases in coastal district of Orissa, India". *Brit. J. Pharmacol. Toxicol.* 1(2): 67–71.

Abstract: The study documents phytotherapeutic practices in Kendrapara district of Orissa, India. It is primarily based omn the filed surveys carried out in villages, where dwellers provided information on plant species used as medicine, parts used to prepare the remedies, and the illness to which the remedies were prescribed. The plant parts, viz., leaf, bark, seed, root, tuber, fruit and whole plant were used in raw or cooked forms for the treatment of piles, asthma, skin diseases, fever and rheumatism. The species used as medicinal drug comprise 28 families. The most important families were Euphorbiaceae, Combretaceae, Liliaceae, Meliaceae and Zingiberaceae. These phytotherapeutical resources were used for the cure of 26 illnesses.

964. **Panda, T. & Padhy, R.N. 2007.** "Sustainable food habits of the hill-dwelling *Kandha* tribe in Kalahandi district of Orissa". *Indian J. Tradit. Knowl.* 6(1): 103–105.

Abstract: An ethnobotanical survey of food practices of an aboriginal, hill-dwelling Kandha tribe of Kalahandi district, revealed that in addition to their conventional foods, rice, finger millet and a few popular pulses, they use many types of naturally occurring unusual additional food items such as carnals of mango, several types of tubers of the genus *Dioscorea*, wild bean *Mucuna utilis* Wall. ex Wight, *Madhuca indica* J.F. Gmel. flowers, *Caryota urens* pith, *Tamarindus indica* seeds, younglings of bamboo (*Dendrocalamus strictus*) and wild mushrooms. Detailed methods of processing of these items are unique and bitter tasting chemicals (alkaloids) of these food items are removed by repeated boiling and discarding the boiled water.

965. **Panda, T. & Padhy, R.N. 2008.** "Ethnomedicinal plants used by the tribes of Kalahandi district, Orissa". *Indian J. Tradit. Knowl.* 7(2): 242–249.

Abstract: An ethnomedicinal survey on the traditional knowledge of aboriginal tribes and other non-tribal communities of 400 km^2 of Kalahandi district, Orissa and a comparison of the data with the available literature revealed that out of the recorded 111 flowering plants of 60 families, 49 plants have new uses that were not known here before. Moreover, different uses of known 62 more plants are recorded with new uses. These 111 plants are in use against 42 human ailments. They use the plant parts as infusions, decoctions and powders.

966. **Panda, T., Mishra, N., Pradhan, B.K. & Mohanty, R.B. 2016.** "Some less known folk medicine in Bhadrak and Kendrapara districts of Odisha, India". *MicroMed.* 4(1): 8–20.

Abstract: An ethnobotanical investigation was carried out in Bhadrak and Kendrapara districts of Odisha, to explore the therapeutic uses of plants by local inhabitants. Data on medicinal plants were collected from June 2012 to July 2014 using structured questionnaires, complemented by free interviews and informal conversations. The research resulted identification of 64 medicinal plants belonging to 45 families. The most cited

families were Cucurbitaceae, Fabaceae, Araceae and Asteraceae. Different plant parts such as bark, leaf, flower, seed, stem, root and whole plant were reported as used in raw or cooked form against different diseases. Prominent diseases treated by plant remedies were asthma, cardiovascular ailments, gastrointestinal disorders, diabetes, jaundice, malaria, skin disorders and rheumatism. Data obtained showed that in the studied area the folk use of plants is still alive and plays an important role in the conservation of biodiversity and the regional indigenous medicinal knowledge for future generations. Further investigation of the reported plant species related to pharmacological and phytochemical studies may lead to the discovery of new bioactive compounds for treating life-threatening illnesses.

967. Panda, T., Mishra, N., Tripathy, B.K., Das, P.K. & Mohanty, R.B. 2013. "Ethno-medico-biology of Bhadrak district, Odisha, India". *J. Forest. Res.* 24(1): 187–192.

Abstract: An ethno-medico-biological investigation was carried out in the interior of Bhadrak district, Odisha, to explore the therapeutic uses of traditional plants/animals by local inhabitants. The villagers and rural people used plant and animal species as medicine. Therapeutic uses of 18 plant species of 13 families and 12 animal species of 7 taxonomic categories were recorded. Different plant/animal parts such as bark, leaves, flowers, seeds, stem, root, whole plant, oil, blood, milk, urine and flesh were reported as used in raw or cooked form against 17 specific diseases. Prominent diseases treated by plant/animal remedies were asthma, cardiovascular ailments, diabetes, epilepsy, jaundice, malaria, skin disorder and rheumatism. This study provides a better database for future studies.

968. Pandey, A.K. & Rout, S.D. 2006. "Ethnomedicinal uses of plants of Similipal Biosphere Reserve (Orissa)". *Ethnobotany* 18: 102–106.

Abstract: Similipal Biosphere Reserve located in Mayurbhanj district of Orissa is inhabited by several tribes, including Santhal, Bhumij, Bhuyan, Gond and Saharis, constituting 52% of the total population. An account of ethnomedicinal uses of 42 plant species known among the tribals of Similipal Biosphere Reserve is provided in this paper.

969. Pani, M., Nahak, G. & Sahu, R.K. 2014–2015. "Review on ethnomedicinal plants of Odisha for the treatment of Malaria". *Int. J. Pharmacogn. Phytochem. Res.* [7(1): 156–165.

Abstract: Malaria is currently a public health concern in many countries in the world due to some factors such as chemotherapy faced by resistance, poor hygienic conditions, poorly managed vector control programmes and no approved vaccines. The survey has identified 33 medicinal plant species from 24 families, which were used for the treatment of malaria in this study area. Presently, it is important that a developing state like

Odisha to document the uses of medicinal plants in all communities, which are still largely unexplored. This is because of old folks are as usually custodians of such information and with the fast disappearance of traditional cultures and natural resources arising from urbanization and industrialization of these areas, such information could be lost forever. Documentation of this kind of information will be beneficial in general healthcare, ecological control, forest conservation of endangered species, research and providing leads to plants with useful medicinal properties.

970. Panigrahi, S.G. & Panigrahi, G. 1990. "An inventory of the economic plants and potential germplasm of Orissa, Part – I". *J. Environm. Sci.* 3(1): 45–55.

971. Panigrahi, S.G. & Panigrahi, G. 1990. "An inventory of the economic plants and potential germplasm of Orissa, Part – II". *J. Environm. Sci.* 3(2): 1–21.

972. Panigrahy, J., Behera, S.K., Venugopal, A. & Leelaveni, A. 2016. Ethnomedicinal study of some medicinal plants from Kandhamal district, Odisha. *Int. J. Herbal Med.* 4(5): 36–40.

Abstract: Ethnomedicinal study was carried out during 2014–15 in the tribal village of Kandhamal district is dominated by two tribal groups such as dongria and desia (kui language), documented the medicinal activity of plant for cure of various diseases in the locality. The present paper deals with traditional uses of 40 ethnomedicinal plant species belonging to 37 genera and 28 families along with correct botanical identification. Local names, parts used and mode of administration in respect to different diseases are recorded. The documented ethnomedicinal plants are mostly used in skin disease, gastrointestinal disease, cold and cough and dysuria.

973. Patnaik, B.K. & Rath, S.P. 2013. "Dominant medicinal plants of KBK districts of Odisha with special reference to the strategy of their conservation". *PI. Sci. Res.* 35(1&2): 14–19.

Abstract: The KBK region of Odisha, comprising of erstwhile Koraput, Bolangir and Kalahandi districts, are considered to be the poorest and most backward region of the country. Its scanty population over an area of 30.60% landmass of the state, dominated by mostly tribals, has attracted the attention of Government of India to declare it as a special region, which needs to be elevated in all developmental aspects. The paper depicts as to how those poor, illiterate and ignorant tribal people make best use of plants available around them and take care of their health and day-to-day medical needs even without the help of a qualified medical professional. Since the over use of the plants has become a threat for the long term sustainability of those medicinal plants found in the wild, some strategy has been adopted for their conservation.

974. Patnaik, B.K. & Rath, S.P. 2014. "Conservation of some rare ethno-medicinal plants of 'Junagarh' Reserve forest and 'Biripura' Dangar of Kalahandi district, Odisha". *Advances Pl. Sci.* 27: 435–438.

Abstract: A total of 13 rare ethno-medicinal plants found in Junagarh Reserve Forest and Biripura Dangar of Kalahandi district of Odisha. The members of local Vaidya Sanghas use these plants frequently for treating common ailments of local tribals. An hour-long interaction with local Vaidya Sangha members was held and a printed questionnaire in Odia was circulated amongst them, to get their well thought opinion about the present availability of these plants, and future action needed for their conservation and sustainable management.

975. Patnaik, B.K. & Rath, S.P. 2014. "Important medicinal plants used by the tribes of Sunabeda plateau in Odisha". *Indian Forester* 140(1): 34–37.

Abstract: This work was taken up to explore the ethnobotanical significance of some plant species showing their medicinal values and application of the plant extracts for different diseases. The significance of those plants was recorded from the local tribal people and Vaidyas, available literature and application of some cases. The uses of biomolecules and identification of action of particular compound need to be studied extensively.

976. Patnaik, B.K. & Rath, S.P. 2014. "Lesser reported medicinal plants of erstwhile district Kalahandi". *Indian Forester* 140(7): 654–660.

Abstract: Kalahandi district with rich biodiversity is inhabited by both aboriginal tribes and non-tribal communities. Over 92% of the populations living in the rural and hilly regions are deprived of the modern medical facilities as a result of which they are subjected to using medicinal plants only for their healthcare, as advised by vaidyas and local practitioners. During the study 57 plant species including 11 trees, 10 small trees or large shrubs, 10 shrubs, 3 undershrubs, 12 herbs, 7 climbers and 4 twinners were recorded, which were used by local people for treating various ailments. Some lesser known medicinal plants, widely used by ethnic people of two localities of Kalahandi district have also been reported.

977. Patnaik, B.K. & Rath, S.P. 2014. "Micro-hotspots of medicinal plants in KBK districts of Odisha, India". *Pl. Sci. Res.* 36(1&2): 27–33.

Abstract: India is one of the 17 megadiverse countries, covering only 2.4% land area of the world. The country is highly populous, and with nearly 46,000 plant species including 15,000–18,000 higher plant species besides thousands of algae, lichens and fungi and 81, 000 animal species, the biodiversity of India is very rich. In addition to the two mega diversity hotspots, 24 more micro-hotspots have been reported within the country.

However, several other micro-hotspots can also be proposed based on biodiversity inventories and floristic analysis done by the scientific workers from various part of the country. During the present work, seven micro-hotspots in KBK region of the state of Odisha have been identified on the basis of the presence of rare and endemic medicinal plant species as well as taxonomically interesting species facing threat due to habitat loss, over-exploitation and other biotic factors.

978. Patnaik, B.K. & Rath, S.P. 2014. "Rare ethno-medicinal plants of Gandhamardan hill ranges of Bolangir district in Odisha and their conservation aspects". *Adavnces Pl. Sci.* 27: 127–129.

Abstract: This paper deals with 10 ethnomedicinal plant species found in Gandhamardan reserve forest of Bolangir district, Odisha. This locality coming under Gandhamardan hill range is a treasure house of medicinal plants. Due to traditional use and over use of these medicinal plants by the local inhabitants and also due to various anthroprogenic activities, the plants identified and listed in the paper were probably once found frequently in the locality, and are now become rare and sparce. As such along with the implementation of Vanaspati Van project, by the State Forest Department, various measures need be taken to minimize the anthroprogenic activities, so as to preserve the rare medicinal plants.

979. Patra, J.M., Panda, S.S., Pattanayak, B. & Dhal, N.K. 2015. "Validations of tribal claims on *Vanda tessellata* (Roxb.) Hook. ex G. Don., *Vitex negundo* L. and *Holarrhena antidysenterica* Wall. ex A. DC. through phytochemical screening and antibacterial activity". *Int. J. Biol. & Pharmaceut. Res.* 6(8): 593–599.

Abstract: Traditionally plants have been used as a source of medicine in India by indigenous people inhabiting various terrains for the control of different ailments afflicting human. According to the World Health Organization, about 80% the world's population depending upon the traditional treatment, which involves plant extract. The present investigation elucidates the ethnobotanical claims of *Vanda tessellata, Vitex negundo* and *Holarrhena antidysenterica* through phytochemical screening and antibacterial activity. Study was conducted during the year 2012–2014 following standard ethnobotanical methods. Data about medicinal uses of plants were collected by questionnaire, personal interview and group discussion with pre-identified informants. A preliminary phytochemical screening was conducted on the selected medicinal plant extract using standard qualitative and quantitative analysis. The phytochemical screening confirmed the presence of secondary metabolites such as alkaloids, glycosides, tannins, flavonoids, anthraquinones and saponins. Antibacterial studies of the ethanol, n-hexane, chloroform and acetone extracts showed inhibitory activity against *Shigella flexneri* (MPT 1457), *Vibrio cholera* (MPT 1906) and *Escherichia coli* (MPT 1231) with zones of inhibitions of

50–56, 40–56 and 43–53 mm, respectively. Results invariably confirm the folkloric usage of the various plant parts in the treatment of the diseases with careful selection of extracting extract and solvent and recommends for pharmacological studies for future herbal drugs. The study encourages further investigations to extract and identity the active chemical compounds responsible for the antibacterial effect observed.

980. Pattanaik, C. & Reddy, C.S. 2007. "Medicinal plant resources of Gandhamardan hill range, Orissa: An urgent need for conservation". *Natl. Acad. Sci. Lett.* 30: 35–38.

981. Pattanaik, C., Reddy, C.S. & Dhal, N.K. 2008. "Phytomedicinal study of coastal sand dune species of Orissa". *Indian J. Tradit. Knowl.* 7(2): 263–268.

Abstract: The coastal sand dune species of Orissa bear high cultural and ecological utility. Unfortunately, the dune vegetation has been extensively modified by human activity. Ethnobotanical survey was conducted among Savaras, Santals and other local communities, in sand dune vegetation of six coastal districts of Orissa during 2002–2004. A total of 55 plant species have been collected and their popular uses are listed. Due to continuous loss of coastal vegetation, the associated indigenous knowledge with them is also gradually disappearing. So, it is imperative to protect and restore the dune vegetation, as an immediate priority.

982. Pattanaik, C., Reddy, C.S. & Murthy, M.S.R. 2008. "An ethnobotanical survey of medicinal plants used by the Didayi tribe of Malkangiri district of Orissa, India". *Fitoterapia* 79(1): 67–71.

Abstract: An ethnobotanical survey was carried out among the ethnic community (Didayi) in Malkangiri district, Orissa. A total of 53 medicinal plant species belonging to 34 families and 52 different species are described under this study.

983. Pattanaik, C., Dhal, N.K., Rout, N.C. & Reddy, C.S. 2008. "Lesser known ethnomedicinal plants of the Satkosia Gorge Sanctuary, Orissa, India". *Hamdard Med.* 51(2):139–144**.**

Abstract: An ethnomedicinal exploration was carried out in Satkosia Gorge Sanctuary, Orissa. The checklist consists of 37 species belonging to 34 families. These medicinal plants are singly used or used with the mixture by the Kondha tribe inhabiting inside the forest areas of sanctuary. The results of this study showed that the Kondha tribe still depends on medicinal plants for treating various ailments.

984. Pattanaik, C., Reddy, C.S., Das, R. & Reddy, P.M. 2007. "Traditional medicinal practices among the tribal people of Malkangiri district, Orissa, India". *Nat. Prod. Radiance* 6(5): 430–435.

Abstract: An ethnobotanical survey of some tribal areas revealed that 34 plant species are used by tribal people of Malkangiri district, Orissa. The use of traditional medicine

was observed to be wide-spread and prevalent over modern medicine in the study area. The paper discusses the plants for various diseases along with their uses, botanical names with family name, local names, plant parts used and medicinal preparation along with dosage and mode of administration.

985. Pattanaik, C., Reddy, C.S., Dhal, N.K. & Das, R. 2006. "Some phytotherapeutic claims by tribals of Rayagada district, Orissa, India". *Ethnobot. Leafl.* 10: 189–197.

Abstract: The paper reports 30 plant species belonging to 23 families, mostly used by the tribal people of Rayagada district, Orissa. The tribal population of the region primarily depends upon these plants for curing various diseases. They are enumerated with binomial, family name, habit, local names, parts used and ethnomedicinal uses. Further studies on chemical and pharmacological actions are suggested to validate the claims.

986. Pattanaik, C., Reddy, C.S., Murthy, M.S.R. & Reddy, P.M. 2006. "Ethnomedicinal observations among the tribal people of Koraput district, Orissa, India". *Res. J. Bot.* 1: 125–128.

Abstract: An attempt has been made to evaluate plants used for medicare by the tribal people of Koraput district, Orissa. The study reveals the indigenous medicinal uses of 39 plant species belonging to 37 genera and 30 families. Documentation of traditional knowledge on the ethnomedicinal uses of these plants is essential for conservation efforts for the plant resources and new drug development.

987. Pattanaik, C., Reddy, S., Dhal, N.K. & Panigrahi, A. 2008. Ethno-medico botanical exploration of southern Orissa. In: Binoj Kumar, M.S. & Gopalakrishnan, P.K. (eds.), *Biodiversity Conservation*. Scientific Publishers, Jodhpur. pp. 173–181.

Abstract: A major part of the population of India live in the rural areas and a considerable proportion of them are tribals, residing in the interior forests. It is imperative that a lot of ethnobotanical information in their folklore remain unnoticed and undocumented due to lack of communications. The different traditions, needs, culture of various tribes and the diversity of flora richly contribute to the Indian plant folklore. The state of Orissa is a rich repository of medicinal plant diversity. The southern part of Orissa constitutes several hill ranges of Eastern Ghats. Orissa has 62 tribal communities. Many of them are restricted to interior hill forests only. The principal tribes seen in this region are Bonda, Kondh, Gond, Saura, Koya, Diyadi, Dharua, Paroja, Lodha, and Bhatoda. The tribals utilize many ethno-herbals from their surrounding vegetation for the treatment of various diseases and disorders. The paper highlights some of the high-valued ethnomedicinal plants along with information on local names, locality, ethnomedicinal uses, dosage and mode of administration, as practiced by them. Some of the important

medicinal plants are *Achyranthes aspera, Alangium salvifolium, Aloe barbadensis, Bauhinia vahlii, Bombax ceiba, Holarrhena antidysentrica, Tridax procumbens, Calotropis gigantea, Rauvolfia serpentina, Caryota urens, Costus speciosus, Justicia adhatoda, Terminalia bellirica* and *T. chebula*. These valuable data gathered during the study on medicinal uses of various plants among the tribals are presented in this paper for further scientific exposure. Care should be taken to enlist the details of all tribal medicines and these should be patented, as this rich repository of traditional Vedic medicines can serve as a boon for the pharmaceutical industries.

988. Pattanaik, D.K. & Mohapatra, P. 2010. "Ethnomedicinal plants used by the Paroja tribe of Koraput". *Ancient Sci. Life* 30(2): 42–46.

Abstract: This paper reports the ethnomedicinal uses of 30 plants by the Paroja tribes of Koraput, Odisha. All the plants were enumerated with botanical name, family name, local name, short description of the plant and information on ethnic use.

989. Pattanayak, B., Dhal, N.K. & Parida, S. 2016. "Ethnobotanical survey of antimalarial plants of Odisha, India". *Asian J. Sci. Technol.* 7(3): 2529–2536**.**

Abstract: Malaria is one of the most common major health problems all over the world. In developing countries where malaria is endemic, depend strongly on traditional medicine as a source for inexpensive treatment of this disease. It is important that antimalarial medicinal plants are investigated, in order to establish their efficacy and to determine their potential as sources of new antimalarial drugs. In this study, the claimed antimalarial properties of 89 plant species belonging to 49 families used in traditional medicines against malaria fever, mainly Odisha regions have been evaluated. However, traditional remedies against malaria are practiced among the rural communities because of ease of availability and convenience and also due to social, psychological and cultural reasons. Species belonging to families such as Asclepiadaceae, Apocynaceae, and Fabaceae are most commonly cited in treatment of malaria.

990. Pattnaik, C., Reddy, C.S. & Murthy, M.S.R. 2008. "An ethnobotanical survey of medicinal plants used by the Didayi tribe of Malkangiri district of Orissa, India". *Fitoterapia* 79(1): 67–71.

Abstract: An ethnobotanical survey was carried out among the ethnic community (Didayi) in Malkangiri district, Orissa. A total 53 medicinal plant species belonging to 34 families are described under this study.

991. Paul, T.K. & Mudgal, V. 1985. "Unreported medicinal uses of some plants recorded from the tribals of Koraput (Orissa)". *Bull. Bot. Surv. India* 27: 69–71.

Abstract: An ethnobotanical survey during the month of November–December, 1984 among the tribals namely Kondh and Paroja residing at Sunki, Metabalsa, Sitaguda,

Pansumangudi, Lauri of Potangi block, Dayanidhiguda of Koraput block, Lakhimpur and Narayanpatna of Narayanpatna block of Orissa resulted in gathering many unreported uses of 21medicinal plants.

992. Pradhan, A., Mishra, S.P. & Behera, N. 2016. An ethnomedicinal survey of medicinal plants from a sacred forest of western Odisha, India. *Int. J. Phytomed.* 8: 325–332.

Abstract: Sacred forests are being protected by means of cultural and religious beliefs by the local communities and act as people participatory conservation sites for several important medicinal plants. Sacred forests are one of the oldest forms of biodiversity conservation sites still effectively managed by local people and act as in-situ conservation sites. In this context, the present study was carried out in Andhari sacred forest of Jharsuguda district as to collect the information regarding the traditional ethno medicinal knowledge acquired by the local medical practitioners. Only few indigenous people have adequate knowledge regarding the medicinal plants and their uses. These traditional knowledge were rapidly degrading and if not documented will be lost forever. The present study reveals the presence of 91 plants species belonging to 46 families being used by the practitioners to treat various diseases such as dysentery, diarrhoea, indigestion, worm infection, wound healing, headache, stomach disorders, rheumatic disorders, snake bite, poisonous bite and menstrual problem. This ethnomedicinal information further needs to be validated by clinical trials for their safe uses. The study also reported the existence of 8 RET (Rare, Endangered and Threatened) medicinally important species which makes this site a biological hotspot and needs further effective conservation efforts.

993. Pradhan, B. & Panda, D. 2016. "Wild tuber species diversity and its ethno-medicinal use by tribal people of Koraput district of Odisha, India". *J. Nat. Prod. Pl. Resources* 2(1): 33–36.

Abstract: The paper documents the indigenous knowledge on the utilization of tuberous species both as food and medicine by the tribal people of Koraput. Field study was carried out in 24 villages of Koraput district of Odisha and the ethnomedicinal information was collected through interview among different tribal group and traditional healers. The use value, informant consensus factors (FIC) and fidelity level (FL) were analyzed to know the important ethnomedicinal tubers used by the tribals. Tubers of 56 different species distributed in 35 genera belonging to 21 families were identified as commonly used tubers by the tribals and traditional healers for the treatment of 37 types of diseases. These diseases were categorized into 11 ailment categories based on the body systems treated. Most of the medicines were prepared in the form of paste and administered orally. FIC values of the present study indicated that there was a high agreement among the users for the use of plants in the treatment of toothache, cough,

nose bleeding and to increase milking of pregnant mother. Six species had highest fidelity level of 100%. The most important species according to their use value were *Dioscorea oppositifolia, Colocasia esculenta, Cheilocostus speciosus, Dioscorea pentaphylla, Manihot esculenta, Curcuma longa, C. angustifolia, Dioscorea alata, D. belophylla* and *D. tomentosa*. The tuber species with highest fidelity level and use values in the study indicate the possible occurrence of valuable phytochemical compounds and the need to search for potential new drugs to treat various ailments.

994. Pradhan, B., Jena, D.D. & Pradhan, M. 1990. "Ethno-medicinal plant studies of Gandhamardan hills (Keonjhar)". *Proc. Orissa Bot. Soc.* 4: 54–55.

995. Prusti, A.B. 2007. "Plants used as ethnomedicine by Bondo tribe of Malkangiri district, Orissa". *Ethnobotany* 19: 105–110.

Abstract: The paper presents a detailed account on the uses of 67 taxa of 44 families as ethnomedicine for curing various ailments by the Bondo tribe inhabiting Malkangiri district of Orissa.

996. Prusti, A.B. & Behera, K.K. 2007. "Ethnobotanical exploration of Malkangiri district of Orissa, India". *Ethnobot. Leafl.* 11: 122–140.

Abstract: The association of man with the neighbourhood flora starts with human civilization. Besides food, feed clothes and shelter, plants are important source of drugs. These plants or their parts therefore used either directly or after processing by the native people against various diseases, disorders and ailments. A survey was conducted on the tribal district of Malkangiri of Orissa to identify and record various ethno medicinally important plants and their medicinal uses. A total of 134 species of plants belonging to 69 families and 128 genera are recorded and used in various ailments by different tribes of Malkangiri district of Orissa are enumerated in the paper.

997. Prusti, A.B. & Behera, K.K. 2007. "Ethno-medico-botanical study of Sundargarh district, Orissa, India". *Ethnobot. Leafl.* 11: 148–163.

Abstract: Ethnomedicinal plant wealth of Sundargarh district is one of the richest in Orissa state. This paper is the outcome of the ethnobotanical observations and survey conducted amongst the tribals residing in Bonai, Sundargarh and Panposh Forest Divisions of Sundargarh district related to plants used for food, diseases, pesticides, stupefiers, industrial, and other related aspects during 2001–2005, by the second author which accounts for 83 plant species with 78 genera in 42 families. Most of the claims are found to be new and interesting.

998. Prusti, A.B. & Mishra, A. 2005. "Interesting medico-botanical claims by Khonds of Nayagarh district of Orissa". *Pl. Sci. Res.* 27(1&2): 16–23.

Abstract: Ethnobotanical study has gained momentum only in the second half of the last century in India. Much has already been said about its importance especially in search of new medicinal plants. Orissa is indeed a haven for such work with abundant natural wealth and ethnobotanical knowledge all over. This study provides the ethnomedicinal-lore of the aboriginal Khond tribe of Nayagarh district, Orissa. The Khonds are a distinct group of Proto-Australoid stock with considerable Mongoloid admixture and numerically form the largest group among the 62 tribes in Orissa. They constitute 16.20 per cent of the total tribal population with a population of 11,40,374 (1991 Census). They are found sporadically throughout the state and they are largely concentrated in the districts of Kandhamal and Rayagada. The Khonds are variously distributed in both plains and hilly areas of Nayagarh district. The information presented in this paper was recorded during the ethnobotanical explorations carried out in various localities of the tribal areas of the district. In this paper information about the traditional uses of 56 angiospermic species belonging to 55 genera and 37 families collected through field surveys and personal interviews with the Khond medicine people is reported. The plant species are used for a number of diseases such as dysmenorrhoea, rheumatism, bilious derangements, wounds and ulcers, back-pain, piles, stomach cancer, snake-bite, joint-swellings, otitis media, bone-fracture, oedema, stomatitis, conjunctivitis, aphthous ulcers, eczema, fever, asthma, mumps, filariasis, nephritis and headache. These ethnomedicinal plants are recommended for pharmacological/ phytochemical investigations.

999. **Prusty, D., Nayak, R.K. & Mohanty, R.C. 2014**. "*Traditional uses of* some medicinal plants of Kendrapara district of Odisha". *Pl. Sci. Res.* 36(1&2): 77–82.

Abstract: Kendrapara district in the state of Odisha is a storehouse of rich indigenous knowledge on medicinal plants. Past floristic studies conducted in the district suggest that this coastal district was much richer in terms of medicinal plant diversity and the rural people possess fairly good knowledge on uses of locally occurring medicinal plants for various ailments. With urbanization and access to modem medicine, the rich traditional knowledge base on indigenous medicine is fast eroding. During the present investigation, through extensive fieldwork, the traditional knowledge on medicinal plants of this district has been documented. About 400 medicinal plant species have been collected and identified from different areas of this district. The urgent need for documentation of local knowledge and conservation of medicinal plants has been emphasized.

1000. **Prusty, G.B. & Sahoo, H.P. 2011.** "Ethnomedicinal observations among forest dwellers of the Daitari hill ranges in Orissa, India". *Advances Pl. Sci.* 24: 703–705.

Abstract: Studies on dependence hill tribes on forest for their livelihood security are less in Orissa. Ethnomedicinal observations in the state with rich diversity of medicinal plants are still meagre. This study enumerates 22 plant species belonging to 17 families used in treatment of various diseases among the tribes of Daitari hill ranges in Orissa.

1001. Rai Chaudhuri, H.N., Pal, D.C. & Tarafder, C.R. 1972. "Less known uses of some plants from the tribal areas of Orissa". *Bull. Bot. Surv. India* 17: 132–136.

Abstract: Ethnobotanical studies of Orissa revealed that most of the uses of plants by the tribals are not usually known to the other people. This paper deals with such uses of 38 plant species collected during ethnobotanical tours in Orissa state.

1002. Rao, J.R., Jena, P.K. & Sahoo, H.P. 2011. "Indigenous phyto-therapy for gastro-intestinal disorders among tribals of Dhenkanal district, Orissa". *Advances Pl. Sci.* 24: 361–364.

Abstract: A study on herbal remedies for gastro-intestinal disorders among the tribals of Dhenkanal district was conducted during the year 2007–2008. A total of 20 plant species belonging to 19 genera and 18 families were enumerated. The traditional communities mainly depend on these locally available plant species for treatment of the diseases utilizing their inherited ethnomedicinal knowledge. The phyto-remedial measures of plant species is based on the traditional tools and technology of the ethnic people but still needs further elaborated studies.

1003. Rath, G.C. 1981. "Ethno-pharmacological uses of plants of Orissa with special reference to rheumatic diseases". *Proc. 5th Annual Conf. Orissa Bot. Soc.* p. 39.

1004. Rath, G.C. 1982. "Ethno-pharmacological uses of plants of Orissa with special reference to peptic ulcer". *Proc. 7th Annual Conf. Orissa Bot. Soc.* p. 28.

1005. Rath, G.C. 1984. "Ethno-pharmacological uses of plants of Orissa with special reference to Leucorrhoea". *Proc. 71st Indian Sci. Congr.* Pt. III. p. 94.

1006. Rath, G.C. 1985. "Ethno-pharmacological uses of plants of Orissa with special reference to filariasis". *Proc. 72nd Indian Sci. Congr.* Pt. III. p. 51.

1007. Rath, R. & Rath, S.P. 2013. "Diversity of medicinal plant species in the coastal districts of Odisha, erstwhile Cuttack district". *J. Econ. Taxon. Bot.* 37(2): 308–317.

Abstract: This paper is focusing on the medicinal plants that are predominantly found in the Cuttack district. The rural and tribal people of the district know the medicinal importance of these plant species, and most of them are still depending on traditional plant medicine for various ailments. Although several medicinal plants are available, only 70 selected plant species having medicinal importance have been reported in this work for record.

1008. Raut, S., Raut, S., Sen, S.K., Satpathy, S. & Pattnaik, D. 2012. An ethnobotanical survey of medicinal plants in Semiliguda of Koraput district, Odisha, India. *Bot. Res. Int.* 5(4): 97–107.

Abstract: An ethnobotanical survey in Semiliguda block of Koraput district, Odisha have revealed a wealth of traditional knowledge on medicinal plants and their uses amongst

the local Godaba healers. The indigenous knowledge of local traditional healers and the native plants used for medicinal purposes were collected through questionnaire and personal interviews during field trips. The study includes 50 species, most of which appear to be still in everyday use. The most dominant families were Euphorbiaceae and Myrtaceae. An overview of the most important plants and their uses are presented, and this study also revealed several interesting records that have hitherto remained undocumented. New records of plants that are locally used, viz., *Caryota urens, Curcuma montana*, *Cardiospermum halicacabum, Sansiveria roxburghiana, Atylosia scarabaeoides*, *Argyreia speciosa, Chenopodium ambrosioides, Euphorbia tirucalli*, *Pongamia glabra, Sesbania grandiflora, Stephania hernandifolia*, *Elephantopus scaber, Acorus calamus* and *Lawsonia inermis* confirm that the medical ethnobotany of Semiliguda block is incompletely recorded. It can be seen that ethnomedicinal information from traditional healers provides a solid lead towards development of new drugs than random screening. The task that remains is to screen extracts prepared from these plants and perform a bioassay-guided fractionation of the active extracts so as to isolate the active compounds from these plants. The traditional healers are dwindling in number and there is a grave danger of traditional knowledge disappearing soon since the younger generation is not interested to carry on this tradition.

1009. Raut, S., Raut, S., Sen, S.K., Satpathy, S. & Pattnaik, D. 2013. An ethnobotanical survey of medicinal plants in Semiliguda of Koraput district, Odisha, India. *Res. J. Recent Sci.* 2(8): 20–30.

Abstract: Same as the above abstract.

1010. Rautray, A.K., Saho, R., Sardar, K.K., Patra, R.C. & Sahoo, A. 2015. "Ethnoveterinary practices for small ruminants followed by rural folks in southern Odisha". *Indian J. Tradit. Knowl.* 14(2): 319–324.

Abstract: The study is aimed at identification of the traditional medical practices being adopted by the rural folks in the treatment of small ruminant diseases in Bhawanipatna block in Kalahandi district of Odisha state. Extensive field survey in 12 villages (Manoharpur, Medinpur, Sujanpur, Jammunabahal, Balarampur, Sagadia, Ichchapur, Sanakhairamala, Kadappa, Chhatiguda, Bangabadi, Kadapada) in and around Bhawanipatna was carried out through 36 regular and repeated informal visits, and 160 informants residing in these villages were consulted through participatory rural appraisal method. Information was gathered through open interaction and door to door interview, and through personal interrogation. A total of 23 species of herbal plants have been identified which were used either alone or in combination as traditional remedies for 24 different conditions/diseases in livestock including important conditions such as hoof infection, liver disorder and enteritis to emergency conditions such as

tympany/bloat and haemorrhage. About 2000 small ruminants have been treated by the total informants over the years with the use of herbal remedies. The success rate of the practices used was claimed by the native folk to be 50–60%. Use of such medicinal plants is of greater value in view of the socioeconomic conditions of the small ruminants owners in reducing the cost of treatment.

1011. Ray, D.P., Das, A.K. & Sahoo, S. 2001. "Conservation and evaluation of major medicinal plants in Orissa". In: Sahoo, S., Ramesh, D.B., Rao, Y.R., Debata, B.K. & Misra, V.N. (eds.), *Conservation and Utilization of Medicinal and Aromatic Plants*. Allied Publishers Ltd., New Delhi. pp. 27–36.

Abstract: India is one of the world's richest sources of medicinal plants comprising nearly 45,000 species but now only 20 species are in commercial uses. Now-a-days people prefer plant-based medicines for their primary healthcare needs because of no side effects. But it is a matter of regret that major requirement of raw material of Indian herbal industry is being met by the collection from wilder sources and 70% of the collections involve destructive harvesting practices as their economic parts being roots, bark, leaves, wood, stem or the whole plants. So knowledge on the economic parts and utilization of important medicinal plants is vital and it is most relevant not only to conserve the depleting flora of medicinal plants but also to extend the area of cultivation with proper recommended package and practices. A rich biodiversity of medicinal plants is also seen in Orissa. The major medicinal plants, viz., trees (28 spp.), shrubs (27 spp.), herbs (27 spp.) and climbers (8 spp.) have been collected from different Agro-climatic zones of Orissa through survey and conserved at Horticultural Research Station, Orissa University of Agriculture and Technology, Bhubaneswar. The economic parts and their utilization of above important types have been discussed.

1012. Rout, S., Panda, S.P. & Patra, H.K. 2015. "Plants used as medicine by Juang tribes of Keonjhar district, Odisha, India". *Int. J. Bioassays* 4(11): 4511–4514.

Abstract: Studies on Juang tribe's dependence on forest for their livelihood security are few for Odisha. Ethnomedicinal observations in the district with a potential diversity of medicinal plants have been studied. The study yielded 20 plant species belonging to 18 families those were frequently used in the treatment of various diseases and ailments by the tribal people of Juang of Keonjhar district. The forest dwellers usually collect these rare plants from the nearby forest areas which are easily accessible and medicines are prepared under the guidance of Vaidyas. This communication throws a preliminary idea about the application of traditional medicines against various serious diseases and the plants screened by the Juang tribes to be used as medicine.

1013. Rout, S.D. 2007. "Ethnobotany of diversified wild edible plants in Similipal Biosphere Reserve, Orissa". *Ethnobotany* 19: 137–139.

Abstract: The paper deals with 19 species of wild edible fruits eaten in various ways by the tribals and other rural people living in and around Similipal Biosphere Reserve. Few of the recorded species are already known for their edible purpose, however, the use of some taxa are uncommon.

1014. Rout, S.D. & Panda, S.K. 2010. "Ethnomedicinal plant resources of Mayurbhanj district, Orissa". *Indian J. Tradit. Knowl.* 9(1): 68–72.

Abstract: A total of 77 plant species belonging to 73 genera and 41 families are employed ethnomedicinally by the rural people in 11 villages of district Mayurbhanj. Ethnomedicinal uses of eight plant species have been recorded for the first time from the region. Documentation of traditional knowledge on the ethnomedicinal uses of these plants is essential for conservation efforts for the plant resources and new drug development.

1015. Rout, S.D. & Pandey, A.K. 2007. Some wild edible and other useful plants of Similipal Biosphere Reserve, Orissa, India. In: Das, A.P. & Pandey, A.K. (eds.), *Advances in Ethnobotany*. Bishen Singh Mahendra Pal Singh, Dehra Dun. pp. 61–72.

1016. Rout, S.D. & Thatoi, H.N. 2009. "Ethnomedicinal practices of Kol tribes in Simlipal Biosphere Reserve, Orissa, India". *Ethnobot. Leafl.* 13: 379–387.

Abstract: Similipal Biosphere Reserve in Mayurbhanj district of Orissa is the most luxuriant forest and rich in medicinal plant resources. The forest area is dominated by a number of tribes such as Kol, Santal, Bhumij, Mankidias and Khadias who are depending on the forest for their food to medicine. The paper reports the ethnomedicinal uses of 32 potential medicinal plant species belonging to 24 families used for treatment of various ailments such as leucorrhoea, spermatorrhea, piles, sore throat, rheumatism and elephantiasis by Kol tribe living in some villages situated in and around Similipal Biosphere Reserve. The botanical name, family name, vernacular name(s), parts used, method of preparation, usage, administration of the drugs are given.

1017. Rout, S.D., Panda, T. & Mishra, N. 2009. "Ethnobotanical studies of Similipal Tiger Reserve, Orissa". *Ethnobotany* 21: 80–83.

Abstract: The ethnobotanical study was conducted in Similipal Biosphere Reserve of Mayurbhanj district. The dominant tribes involved in using plants as medicines in the district are Santhal, Kol, Bhumija, Bhuiyan, Mahalis, Sounti and Saharas. This paper deals with the ethnobotanical information of 15 plant species obtained through field surveys and taxonomic identification of plants.

1018. Rout, S.D., Panda, T. & Mishra, N. 2009. "Ethno-medicinal plants used to cure different diseases by tribals of Mayurbhanj district of north Orissa". *Ethno-Med* 3(1): 27–32.

Abstract: Mayurbhanj, a hilly district, is rich in ethnomedicinal plants. In this paper, 58 plant species belonging to 34 families used in folk medicine have been documented. Due to poor condition of modern healthcare facilities and poverty, indigenous people of the district fully or partially depend on local medicinal plants. An attempt has been made to document the traditional knowledge from the baidyas group of Hatikote, Moroda and Rasgovindpur and Udala and Kaptipada blocks of Mayurbhanj district on the treatment of various diseases.

1019. Rout, S.D., Panda, T. & Mishra, N. 2009. "Ethnomedicinal studies on some pteridophytes of Similipal Biosphere Reserve, Orissa, India". *Int. J. Med. & Medical Sci.* 1(5): 192–197.

Abstract: Investigations had been made on medicinal values of flowering plants but pteridophytes are often ignored. In spite of the luxuriant growth of these plants in and around Similipal in Mayurbhanj district of Orissa, they had not been studied taxonomically or ethnobotanically. The dominant tribes involved in using pteridophytes as medicines in the district are Santhal, Kol, Bhumija, Bhuyan, Mahalis, Sounti and Saharas. The plant parts such as leaves, roots, rhizomes and fronds were used in raw or cooked forms for the treatment of malaria, gonorrhoea, leprosy and rheumatism. Mostly used genera are *Adiantum, Asplenium, Lygodium* and *Pteris*. This study had been designed to assess the medicinal uses of 33 species of pteridophytes belonging to 21 families on the basis of field surveys and taxonomic identification of plants.

1020. Rout, S., Panda, S.P. & Patra, H.K. 2014. "Ethnomedicinal studies on Bondo tribe of Malkangiri district, Odisha, India". *Int. J. Biodivers. & Conservation* 6(4): 326–332.

Abstract: Ethnomedicinal studies revealed the use of 34 angiospermic species by the Bondo tribe of Malkangiri district of Odisha. The traditional medicinal uses were observed to be widespread and prevalent over modern medicine in the study area. In this paper, plants used in various diseases have been discussed together with dosage and mode of administration. The correct name, family name, local names are also provided for correct identification of the species.

1021. Roy, A., Moktan, B. & Sarkar, P.K. 2007. "Traditional technology in preparing legume-based fermented foods of Orissa". *Indian J. Tradit. Knowl.* 6(1): 12–16.

Abstract: The people in Orissa, like many other states in India, have a tradition of relishing a variety of cakes, locally called pitha, specially prepared during various festivals and rituals. Some of these foods are produced from the fermentation of cereal-legume batters. These products include chakuli, chhuchipatra pitha, enduri pitha, munha pitha, podo pitha and chitou, which are unknown to the scientific community. All these foods are described with respect to the nature of the product, method of preparation, mode of consumption and ethnic value.

1022. Roy, S.N. 1931. "Some trees and herbs in the rituals and folklore (Bengal and Orissa)". *J. Anthropol. Soc. Bombay* 14: 588–604.

1023. Sachan, S.K.S., Patra, J.K. & Thatoi, H.N. 2013. "Indigenous knowledge of ethnic tribes for utilization of wild mushrooms as food and medicine in Similipal Biosphere Reserve, Odisha, India. *J. Agric. Technol.* 9(2): 403-–416.

Abstract: Indigenous knowledge on the utilization of wild mushrooms by tribal communities is quite different in Similipal Biosphere Reserve (SBR), Odisha. An effort has been made to record some of this precious indigenous knowledge through questionnaire survey, visits and interviews which were conducted with selected indigenous tribal communities in SBR. The knowledge about the wild edible mushroom flora of SBR and their uses by the indigenous tribes for food and medicine were documented. The study revealed that more than ten enthnic groups (Santal, Kolha, Munda, Khadia, Bhumija, Bhuyan, Bathudi, Kudumi, Ho and Mankdias) of SBR were found to be mycophilic and have extensive traditional mycological knowledge. In total 14 species of fleshy mushrooms belong to 8 genera and 6 families were collected through field visits and identified by phenotypic and microscopic characters. All these mushrooms are being used by the tribes as source of food as well as medicinal purposes including cure for malnutrition, weakness and other nutritional disorders. The study highlights the diversity and ethnomedicinal potential of some indigenous mushrooms from SBR. Further studies in these mushrooms may be undertaken to discover active compounds for their possible pharmaceutical applications.

1024. Sadangi, N. 2002. *Ethnomedicinal and ethnobotanical investigations among schedule castes and tribes of Kalahandi district, Orissa,* India. Ph.D. Thesis, Berhampur University, Behrampur (unpublished).

1025. Sadangi, N., Padhy, R.N. & Sahu, R.K. 2005. "A contribution to medico-ethnobotany of Kalahandi district, Orissa on ear and mouth disease". *Ancient Sci. Life* 24(3): 160–163.

Abstract: Different herbal methods of treating ear and mouth disease in ethnomedicinal practice of the tribal people of Kalahandi district are described based on survey among Scheduled Caste and Scheduled Tribe population. Ten species have been found to be used as external application. On scrutiny of literature it was found that almost all the species are found to be new to medico-ethnobotany of Orissa.

1026. Sahoo, A.K. & Bahali, D.D. 2003. "Plants used in less known ethnomedicines and medico-religious beliefs in Phulbani district of Orissa". *J. Econ. Taxon. Bot.* 27(2): 500–502.

Abstract: A total of 24 plant species with less-known medicinal and medico-religious uses practiced by the tribal of Phulbani district, Orissa are reported along with local names and mode of administration.

1027. Sahoo, A.K. & Goel, A.K. 2012. "Ethnobotanical studies in Odisha (1942–2011): In Pursuit of plant conservation". *Ethnobotany* 24: 29–42.

Abstract: Ethnobotanical studies in Odisha were initiated with a publication by S.N. Bal in 1942 to document 282 useful plant species of Mayurbhanj, a northern district and the home of Santal, Kolha, Bhumij and Bathudi tribes. Since then ethnobotanical studies continued covering the tribal communities in all the 30 districts of the state and have resulted in as many as 130 research publications till 2011. The literature compilation during seven decades (1942–2011) reveals that 960 species (35% of flora in state) under 156 families (138 angiosperms, 15 pteridophytes and 3 gymnosperms) are useful medicinally along with 142 less known medicinal taxa. These plants are used by various ethnic tribal and non-tribal communities for food, medicine, material-culture, magico-religious and symbolic purposes. Some plants available in wild in the natural habitat are also procured and used as oilseed, fibre, fodder, gum, resin, tannin, detergent, veterinary medicine, fuel, timber and to make house-hold materials along with some common cultivated crops. This documentation is a precursor of useful plants of Odisha for bioprospection, *in situ* as well as *ex situ* conservation.

1028. Sahoo, A.K. & Mudgal, V. 1995. "Less known ethnobotanical uses of plants of Phulbani district, Orissa, India". *Ethnobotany* 7: 63–67.

Abstract: The paper deals with less-known uses of 23 plant species belonging to 23 genera and 21 families in the treatment of amenorrhoea, dysmenorrhoea, dysuria, gonorrhoea, leucorrhoea and spermatorrhoea. The formulation of the medicine and the details of application are provided.

1029. Sahoo, B.B. & Satapathy, K.B. 2009. "Plants used by the tribals and rural folks for common ailments in Jajpur district (Orissa)". *Ethnobotany* 21: 107–111.

Abstract: This paper provides first hand information on the herbal remedies practiced by the tribals and rural folks of Jajpur district of Orissa. During the study, 25 plant species belonging to 24 families were found to be used by the local tribal medicine men and village folks to cure various common ailments like cold and cough, jaundice, diabetes, diarrhoea, dysentery, stomach ailments, worms, rheumatism, headache, cuts, pimples, sinusitis, pyorrhoea, piles, insect bites and women's diseases. The report incorporates botanical names of the plants followed by the family name, local name(s), mode of administration and dosage.

1030. Sahu, C., Nayak, R.K. & Dhal, N.K. 2014. "Indigenous ethnomedicine used for treatment of gynaecological disorders by tribals of Boudh district, Odisha, India". *J. Ethnobiol. Tradit. Med.* 121: 743–751.

Abstract: Traditional remedies are part of the tribal life. The tribals depend on the herbal medicines for curing various gynaecological disorders. This work is the outcome of extensive field surveys and collection of ethnomedicinal data by interview with herbal healers and village heads of different tribes of Boudh district of Odisha during 2011–2013. The investigation listed and enumerated medicinal plants of 35 species, 35 genera and 27 families with 37 prescriptions commonly used for gynaecological ailments. Of which, species such as *Curculigo orchioides, Hygrophila auriculata, Smilax zeylanica, Syzygium cumini, Vanda tessellata* and *Woodfordia fruticosa* are reported to be less-known. Herbal medicines are only means of phytotherapy among tribal community, as modern medicinal facilities are not available and have some limitations. There is an urgent need to assess the safety and efficacy of the medicinal plants and further studies were suggested to validate the claims and herbal drug development for treatment of such gynaecological disorders.

1031. Sahu, C.R., Nayak, R.K. & Dhal, N.K. 2013. "Ethnomedicinal plants used against various diseases in Boudh district, Odisha, India". *Ethnobotany* 25: 153–159.

Abstract: This paper presents the study of ethno-medicinal importance of 70 plant species belonging to 35 families and 55 genera of Boudh Reserve Forests of Odisha. Different plants available in this locality used by the tribals are summarized. The scientific names, local names, plant parts sued and their ethno medicinal uses are provided.

1032. Sahu, C.R., Nayak, R.K. & Dhal, N.K. 2013. The plant wealth of Boudh district of Odisha, India with reference to ethnobotany. *Int. J. Curr. Biotechnol.* 1(6): 4–10.

Abstract: Ethnobotanical study was carried out in Boudh district of Odisha, India. Fifteen villages dominated by tribal communities under three community development blocks were selected. The indigenous knowledge of local traditional uses was collected through questionnaire and personal interviews during field trips. Indigenous communities of the region are largely dependent on plant resources such as medicines, food, fuel, fodder and for other livelihoods. A total of 20 traditional agricultural crop species, 8 traditional vegetable species and nearly 150 forest species were documented. Conservation of these valuable resources in its natural habitat would be an appropriate approach for ensuring food security of future generations.

1033. Sahu, C.R., Nayak, R.K. & Dhal, N.K. 2013. "Traditional herbal remedies for various diseases used by tribals of Boudh district, Odisha, India for sustainable development". *Int. J. Herbal Med.* 1(1): 12–20.

Abstract: An ethnobotanical survey was conducted to collect information about the medicinal plants used by different tribes in Boudh district of Odisha. Information presented in this paper was gathered from various tribes of the district using an integrated approach

of botanical collections and interview schedules. A total of 15 informants were interviewed and 35 ethnomedicinal plant species distributed in 27 families have been documented. Collected information depicts that Boudh tribes largely depend on medicinal plants to meet their primary healthcare needs.

1034. Sahu, R.K., Sahoo, A.K., Sadangi, N., Singh, K. & Nahak, G. 2011. *Ethnomedicinal Plant Resource of Orissa*. Vol. I. *Kalahandi*. New India Publishing Agency, New Delhi.

Abstract: The ethnomedicinal plant species used by the tribals in Kalahandi district of Orissa and the traditional medical practices of the local tribes, conservation of biological resources for sustainable use have been discussed in this book.

1035. Sahu, S.C. & Dhal, N.K. 2010. "Status of threatened medicinal plants in north-west Orissa, Eastern Ghats, India". *Ecol. Environm. Conservation* 16(1): 47–50.

Abstract: The study was carried out in northwest part of Orissa to ascertain the conservation assessment and present status of medicinal plants. It highlights the 2 Critically Endangered, 11 Endangered and 13 Vulnerable species along with their botanical name, voucher specimen number, family name, locality, local name, life-form and distribution.

1036. Sahu, S.C., Dhal, N.C. & Mohanty, R.C. 2009. "Ethnobotanical study of Deogarh district (Orissa) with respect to plants used for treating skin diseases". *Ethnobotany* 21: 46–50.

Abstract: This ethnobotanical study was carried out in different forest pockets of Deogarh district of Orissa. The paper reports 21 plant species belonging to 17 families used in treatment of 11 skin diseases.

1037. Sahu, S.C., Dhal, N.C. & Mohanty, R.C. 2010. "Potential medicinal plants used by the tribals of Deogarh district, Orissa, India". *Ethno-Med.* 4(1): 53–61.

1038. Sahu, S.C., Dhal, N.K. & Mohanty, R.C. 2010. "Folklore claims of a few interesting ferns from Deogarh district, Odisha, India". *Pl. Sci. Res.* 32(1&2): 138–141.

Abstract: A survey of medicinal plants used by the tribal people in Deogarh district, Odisha, is reported. Ethnobotanical study of pteridophytes are very rare in India as a whole and Odisha in particular. An attempt has been made to study the medicinal uses of ferns for different ailments such as skin diseases, stomach problem, rheumatism, common cold, snake bite and insomnia. This paper enumerates 21 fern species with their correct botanical name followed by family name, vernacular names, *locality, field* number, occurrence, parts used, doses and mode of administration in respect to different diseases.

1039. Sahu, S.C., Pattnaik, S.K., Sahoo, S.L., Lenka, S.S. & Dhal, N.K. 2011. "Ethnobotanical study of medicinal plants in the coastal districts of Odisha". *Curr. Bot.* 2(7): 17–20.

Abstract: Ethnobotanical study was carried out in the coastal districts of Odisha during 2010–2011 to document the medicinal utility of plants. The paper deals with traditional uses of 46 plant species belonging to 44 genera and 32 families along with correct botanical identification, local names, parts used and mode of administration in respect to different diseases. The documented ethnomedicinal plants are mostly used to cure skin diseases, diarrhoea, jaundice, piles and urinary troubles.

1040. Saren, A.M., Baske, P.K. & Halder, A.C. 2012. "Observation on ethnobotany of Ujjalpur forest range, Sundargarh Sadar division, Sundargarh district, Orissa". *J. Econ. Taxon. Bot.* 36(1): 1–7.

Abstract: The paper presents the study of ethno-economic importance of 61 plant species belonging to 37 families and 55 genera of Ujjalpur forest range, Sundargarh forest division, Sundargarh district of Orissa. The different plant species available in the locality, used by tribals namely Kondh, Santals, Munda and Oraon are summarised. Scientific name, local names, plant parts used and their ethnobotanical uses are given.

1041. Saren, A.M., Halder, A.C. & Sur, P.R. 2008. "Ethnobotanical study of Kalahandi district, Orissa". *J. Econ. Taxon. Bot.* 32(Suppl.): 72–78.

Abstract: The paper deals ethnobotanically important 52 plant species under 42 genera of Kalahandi district, Orissa. The knowledge and wisdom of different tribals such as Konda, Oraon and Santhal have been summarized. The valid scientific names, vernacular names, plant parts used and their socio-economic uses are documented in the present communication.

1042. Sarkar, N., Rudra, S. & Basu, S.K. 1999. "Ethnobotany of Bangriposi, Mayurbhanj, Orissa". *J. Econ. Taxon. Bot.* 23(2): 525–530.

Abstract: The paper deals with ethnobotanical observations on 45 plant species used in the traditional medicine by the tribals inhabiting Bangriposi P.S., Mayurbhanj district, Orissa. Some interesting and new therapeutic uses of plants have been recorded. Species are arranged alphabetically with their correct botanical name, name of the family, local name, locality of collection with field number and uses.

1043. Satapathy, G.C. 1981. "Some magico-religious beliefs about plants among tribals of Kalahandi district". *Proc. 5th Annual Conf. Orissa Bot. Soc.* p. 28.

1044. Satapathy, K.B. 2001. "Disappearing medicinal plants of Jajpur district: Utilization and Conservation". In: Sahoo, S., Ramesh, D.B., Rao, Y.R., Debata, B.K. & Misra, V.N. (eds.), *Conservation and Utilization of Medicinal and Aromatic Plants*. Allied Publishers Ltd., New Delhi. pp. 53–62.

Abstract: This paper is the result of field studies carried out by the author in Jajpur district of Orissa for the past 11 years (1990–2001). Out of over 1000 species of flowering plants and ferns recorded from the district about 530 species are of medicinal value. Twenty species of commonly important medicinal plants have a good potential for commercial exploitation. Information on 40 medicinal plant species, which are fast depleting in this area have been presented to draw immediate attention for their conservation and protection. These have been enumerated with Sanskrit and Oriya names, parts used and names of Ayurvedic preparations. Some of the medicinal plants that are facing various threats are *Asparagus racemosus, Bacopa monnieri, Centella asiatica, Dalbergia sissoo, Desmodium gangeticum, Eclipta prostrata, Hemidesmus indicus, Sphaeranthus indicus, Pterocarpus marsupium, Pueraria tuberosa, Plumbago indica* and *Rauvolfia serpentina*, which are widely used in the Ayurvedic system of medicine. This paper also examines possible causes of threat to these species and offer suggestions for their proper utilization and conservation.

1045. Satapathy, K.B. 2008. "Interesting ethnobotanical uses from Juang, Kolha and Munda tribes of Keonjhar district, Orissa". *Ethnobotany* 20: 99–105.

Abstract: Ethnobotanical studies on Juang, Kolha and Munda tribes of Keonjhar district of Orissa are presented in this paper. The survey has recorded interesting therapeutic and other folk uses of 50 plant species distributed over 30 families.

1046. Satapathy, K.B. 2010. "Ethnoveterinary practices in Jajpur district of Orissa". *Indian J. Tradit. Knowl.* 9(2): 338–343.

Abstract: Domestic animals comprise the most important part of agricultural economics of Jajpur district of Orissa. Farmers in inaccessible countryside of the district still depend upon plants for curing various animal ailments. Plants of ethnoveterinary importance have been recognized by the folk through a process of experience over hundred of years. The paper deals with 88 plant species belonging 46 families and 86 prescriptions for veterinary medicines in use among tribes and atribes of Jajpur. Ailments covered in the paper include anorexia, bad taste of mouth, bronchitis, cold and cough, colic pain, conjunctivitis, constipation, cracks in palate, cracked nipples, diarrhoea, dysentery, dyspepsia, dysuria, fever, filariasis, flatulence, foot and mouth disease, galactorrhoea, indigestion, mastitis, mump, peptic ulcer, scabies, stomachache, throat infection, yoke wound and swellings. Plants enhancing the milching capacity as well as those adding to the strength and vigour of the livestock have also been included.

1047. Satapathy, K.B. & Brahmam, M. 1999. "Some interesting phytotherapeutic claims of tribals of Jajpur dist. (Orissa), India". *J. Econ. Taxon. Bot.* 23(2): 483–488.

Abstract: Ethnobotanical studies carried out on the tribals of Jajpur district reveal that they are very primitive by all standards and depend on plant remedies for their ailments. The paper describes 42 wild and domesticated species having interesting ethnobotanical applications which might give some clue for evolving new drugs, in near future.

1048. Satapathy, K.B. & Chand, P.K. 2003. "Plants used in healthcare of tribal women and children of Sundargarh district of Orissa". *Pl. Sci. Res.* 25(1&2): 52–57.

Abstract: Ethnobotanical studies in Sundargarh district of Orissa resulted in the recording of many curative uses of plants. This paper deals with ethnobotanical noting on 55 plant species used in traditional medicines by the tribes inhabiting Bisra, Bonai, Kuaramunda, Lathikata, Rajgangpur, Rourkela, Sundargarh and Tangarapali blocks of Sundargarh. Special attention was given to plants used in the well-being of tribal women and children in the remote areas of the district. The enumeration contains correct botanical names followed by synonyms (if any), name of the family, local names, uses, manner of administration and dosage.

1049. Satapathy, K.B. & Panda, P.C. 1992. "Medicinal uses of some plants among the tribals of Sundargarh district, Orissa". *J. Econ. Taxon. Bot., Addit. Ser.* 10: 241–249.

Abstract: The paper deals with ethnobotanical observations on 45 plant species used in traditional medicine by the tribals inhabiting Tangarpali, Rajgangpur, Bisra, Kunarmunda, Bonai, Sundargarh, Lathikata and Rourkela blocks of Sundargarh district in Orissa. Some interesting and new therapeutic uses in respect of a number of plants have been recorded. Species are arranged alphabetically with their correct botanical name followed by synonym (if any), name of the family, local name, locality of collection with field number and uses.

1050. Saxena, H.O. & Dutta, P.K. 1975. "Studies on the ethnobotany of Orissa". *Bull. Bot. Surv. India* 17: 124–131.

Abstract: The paper presents the ethnobotanical observations on 81 plant species, which were recorded during authors' survey in Orissa for over four years. A number of interesting uses for antifertility, medicine, fibre and food are reported, many of which have been found new on comparison with the important published literature on the medicinal and economic plants of the country.

1051. Saxena, H.O., Brahmam, M. & Dutta, P.K. 1979. "Survey of aromatic and medicinal plants in Orissa". *Pl. Sci. Res.* 1(1): 19–20.

Abstract: Nature has gifted the ancient land of Orissa with enormous natural resources. The wide range of edaphic and climatic conditions of the state have favoured the development of a rich and varied flora, which includes a variety of aromatic and medicinal plants. Some of these have potentiality for commercial exploitation. But, in order to plan their proper utilization a systematic survey, both quantitative and qualitative

is urgently needed. The following programme of research as has been undertaken by the Regional Research Laboratory, Bhubaneswar for the last over seven years may be useful for the state.

1052. Saxena, H.O., Brahmam, M. & Dutta, P.K. 1981. Ethnobotanical studies in Orissa. In: Jain, S.K. (ed.), *Glimpses of Indian Ethnobotany*. Oxford & IBH Publ. Co., New Delhi. pp. 232–244.

Abstract: Ethnobotanical observations on 83 plant species recorded during the survey in Orissa are given. The species are arranged alphabetically, giving details of local name, local use, locality and field number. Most of the uses for antifertility, medicine and food reported in this paper have been found to be new on comparison with the important published literature on the medicinal and economic plants of the country.

1053. Saxena, H.O., Brahmam, M. & Dutta, P.K. 1988. "Ethnobotanical studies in Simlipahar forests of Mayurbhanj districts (Orissa)". *Bull. Bot. Surv. India* 30: 83–89.

Abstract: Similipahar forests in Mayurbhanj district of Orissa are among the most luxuriant and valuable forests of the state. The area is distinctive for its pristine wilderness. Only a small population of aboriginal tribes inhabits the area. A systematic survey of the forests carried out by the authors for over a period of four years has resulted in the findings of a number of tribal uses of the plants. The interesting ones, covering 67 species of vascular plants, which are not recorded in the important published literature on the medicinal and other economic plants of the country, are reported in the paper.

1054. Saxena, H.O., Brahmam, M. & Dutta, P.K. 1991. Ethnobotanical studies in Orissa. In: Jain, S.K. (ed.), *Contribution to Ethnobotany of India*. Scientific Publishers, Jodhpur. pp. 123–135.

1055. Sen, R., Pal, D.C. & Roy, B. 1984. "Botany and ethnobotany of *Parashi*". *J. Econ. Taxon. Bot.* 5(4): 857–858.

Abstract: Ethnobotanical uses of "Parishi", botanically known as *Cleistanthus collinus* (Roxb.) Benth. & Hook.f. in respect of medicine, poison, charm and for the purposes of other material culture among the ethnic group of Bihar, Orissa and West Bengal have been reported in the paper.

1056. Sen, R., Pal, D.C. & Soren, A.M. 1983. "Traditional uses and ethnobotany of 'Kuchila'". *J. Econ. Taxon. Bot.* 4(2): 575–578.

Abstract: 'Kuchila' and 'Chhotokuchila' are botanically known as *Strychnos nux-vomica* L. and *S. potatorum* L.f., respectively. Ethnobotanical and folk uses of these plants, such as medicinal, application of poison, as charm, clearing and purifying drinking water in respect of Bihar, Orissa and West Bengal states have been reported.

1057. Sen, S.K. & Behera, L.M. 2002. Ethnomedicinal plants used against a common form of diarrhea of infants in Bargarh district, Orissa. In: Sahoo, S., Ramesh, D.B., Panda, P.K. & Misra, V.N. (eds.), *Proceedings of the National Seminar on Plant Resources Utilization for Backward Area Development.* Allied Publishers Pvt. Ltd., New Delhi. pp. 90–91.

Abstract: The paper deals with nine ethnomedicinal plants used in the treatment of a type of diarrhoea, locally known as 'churna' often seen in infants of west Bargarh district in western Orissa.

1058. Sen, S.K. & Behera, L.M. 2003. "Ethnomedicinal plants used against skin diseases at Bargarh district in Orissa (India)". *Ethnobotany* 15(1&2): 90–96.

Abstract: The ethnobotanical study was carried out mostly in Barapahad hills and Gandhamardan hills of Bargarh district. The dominant ethnic communities involved in using medicinal plants in the district are Sahanra (Soara), Binjhal, Gond and Kondha. This paper deals with 78 ethnomedicinal plants belonging to 47 families.

1059. Sen, S.K. & Behera, L.M. 2007. "Ethnomedicinal plants used in touch therapy at Bargarh district in Orissa". *Ethnobotany* 19 (1&2): 100–104.

Abstract: Plants used by tribals in touch therapy have been enumerated. Touch therapy is an old practice among the tribals and other rural people in Bargarh district of Orissa. In this therapy locally available plant species are used for the prevention and/or cure of the diseases. The tribals such as Sahanra, Binjhal, Kondh and Gond were contacted and the information on 40 plant species belonging to 30 families from different pockets was documented. This knowledge has not been recorded earlier from the reported site.

1060. Sen, S.K. & Behera, L.M. 2008. "Ethnomedicinal plants used by the tribals of Bargarh district to cure diarrhoea and dysentery". *Indian J. Tradit. Knowl.* 7(3): 425–428.

Abstract: The tribals and other rural communities residing in and around the forests in Bargarh district of Orissa mostly depending on the vegetation around them for the prevention as well as treatment of diseases. First-hand information on ethnomedicinal uses of plants, their doses and mode of administration have been collected from the local traditional medicine practitioners as well as experienced old men and women. The paper deals with 35 ethnomedicinal plants used by the tribals for the treatment of diarrhoea and dysentery in Bargarh district. The tribals of the district, who were interviewed, include Sahanra, Binjhal, Gond and Kondh, besides some other minor communities.

1061. Sen, S.K. & Behera, L.M. 2009. "Traditional use of herbal medicines against headache and migraine by the tribals of Bargarh district of Orissa". *Ethnobotany* 21:127–130.

Abstract: Ethnobotanical studies were carried out in different tribal areas of Bargarh district. During survey, the tribals and other rural communities were interviewed to record information regarding their lifestyle, tradition, culture and medicinal uses of the plant species. Out of a number of plants used by these tribals for treatment of various ailments, 30 plants are used to treat headache and migraine. The local name(s), locality and collection number along with part(s) used and mode of administration for treatment of headache and migraine are presented in the paper.

1062. Sen, S.K. & Behera, L.M. 2013. "Ethnomedicinal practices for mother and childcare in Western Orissa, India". *Advances Pl. Sci.* 26(11): 425–428.

Abstract: Out of 30 districts in Odisha, western Odisha comprises of 10 districts, namely Bargarh, Bolangir, Boudh, Deogarh, Jharsuguda, Kalahandi, Nuapada, Sambalpur, Subarnapur and Sundargarh. The districts are rich with varieties of plants in their hills and forests. The main tribes include Bhuiyan, Binjhal, Gond, Kharia, Kisan, Kondh, Munda, Oran and Sahanra (Saora). They use different plants by themselves or in consultance with the local herbal medicinal practitioners for treatment of different ailments. This paper highlights the plants used by them for mother and childcare. The botanical name with family name, local names, locality and collection number, methods of preparation, usage and mode of administration of drugs for treatment of corresponding ailments and disorders of mother and childcare have been discussed.

1063. Sen, S.K. & Behera, L.M. 2014. "Ethno-medico-religious information on some plants used by the tribals of Bargarh district in western Odisha (India)". *Ethnobotany* 26: 52–57.

Abstract: This study has been conducted among the tribals of Bargarh district in western Odisha. The district is endowed with rich forests and hill ranges with rich flora. Sahanra (Saora), Binjhal, Kondh and Gond are the main tribes in the district. The tribals living in the forest areas depend on the forest flora for their livelihood. They believe in supernatural power and use folk medicines for the treatment of diseases. This study is based on 37 plant species utilized by these tribals of Bargarh district for curing various diseases with medico-religious beliefs.

1064. Sen, S.K. & Behera, L.M. 2014. "Traditional use of some ethno-medicinal plants of Lamiaceae family in Bargarh district of Odisha (India)". *Advances Pl. Sci.* 27: 401–404.

Abstract: The paper presents 12 medicinally important plant species belong to 10 genera of family Lamiaceae. A survey was carried out in different parts of Bargarh district to gather information regarding the use of medicinal plants by the different tribals and people of other communities settled in the district. A list of plant species along with their botanical name, English name, local names, and the mode of administration has been enumerated.

1065. Sen, S.K. & Behera, L.M. 2015. "Roots root out diseases: A study on ethnomedicinal uses of root in Bargarh district of Odisha (India)". *Indian Res. J. Pharm. Sci.* 5: 123–129.

1066. Sen, S.K. & Behera, L.M. 2015. "Ethnomedicinal uses of plants related to delivery problem in Bargarh district of western Odisha". *Int. J. Herbal Med.* 2 (5): 31–33.

Abstract: An ethnobotanical survey was carried out in remote villages of Bargarh district of western Odisha. The investigation provides information on ethnomedicinal uses of 14 plants used by the tribal and rural people of Bargarh district of western Odisha against delivery problem. Out of many plant species traditionally used by the villagers as medicine, 14 plant species belonging to 14 genera and 10 families are identified and their uses are described for treatment for smooth delivery, postnatal pain, back pain and postnatal weakness.

1067. Sen, S.K. & Behera, L.M. 2015. "*Haldina cordifolia* (Roxb.) Ridsd., a sacred medicinal plant its conservation through traditional culture and religious beliefs by some tribes of western Odisha". *Int. J. Ethnobiol. Ethnomed.* 1(1): 1–4.

Abstract: Traditional knowledge, culture and religious beliefs of tribal communities play significant role in conservation of biodiversity. It has been observed that the local culture, sprit, social and ethical principles possessed by local people have often been the determining factors for sustainable use and conservation of biodiversity. The floristic diversity of western part of Odisha is very vast and includes valuable plant species of ethical and economic importance. Some of the plants are worshipped by tribals of western Odisha in different occasions. *Haldina cordifolia* (Roxb.) Ridsdale is one among them; it is locally called Halan, and used as an important sacred medicinal plant. The plant has a great timber value and also has number of ethnomedicinal uses as utilized by the tribal and other rural people of this region. In this paper, an attempt has been made to highlight the conservation of Halan by some of the tribes such as Binjhal, Gond, Kondh, Kharia, Kisan and Kol of western Odisha.

1068. Sen, S.K., Pattnaik, M.R. & Behera, L.M. 2013. "Ethnomedicinal plants used to cure scorpion sting by the people of Bargarh district in Odisha (India)". *Int. J. Inst. Pharm. & Life Sci.* 3(5):1–9.

Abstract: Herbal medicines are used widely by the rural people, as they are readily available in the vicinity of their homes. A field survey was conducted in the rural areas of Bargarh district for studying the medicinal plants used by the local inhabitants. During the course of ethnobotanical exploration a number of plant species have been collected which are used for treatment of various ailments. The survey was carried out with the cooperation of local traditional healers. Insect bites are very common in the fringing forest villages. This paper deals with the plant species, which are used by the rural inhabitants to get relief from scorpion sting.

1069. Sen, S.K., Pattnaik, M.R. & Behera, L.M. 2015. "Ethnomedicinal uses of plants related to delivery problem in Bargarh district of western Odisha". *Int. J. Herbal Med.* 2(5): 31–33.

Abstract: An ethnobotanical survey was carried out in remote villages of Bargarh district of western Odisha. The investigation provides information on ethnomedicinal uses of plants used by the tribal and rural people of Bargarh district of western Odisha against delivery problems. Out of many plant species traditionally used by the villagers as medicines, 14 plant species belonging to 14 genera and 10 families are identified and their uses are described for treatment for smooth delivery, post-natal pain, back pain and post-natal weakness.

1070. Sen, S.K., Pradhan, N.B. & Behera, L.M. 2000. "Ethnomedicinal plants used against jaundice at Bargarh district in Orissa (India)". *Advances Pl. Sci.* 13(1): 329–330.

Abstract: The paper provides information on the seven species of medicinal plants used against jaundice by the people of Bargarh district; the information was gathered during number of field trips conducted in different localities of the district. Voucher specimens are deposited in the herbarium of Panchayat College, Bargarh, Orissa.

1071. Sen, S.K., Pradhan, N.B. & Behera, L.M. 2001. "Ethnomedicinal plants used against diabetes at Bargarh district in Orissa (India)". *Bull. Bot. Surv. India* 43: 195–197.

Abstract: This paper deals with 11 plant species of ethnomedicinal value that have been used to manage diabetes by the people residing in the forests of Barapahad and Gandhamardan hills in Bargarh district, Orissa. The data presented in this paper have been collected by personal contact with different medicine men. Voucher specimens are deposited in the herbarium of Botany Department, Panchayat College, Bargarh, Orissa.

1072. Sen, S.K., Pradhan, N.B. & Behera, L.M. 2001. "Ethnomedicinal plants used against dysurea at Bargarh district in Orissa". *Advances Pl. Sci.* 14: 459–462.

Abstract: This paper deals with 20 ethnomedicinal plants commonly used against dysurea by the people of Bargarh district in Orissa. During the survey the information regarding the medicinal uses of the plants were gathered from the local inhabitants. It has been observed that the people use different parts of these plants as medicine in crude form and they have also a strong faith on the efficacy of these crude medicines. The collected plant species are preserved in the herbarium of Botany Department, Panchayat College, Bargarh, Orissa.

1073. Sen, S.K., Sahu, P. & Behera, L.M. 2010. "Effect of *Pergularia daemia* (Forssk.) Chiov. leaf latex in the treatment of jaundice at Bargarh district in Orissa". *Indian J. Tradit. Knowl.* 9(4): 775–778.

Abstract: *Pergularia daemia*, locally called 'Uturli', is a climber having pubescent, opposite leaves, containing milky latex. Found in waste, neglected places near domestic area is used in several diseases such as asthma, ammenorrhoea, abortion, scorpion bite, fits, smooth delivery, rheumatism, diarrhoea, piles, boils, oedema, headache, emetic in bronchial congestion, muscular pain in animals and eye diseases in cattle. The work is based on its herbal medicinal use against jaundice in Bargarh district, Orissa.

1074. Sen, S.K., Pradhan, R., Pattnaik, M.R. & Behera, L.M. 2012. "Traditional knowledge of medicinal plants against birth control by the tribal and other rural people of Bargarh district in western Odisha, India". *Global J. Res. Med. Pl. Indigen. Med.* 1(12): 670–677.

Abstract: Bargarh is one of the ten districts of western part of Odisha covering a land area of 5837 km^2 and is the natural treasure of a large number of plants. Many of these plants have ethnobotanical uses. A survey of the medicinal plants in different forest pockets and rural areas of Bargarh district was undertaken during 2006–2008. This work relates to the study of medicinal plants used by the tribals and other rural people of Bargarh district. The information has been collected by personal contact with these people. It reveals that 20 plant species belonging to 20 genera and 16 families are used by them for temporary or permanent birth control either as contraceptive or abortifacient. The plant parts used, mode of drug preparation and their doses are discussed.

1075. Senapati, P.K., Verma, K.K., Rout, B. & Panda, P.K. 2002. Potential of non-traditional pulses and their post-harvest processing for rural food security in Orissa. In: Sahoo, S., Ramesh, D.B., Panda, P.K. & Misra, V.N. (eds.), *Proceedings of the National Seminar on Plant Resources Utilization for Backward Area Development*. Allied Publishers, New Delhi. pp. 36–45.

Abstract: More than 25 species of non-traditional or less known or local pulses are cultivated in the backward KBK districts namely Balangir, Kalahandi, Rayagada, Koraput, Navarangapur and Malkangiri, mostly by the tribal cultivators. *Atylosia cajanifolia, Phaseolus lunatus, P. calcaritus, Dolichos lablab* and *Vicia bithynica* are the five major non-traditional pulses. The equipments and techniques developed to safely protect the pulses from spoilage are provided in detail.

1076. Senapati, S.K., Misra, M.K. & Kara, T.C. 2001. "Ethnomedicinal studies of Mahendragiri range of hills, Eastern Ghats: A case study of Jeerango Gram Panchayat". *EPTRI–ENVIS Newslett.* 7(1): 2–4.

Abstract: Identification, characterization and description of ethnomedicinal uses of 16 plants and 2 animals in Jeerango Gram Panchayat, 35-km away from Paralakhemundi, Gajapati district are provided in the paper.

1077. Shadangi, A.K., Panda, R.P. & Patra, A.K. 2012. "Ethnobotanical studies of wild flora at G. Udayagiri forest in Eastern Ghats, Odisha". *IOSR – J. Environm. Sci., Toxicol. Food Technol.* 2(2): 25–37.

Abstract: Ethnobotanical studies on diversity patterns and their economic importance during 2009–2011 have been surveyed. The documentation of data based on taxonomical status of useful flora and their economic importance have been established. A total of 120 potent species belonging to 23 orders and 55 families have been documented and 37 valuable species have been identified. This study also precautioned to take immediate step to conserve these precious resources before these get extinct.

1078. Sharma, A.K. & Biswal, A.K. 2008. "Traditional phytotherapeutic uses among the Santal Tribes in four villages of Mayurbhanj, Orissa". *Pl. Sci. Res.* 30(1&2): 65–69.

Abstract: Mayurbhanj, one of the tribal dominated districts of Orissa, lies between 21°17'–22°34' N and 85°40'–87°10' E. This district has been divinely gifted with Similipal, a place having rich biodiversity. The phytotherapeutic uses of plants by the Santals of Mayurbhanj need some special attention as some potential medicinal plants of Similipal and its vicinity are going to be extinct. This paper deals with 32 angiospermic species along with their phytotherapeutic uses and their future utility.

1079. Sharma, P.C., Murty, K.S., Bhat, A.V., Narayanappa, D. & Kishore, P. 1985. "Medicinal folklore of Orissa – I: Skin diseases". *Bull. Med.-Ethno-Bot. Res.* 6: 93–101.

1080. Sharma, P.C., Murty, K.S., Bhat, A.V., Narayanappa, D. & Kishore, P. 1986. "Medicinal folklore of Orissa – II: Gastrointestinal disorders". *Bull. Med.-Ethno-Bot. Res.* 7: 26–40.

1081. Singh, H. 2012. "Traditional phytotherapy for the treatment of hydrocele in Odisha, India". *Ancient Sci. Life* 31(3): 137–140.

Abstract: This paper deals with the unknown traditional uses of 15 plant species for the treatment of hydrocele, collected from 27 tribal groups ofthe Sundargarh, Mayurbhanj, Angul, and Balangir districts of Odisha. These ethnomedicinal uses were compared and cross-checked with the data mentioned in the well-known, standard, Indian ethnomedicinal as well as medicinal literatures and it was found that these medicinal uses of the referred plants had not been reported earlier.

1082. Singh, H. 2012. "*Chlorophytum arundinaceum* Baker ('Nepayee'): A little known wild edible plant with indigenous method of cooking in Angul district, Odisha, India". *J. Econ. Taxon. Bot.* 36(4): 777–780.

Abstract: The paper highlights the little-known edible uses of *Chlorophytum arundinaceum* Baker (Liliaceae) with indigenous method of cooking by tribal as well as rural people in Angul district of Odisha.

1083. Singh, H. 2012. "Less known ethnomedicinal uses of some plants from Sundargarh, Mayurbhanj, Angul and Balangir districts of Odisha, India". *Nelumbo* 54: 172–181.

Abstract: This paper enumerates ethnomedicinal uses of 68 plant species belonging to 63 genera and 40 families, collected from Sundargarh, Mayurbhanj, Anugul and Balangir districts of Odisha that have not been reported earlier.

1084. Singh, H. 2013. "Ethnomedicinal uses of some wild flowers in Sundargarh, Mayurbhanj, Angul and Bolangir districts of Odisha". *Ethnobotany* 25: 115–119.

Abstract: A total of 314 plant species were documented during the ethnobotanical studies of 165 tribal villages among the 28 tribal groups inhabiting in the remote and forest areas of Sundargarh, Mayurbhanj, Angul and Bolangir districts of Odisha. Of these, 29 wild flowers belonging to 20 families used in the treatment of different disorders by the tribal and rural people are presented in this paper. Most of the uses are either new or interesting.

1085. Singh, H. & Krishna, G. 2011. *Chlorophytum arundinaceum* (Asparaaceae) leaves used as vegetable in Angul district, Odisha. *ENVIS Newslett.* 16(2): 2.

Abstract: The leaves of *Chlorophytum arundinaceum* locally known as ´Nepayee´ or ´Musali´ are eaten as a leafy vegetable by the local people and various tribal communities of Angul district in Odisha.

1086. Singh, H. & Krishna, G. 2012. "Unreported ethnomedicinal uses of some plants in Angul district, Odisha (India)". *Ethnobotany* 24: 86–91.

Abstract: An account of new ethnomedicinal uses of 40 plant species from different tribal groups of Angul district of Odisha is reported in this paper. The report is an outcome of ethnobotanical survey of 55 villages amongst 27 tribal groups and a comparative study of collected data with well-known published medicinal and ethnobotanical literature.

1087. Singh, H. & Krishna, G. 2012. "Ethnobotanical observations on Angul district of Odisha, India". *J. Econ. Taxon. Bot.* 36(4): 781–808.

Abstract: An account of ethnobotanical uses of 231 species belonging to 79 families and 195 genera gathered from different tribal and rural people of Angul district of Odisha has been dealt in this paper. These data are outcome of ethnobotanical survey amongst 16 tribal and 11 non-tribal communities in 55 villages of 4 subdivisions of the district. Angul district is rich in floristic as well as ethnic diversity; 49 tribal communities reside in or around the forest of the district and depend mainly on forest resources for daily requirements such as food, fodder, fibre, wood, medicines, gum and dye. The first-hand ethnobotanical information collected from Angul district are being enumerated

with their botanical name, family, local name(s), locality and voucher number, followed by detailed method of preparation and mode of uses.

1088. Singh, H., Baske, P.K. & Saravanan, R. 2014. "Ethnobotanical observations on Balangir district, Odisha, India". *J. Econ. Taxon. Bot.* 38: 40–73.

Abstract: This paper deals with an account of 587 ethnobotanical uses of 264 plant species belonging to 102 families and 205 genera, collected from different tribal and rural people of Balagir district of Odisha. These data are outcome of extensive ethnobotanical surveys among 8 major tribal groups and 17 non-tribal communities in 85 villages under 3 subdivisions of the district; 43 tribal groups and many rural communities reside in and around the forests of the district and depend mainly on plant resources for their daily requirements such as food, fodder, fibre, fuel, medicine, wood, gum and dye. These first-hand ethnobotanical data are being enumerated with their botanical name, family, local name(s), locality and voucher number(s), followed by ethnobotanical uses collected from field study and from already published literature.

1089. Singh, H., Krishna, G. & Baske, P.K. 2010. "Plants used in the treatment of joint diseases (rheumatism, arthritis, gout and lumbago) in Mayurbhanj district of Odisha, India". *Report & Opinion* 2(9): 22–26.

Abstract: During the ethnobotanical survey of Mayurbhanj district, about 380 uses of plants have been recorded for various purposes. Of these, 23 plant species belonging to 22 genera and 18 families are being used in the treatment of joint diseases (rheumatism, arthritis, gout and lumbago) by the tribal and non-tribal people of the district. These plants are arranged alphabetically with their family, local name(s), locality, and method of preparation and mode of uses for the treatment of rheumatism with collection number(s).

1090. Singh, H., Krishna, G. & Baske, P.K. 2010. "Traditional phytotherapy for leucorrhoea in Mayurbhanj district, Odisha". *Ethnobotany* 22: 128–131.

Abstract: This paper deals with 15 plant species belonging to 13 families being used traditionally by the tribal and rural people of Mayurbhanj district of Odisha, for the treatment of leucorrhoea (Prameh). These plants are listed alphabetically with thier family name, local name(s), locality and method of preparation and mode of uses with collection number(s).

1091. Singh, H., Krishna, G. & Baske, P.K. 2013. "Ethnomedicinal plants used for dental care in Sundargarh district, Angul and Balangir districts of Odisha, India". *Indian J. Nat. Prod. Resources* 4(4): 419–424.

Abstract: The paper deals with 31 plant species belonging to 29 genera and 20 families comprising 40 ethnomedicinal uses for dental care (tooth ache, tooth decay, pyorrhoea,

foul smell and as tooth brush) by different tribal and rural people in Sundargarh, Mayurbhanj, Angul and Balangir districts of Odisha. These uses were compared and cross-checked with the published ethnomedicinal data from Odisha and other states of the country and found that 12 uses of the referred plants had not been reported earlier. These plant species are arranged alphabetically with their botanical names, family and local name(s), followed by the method of uses for dental care along with field collection number(s) and uses cited by earlier workers.

1092. Singh, H., Krishna, G., Baske, P.K. & Saravanan, R. 2012. *Chlorophytum arundinaceum* (Asparaaceae) leaves used as vegetable in Angus district, Odisha. *ENVIS Newslett.* 17(2): 6.

Abstract: The fresh shoots of *Dendrocalamus strictus* (Roxb.) Nees, locally known as ´Salia Banse´ are sold in the local markets of Angul and Balangir districts of Odisha as ´Kardi´ consumed as an energetic and tasty vegetable during rainy season by the tribal as well as rural people of the districts.

1093. Singh, H., Dhole, P.A., Baske, P.K. & Saravanan, R. 2015. "Ethnobotanical observations on Deogarh district, Odisha, India". *J. Econ. Taxon. Bot.* 39: 223–265.

Abstract: This paper deals with an account of 1,010 ethnobotanical uses of 393 plant species belonging to 110 families and 395 genera, collected from different tribal and rural people of Deogarh district of Odisha. These data are outcome of extensive ethnobotanical surveys among 11 major tribal groups and many non-tribal communities in 83 villages under 4 subdivisions of the district; 32 tribal groups and many rural communities residing in and around the forests of the district and depend mainly on plant resources for their daily requirements such as food, fodder, fibre, fuel, medicine, wood, gum and dye. These first-hand ethnobotanical data are being enumerated with their botanical name, family name, habit, local name(s), locality and voucher number(s), followed by ethnobotanical uses collected from field study as well as from already published literature.

1094. Singh, H., Baske, P.K., Saravanan, R. & Dhole, P.A. 2015. Traditional uses and marketing of crude oleoresin (Jhuna) of *Shorea robusta* (Dipterocarpaceae) by tribes in Odisha. *ENVIS Newslett.* 20(1): 5.

Abstract: The brownish and whitish shining crude resin locally known as ´Jhuna´, ´Jhunda´ or ´Ral´ in local dialect collected from the trunk of *Shorea robusta* C.F. Gaertn., locally known as ´Sad´, ´Rengal´, ´Sal´, ´Sargi´, ´Sarjam´, ´Sarjom´ is used as incense (´Dhuna´) during worship or other rituals in the tribal areas of Odisha. It is also burnt to repel mosquitoes and other flies and a charcoal paste prepared after burning the resin is applied as Kajal.

1095. Singh, H., Krishna, G., Saravanan, R., Dhole, P.A. & Baske, P.K. 2014. Handia – The indigenous rice beer of tribals in Odisha. *ENVIS Newslett.* 19(1): 4.

Abstract: It provides the method of preparation of an ethnic fermented drink or rice beer, locally known as ´Handia´, prepared by the various tribal communities of Mayurbhanj, Sundargarh, Deogarh and Angul districts of Odisha.

1096. Sinha, R. & Lakra, V. 2005. "Wild tribal food plants of Orissa". *Indian J. Tradit. Knowl.* 4(3): 246–252.

Abstract: Three tribal dominated districts of Orissa, namely Kheonjhar, Mayurbhanj and Dhenkenal were studied for plant consumption pattern in five tribal groups. Data were collected through PRA exercises and interview schedules. The study identifies leaves (50 types), fruits (46 types), flowers (11 types), tubers (14 types) and gums (5 types) consumed by the tribal population. The potential nutritive value of these plants has been discussed.

1097. Srivastava, S.C. & Rout, N. 1994. "Some plants of ethnopaediatric importance in district Koraput, Orissa". *Bull. Bot. Surv. India* 36: 166–168.

Abstract: Ethnobotanical studies among the Kondh of Koraput district of Orissa state envisaged that some of the herbal medicines are specifically prescribed for children by local medicine men or medicine woman. A total of 18 such species, including *Crotalaria juncea* L., *Elephantopus scaber* L., *Gardenia gummifera* L., *Diospyros melanoxylon* Roxb. and *Bambusa tulda* Roxb. are discussed in this paper.

1098. Subudhi, H.N. & Choudhury, B.P. 1989. "Ethnobotanical studies in the district of Phulbani (Orissa) – I". *Bio-Sci. Res. Bull.* 1(1&2): 26–32.

1099. Subudhi, H.N., Choudhury, B.P. & Acharya, B.C. 1992. "Some potential medicinal plants of Mahanadi delta in the state of Orissa". *J. Econ. Taxon. Bot.* 16(2): 479–487.

Abstract: Of the various socio-economic aspects of mangroves, in the present treatment medicinal properties of 36 species coming under the category of true mangrove and a few semi-mangals have been highlighted. In this alphabetical list the correct names followed by the synonyms appearing in 'The Botany of Bihar and Orissa', name of the family, mode of use and locality of collection have been provided. The socio-economic importance of mangroves may generate awareness among the common people for protection and judicious utilization of these life-forms.

1100. Sur, P.R. & Halder, A.C. 2004. "Ethnobotanical study of Sambalpur district, Orissa, India". *J. Econ. Taxon. Bot.* 28(3): 573–584.

Abstract: This paper presents the study of ethno-economic importance of 130 plant species under 112 genera of Sambalpur district, Orissa. The different plants available in the locality used by the tribals such as Munda, Kharia, Kisan, Oraon, Bhumij and

Santal are summarized. The scientific names, vernacular names, plant parts used and their ethnobotanical uses are also given.

1101. Sur, P.R. & Halder, A.C. 2010. "Observation on the ethnobotany of Keonjhar district, Orissa". *J. Econ. Taxon. Bot.* 34(4): 908–919.

Abstract: The paper presents the study of ethnobotanical importance of 104 plant species under 95 genera and 52 families of Keonjhar district, Orissa. The different plant species available in this locality used by the tribals are summarized. The scientific names, vernacular names, plant parts used and their ethnobotanical and ethnomedicinal uses are also given.

1102. Sur, P.R., Halder, A.C. & Saren, A.M. 2007. Kasru-konda and Mal-velua – Two less known edible plant parts from Kalahandi district, Odisha. *ENVIS Newslett*. 12(1&2): 6.

Abstract: The chemical constituents and nutritive values of *Schoenoplectus grossus* (L.f.) Palla (Cyperaceae) and *Anacardium occidentale* L. (Anacardiaceae) are provided in this paper. These two edible plant parts are sold in a market at Bhawanipatna in Kalahandi district, Orissa, and are locally known as ´Kasru-konda´ and ´Mal-velua´, respectively.

1103. Sur, P.R., Saren, A.M. & Halder, A.C. 2009. *Celastrus paniculatus* Willd. (Celastraceae) – A source for the treatment of diabetes among the tribals of Sambalpur district, Orissa. *ENVIS Newslett.* 14(2): 7.

Abstract: The ´ping oil´ extracted from the seeds of *Celastrus paniculatus*, locally known as ´Korsana´, ´Malkangni´, ´Pengnavbadhu´ and ´Ping´ is used by the tribals of Samalpur district in Orissa for the treatment of diabetes.

1104. Sur, P.R., Baske, P.K. & Halder, A.C. 2011. "A contribution to the ethnobotany of Rayagada district, Orissa". *J. Econ. Taxon. Bot.* 35(1): 6–16.

Abstract: This paper deals with the study of ethnobotanical importance of 104 plant species under 96 genera of Rayagada district, Orissa. The different plant species available in this locality, and used by the tribes such as Kond, Saora, Paroja, Kondadora, Munda, Gadhaba, Kandha Gauda, Koya, Kolah Loharas, Santal, Kharia, Gond, Bathudi, Bhumia and Oraon are summarized. The scientific names, vernacular names, locality, plant parts used and their ethnobotanical uses are also given.

1105. Swain, B.K. & Dash, S.K. 2007. *Visual guide to wild medicinal plants of Orissa*. State Medicinal Plants Board, Govt. of Orissa.

Abstract: This book is a compilation of 216 species of medicinal plants found in Orissa in wild, providing description and medicinal properties of different parts of these plants. Different names of the same plant are used in local vernacular, in trade, in Ayurvedic

system, and botanical nomenclature have also been provided in this book for easy identification of these plants.

1106. Thatoi, H.N., Panda, S.K. & Dutta, S.K. 2008. "Phytochemical and Antimicrobial Evaluation of three Medicinal plants from Similipal: A Note". *Pl. Sci. Res.* 30(1&2): 48–51.

Abstract: Since the advent of modem drug treatments, traditional medicine has greatly receded in occidental to modem societies. So far only a limited number of medicinal plants have received detailed scientific scrutiny, thereby prompting the World Health Organization (WHO) to recommend that this area be comprehensively investigated. In the present experiment extracts were prepared from three medicinal plants, viz., *Cassia fistula, Vitex negundo* and *Asparagus racemosus* from Simlipal Biosphere Reserve, Orissa taking both polar and nonpolar solvents such as Petroleum Ether (PE), Chloroform (CL), Ethanol (EOH), Methanol (MeOH) and aqueous solvent using Soxhlet apparatus. These extracts were screened for the presence of phytochemicals and antimicrobial properties against some gram positive and gram negative pathogenic organisms such as *Escherichia coli, Pseudomonas aeroginosa, Bacillus subtilis, Staphylococcus aureus* and one fungus *Candida krusei***.**

1107. Tribedi, G.N., Kayal, R.N. & Rai Chaudhuri, H.N. 1982. "Some medicinal plants of Mayurbhanj (Orissa)". *Bull. Bot. Surv. India* 24: 117–120.

Abstract: The paper deals with fifty species of medicinal plants collected from Nilgiri hills, Kaptipada, Poradiha and Bhanjabasa in Mayurbhanj (Orissa), indicating their unrecorded local medicinal uses.

1108. Tripathy, B.K., Panda, T. & Mohanty, R.B. 2014. "Traditional artifacts from *Bena* grass [*Chrysopogon zizanioides* (L.) Roberty] (Poaceae) in Jajpur district of Odisha, India". *Indian J. Tradit. Knowl.* 13(4): 771–777.

Abstract: The paper reports the utility of a common wetland plant, 'Bena' in traditional craft making in some rural pockets of Jajpur district of Odisha. The field survey was conducted during the year 2010–2012 to access the present status of this unique plant based craft as well as the condition of the artisans involved in this craft making. Data were collected through interview with elderly artisans of the area of study. The result revealed that making artifacts from *Bena* is exclusively the hand work of female folk belonging to Scheduled Caste and Scheduled Tribe Communities. Most of these artisans are either daily wage labourers or marginal farmers while making such craft is their secondary occupation. They collect the raw material, i.e., Bena stem from the nearby field, process it and make around two hundred varieties of attractive craft items both for traditional use in socio-religious rituals and as modern lifestyle accessories. These artifacts are appreciated for their intricate design and glazing golden yellow colour.

The existing conditions of this folk craft as well as the artisans were analysed. Some remedial measures are suggested to save this endangered craft from oblivion.

1109. Tripathy, N.K. & Behera, N. 2007. "Ethnobotany of fibre usages in Bolangir district of Orissa". *Advances Pl. Sci.* 20: 559–562.

Abstract: A total of 57 wild plant species distributed among 50 genera and 25 families are used as fibre in Bolangir district. For roof purpose, members of Poaceae with long and durable leaves are chosen. Annuals are selected for bark extraction, while stems of climbers are preferred for cordage. Maximum number of species flowers from July to October, which corresponds to the minimum fibre extraction period. Stems of *Rotula aquatica, Hemidesmus indicus, Tamarix ericoides, Cryptolepis sinensis*, ripe dry fruits of *Luffa*, immatured and aborted fruits of *Oryza sativa* and other species, coralloid type root of *Phoenix sylvestris* and ramenta of *Borassus flabellifer* are intersting reports for water enduring fibre uses. The auspicious and rare use of silky thread drawn from the latex of *Nelumbo nucifera* pedicels and petioles impress to examine it as a resource plant for silk fibre.

1110. Tripathy, N.K. & Behera, N. 2008. "Traditional methods of crop protection used in Bolangir district of Orissa". *Ethnobotany* 20: 147–149.

Abstract: Nine plant species belonging to different families, used for different crop protection processes in Bolangir district of Orissa are reported. Specific uses of *Shorea robusta, Haldina cordifolia, Albizia lebbeck, Cleistanthus collinus* and *Perilla ocymoides* for crop protection are reported. Special attention is drawn to the interesting use of cow dung, skull bones of dead cows and a seed sowing process 'Khardi' for further research and development in the subject of plant protection.

1111. Yoganarasimhan, S.N. & Dutta, P.K. 1970. "Medicinal plants of Orissa – Plants in and around Bhubaneswar". *Nagarjun* 13: 15–20.

1112. Yoganarasimhan, S.N. & Dutta, P.K. 1972. "Medicinal plants of Orissa – A preliminary survey of Simlipahar forests, Mayurbhanj district, Orissa". *Nagarjun* 15: 25–27.

ABBREVIATION OF JOURNALS

The titles of journals have been standarised following Botanico-Periodicum-Huntianum (Lawrence & al., 1968), B-P-H/Supplementum (Bridson & Smith, 1991) and BPH2: Periodicals with Botanical Content (Bridson, 2004). The journals which are not in BPH and its Supplements have been abbreviated as suggested in the journals, or as per the rules of B-P-H.

Adibasi	:	Adibasi
Advances Pl. Sci.	:	Advances in Plant Sciences
Agric., Ecosyst. Environm.	:	Agriculture, Ecosystems & Environment
Algae	:	Algae
Algol. Stud.	:	Algological Studies
Amer. J. Ethnomed.	:	American Journal of Ethnomedicine
Amer. J. Phytomed. Clinic. Therap.	:	American Journal of Phytomedicine and Clinical Therapeutics
Ancient Sci. Life	:	Ancient Science Life
Ann. Ayurvedic Med.	:	Annals of Ayurvedic Medicine
Ann. Pl. Sci.	:	Annals of Plant Science
Anusandhana (Berhampur Univ. J. Nat. Phys. Sci.)	:	Anusandhana (Berhampur University Journal of Natural and Physical Science)
Arch. Bryol.	:	Archive for Bryology
Asian J. Microbiol. Biotech. Environm. Sci.	:	Asian Journal of Microbiology, Biotechnology & Environmental Science
Asian J. Pharmaceut. Clinic. Res.	:	Asian Journal of Pharmaceutical and Clinical Research
Asian J. Pl. Sci.	:	Asian Journal of Plant Sciences
Asian J. Pl. Sci. Res.	:	Asian Journal of Plant Sciences Research
Asian J. Sci. Technol.	:	Asian Journal of Science & Technology
Asian Pacific J. Trop. Biomed.	:	Asian Pacific Journal of Tropical Biomedicine
Asian Resonance	:	Asian Resonance
Bangladesh J. Bot.	:	Bangladesh Journal of Botany
Bangladesh J. Pl. Taxon.	:	Bangladesh Journal of Plant Taxonomy
Biblioth. Phycol.	:	Bibliotheca Phycologica
Biodivers. & Conservation	:	Biodiversity and Conservation
Biohelica	:	Biohelica
Biolife	:	Biolife
Biologia (Bratislava)	:	Biologia; Casopis Slovenskej Akademia Vied. Bratislava.

Biomass & Bioenergy	:	Biomass and Bioenergy
Bio-Sci. Res. Bull.	:	Bio-Science Research Bulletin
Bioresource Technol.	:	Bioresource Technology
Biosci. Disc.	:	Bioscience Disc.
Biospectra	:	Biospectra
Blumea		Blumea
Bot. Res. Int.	:	Botany Research International
Brit. J. Pharmacol. Toxicol.	:	British Journal of Pharmacology & Toxicology
Bull. Bot. Surv. India	:	Bulletin of the Botanical Survey of India (Vol. 1–50, 1959–2009. Superseded by: Nelumbo)
Bull. Dept. Anthropol.	:	Bulletin of Department of Anthropolgy
Bull. Environm. Sci.	:	Bulletin of Environmental Scinece
Bull. Int. Soc. Trop. Ecol.	:	Bulletin of International Society of Tropical Ecology
Bull. Marine Sci.	:	Bulletin of Marine Science
Bull. Med.-Ethno-Bot. Res.	:	Bulletin of Medico-Ethno-Botanical Research
Bull. Pure Appl. Sci.	:	Bulletin of Pure and Applied Sciences
Bull. Reg. Res. Lab.	:	Bulletin of Regional Research Laboratory
Caryologia	:	Caryologia
Cashew	:	The Cashew
Curr. Bot.	:	Current Botany
Curr. Sci.	:	Current Science
Cytobios	:	Cytobios
Ecol. Environm. Conservation	:	Ecology Environment & Conservation
Ecoprint	:	Ecoprint
Emerg. Sci.	:	Emerging Science
ENVIS Newslett.	:	ENVIS Newsletter
E-planet	:	E-planet
EPTRI–ENVIS Newslett.	:	EPTRI–ENVIS Newsletter
Ethnobot. Leafl.	:	Ethnobotanical Leaflets
Ethnobotany	:	Ethnobotany
Ethno-Med	:	Ethno-Med
Fitoterapia	:	Fitoterapia
Food Security	:	Food Security
Folia Geobot. Phytotax., Praha	:	Folia Geobotanica Phytotaxonomica, Praha
Folklore	:	Folklore
Genet. Resources Crop Evol.	:	Genetic Resource of Crop Evolution
Geobios (Jodhpur)	:	Geobios; an international (bimonthly) journal of life sciences. Jodhpur

Geobios, New Rep.	:	Geobios, New Reports
Global J. Res. Med. Pl. Indigen. Med.	:	Global Journal of Research on Medicinal Plants and Indigenous Medicine
Hamdard Med.	:	Hamdard Medicus
Indian Bot. Reporter	:	Indian Botanical Reporter
Indian Drugs	:	Indian Drugs
Indian Ecol.	:	Indian Ecology
Indian Forest Rec., Bot.	:	Indian Forest Records, New Series, Botany
Indian Forester	:	The Indian Forester
Indian Med.	:	Indian Medicine
Indian J. Aerobiol.	:	Indian Journal of Aerobiology
Indian J. Bot.	:	Indian Journal of Botany
Indian J. Ecol.	:	Indian Journal of Ecology
Indian J. Forest.	:	Indian Journal of Forestry
Indian J. Forest., Addit. Ser.	:	Indian Journal of Forestry, Additional Series
Indian J. Geo-Marine Sci.	:	Indian Journal of Geo-Marine Science
Indian Hydrobiol.	:	Indian Hydrobiology
Indian J. Mar. Sci.	:	Indian Journal of Marine Sciences
Indian J. Microbiol.	:	Indian Journal of Microbiology
Indian J. Nat. Prod. Resources	:	Indian Journal of Natural Products and Resources (Vol. 1+, 2010+. Preceded by: Natural Product Radiance)
Indian J. Pl. Sci.	:	Indian Journal of Plant Sciences
Indian J. Tradit. Knowl.	:	Indian Journal of Traditional Knowledge
Indian J. Weed Sci.	:	Indian Journal of Weed Science
Indian Perfumer	:	Indian Perfumer
Indian Pharm. Sci.	:	Indian Pharmaceutical Science
Indian Res. J. Pharm. Sci.	:	Indian Research Journal of Pharmacy & Science
IOSR J. Humanit. Soc. Sci.	:	IOSR Journal of Humanities Social Science
IOSR J. Environm. Sci., Toxicol. Food Technol.	:	IOSR Journal of Environment Science, Toxicology and Food Technology
Int. J. Advanced Res.	:	International Journal of Advanced Research
Int. J. Advanced Res. Sci. Technol.	:	International Journal of Advanced Research in Science and Technology
Int. J. Agric. Food Sci.	:	International Journal of Agricultural and Food Science
Int. J. Appl. Biol. Pharmaceut. Technol.	:	International Journal of Applied Biological and Pharmaceutical Technology
Int. J. Appl. Res.	:	International Journal of Applied Research

Int. J. Bioassays	:	International Journal of Bioassays
Int. J. Biodivers. & Conservation	:	International Journal of Biodiversity and Conservation
Int. J. Biol. & Pharmaceut. Res.	:	International Journal of Biological & Pharmaceutical research
Int. J. Curr. Biotechnol.	:	International Journal of Current Biotechnology
Int. J. Curr. Microbiol. Appl. Sci.	:	International Journal of Current Microbiology and Applied Sciences
Int. J. Curr. Res.	:	International Journal of Current Research
Int. J. Drug Developm. & Res.	:	International Journal of Drug Development and Research
Int. J. Ecol. Environm. & Conservation	:	International Journal of Ecology Environment & Conservation
Int. J. Eng. Res. Sci. & Technol.	:	International Journal of Research of Science & Technology
Int. J. Environm. Studies	:	International Journal of Environmental Studies
Int. J. Ethnobiol. Ethnomed.	:	International Journal of Ethnobiology and Ethnomedicine
Int. J. Green Energy	:	International Journal of Green Energy
Int. J. Herbal Med.	:	International Journal of Herbal Medicine
Int. J. Innov. & Appl. Res.	:	International Journal of Innovative & Applied Research
Int. J. Innov. Res. & Developm.	:	International Journal of Innovative Research and Development
Int. J. Inst. Pharm. & Life Sci.	:	International Journal of Institutional Pharmacy and Life Sciences
Int. J. Mendel	:	International Journal of Mendel
Int. J. Med. Aromat. Pl.	:	International Journal of Medicinal and Aromatic Plants
Int. J. Med. & Medical Sci.	:	International Journal of Medicine & Medical Sciences
Int. J. Microbiol. Res.	:	International Journal of Microbiological Research
Int. J. Pharmacogn.	:	International Journal of pharmacognosy
Int. J. Pharmacogn. Phytochem. Res.	:	International Journal of Pharmacognosy and PhytochemicalResearch
Int. J. Pharm. Biol. Sci.	:	International Journal of Pharmacy and Biological Sciences
Int. J. Pharm. & Life Sci.	:	International Journal of Pharmacy and Life Sciences
Int. J. Pharm. & Pharmaceut. Sci.	:	International Journal of Pharmacy and Pharmaceutical Research
Int. J. Phytomed.	:	International Journal of Phytomedicine

Int. J. Sci. Innov. & Disc.	:	International Journal of Scientific Innovation & Discoveries
Int. J. Sci. Res.	:	International Journal of Scientific Research
Int. J. Sci. Res. Publ.	:	International Journal of Scientific Research Publication
Int. J. Sustain. Developm. World Ecol.	:	International Journal of Sustainable Development of World Ecology
Int. Res. J. Biol. Sci.	:	International Research Journal of Biological Science
Int. Res. J. Environm. Sci. Science	:	International Research Journal of Environmental
Iran J. Bot.	:	Iranian Journal of Botany
J. Agri-Hort. Soc. India	:	Journal of Agri-Horticultural Society of India
J. Agric. Sci.	:	Journal of Agricultural Science
J. Agric. Technol.	:	Journal of Agricultural Technology
J. Algal Biomass Utiliz.	:	Journal of Algal Biomass Utilization
J. Anthropol. Soc. Bombay	:	Journal of Anthropological Society Bombay
J. Appl. Pharmaceut. Sci.	:	Journal of Applied Pharmaceutical Sciences
J. Asiat. Soc. Bengal	:	Journal of Asiatic Society of Bengal
J. Biodivers.	:	Journal of Biodiversity
J. Bombay Nat. Hist. Soc.	:	Journal of the Bombay Natural History Society
J. Bot. Res.	:	Journal of Botanical Research
J. Ecol.	:	Journal of Ecology
J. Econ. Taxon. Bot.	:	Journal of Economic and Taxonomic Botany
J. Econ. Taxon. Bot., Addit. Ser.	:	Journal of Economic and Taxonomic Botany Additional Series
J. Ethnopharmacol.	:	Journal of Ethnopharmacology
J. Environm. Biol.	:	Journal of Environmental Biology
J. Environm. Sci.	:	Journal of Environmental Science
J. Ethnobiol. Tradit. Med.	:	Journal of Ethnobiology Traditional Medicine
J. Forest. Res.	:	Journal of Forestry Research
J. Hill Res.	:	Journal of Hill Research
J. Human Ecol.	:	Journal of Human Ecology
J. Indian Bot. Soc.	:	The Journal of the Indian Botanical Society
J. Indian Soc. Remote Sens.	:	Journal of the Indian Society of Remote Sensing
J. Life Sci.	:	Journal of Life Science
J. Mar. Biol. Assoc. India	:	Journal of Marine Biology Association of India
J. Med. Aromat. Pl. Sci.	:	Journal of Medicinal and Aromatic Plant Science
J. Nat. Prod. Pl. Resources	:	Journal of Natural Products and Plant Resources
J. Non-Timber Forest Prod.	:	Journal of Non-Timber Forest Products

J. Orchid Soc. India	:	Journal of Orchid Society of India
J. Orissa Bot. Soc.	:	Journal of the Orissa Botanical Society
J. Pharmacogn. & Phytotherapy	:	Journal of Pharmacognosy and Phytotherapy
J. Phytol. Res.	:	Journal of Phytological Research
J. Proc. Asiat. Soc. Bengal	:	Journal and Proceedings of Asiatic Society of Bengal
J. Res. Educ. Indian Med.	:	The Journal of Research and Education in Indian Medicine
J. Sci. Res. Banaras Hindu Univ. Varanasi	:	Journal of Scientific Research Banaras Hindu University, Varanasi
J. Sci. & Technol. Sambalpur Univ.	:	Journal of Science and Technology Sambalpur University
J. Sci. Res. Pl. Med.	:	Journal of Science and Research of Plant and Medicine
J. Spices Aromat. Crops	:	Journal of Spices and Aromatic Crops
J. Threat. Taxa	:	Journal of Threatened Taxa
J. Trop. Med. Pl.	:	Journal of Tropical Medicinal Plants
J. Water Resource Protect.	:	Journal of Water Resource and Protection
Life Sci. Leafl.	:	Life Science Leaflets
Lloydia	:	Lloydia
Mahasagar	:	Mahasagar
Mangroves Salt Marshes	:	Mangroves and Salt Marshes
Marine Biol.	:	Marine Biology
Mem. Asiat. Soc. Bengal	:	Memories of Asiatic Society of Bengal
Mem. Dept. Agric. India, Bot. Ser.	:	Memoirs of the Department of Agriculture in India. Botanical Series.
MicroMed.	:	MicroMedicine
My Forest	:	My Forest
Mycotaxon	:	Mycotaxon
Nagarjun	:	Nagarjun
Natl. Acad. Sci. Lett.	:	National Academic Science Letter
Nat. Prod. Radiance	:	Natural Product Radiance. (Vol. 1–8, 2002–2009. Superceded by: Indian Journal of Natural Products and Resources)
Nat. Resources Conservation	:	Natural Resources and Conservation
Nat. Wildlife Conservation Soc. Newslett.	:	Nature and Wildlife Conservation Society Newsletter
Nelumbo	:	Nelumbo (Vol. 51+, 2010+. Preceded by: Bulletin of the Botanical Survey of India)
Neo Bot.	:	Neo Botanica

Nordic J. Bot.	:	Nordic Journal of Botany
New York Sci. J.	:	New York Science Journal
NWCSO Newslett.	:	NWCSO Newsletter
Orchid News	:	Orchid News
Orchid Rev.	:	The Orchid Review
Orissa Rev.	:	Orissa Review
Pakistan J. Bot.	:	Pakistan Journal of Botany
Palaeobotanist	:	Palaeobotanist
Parijatak	:	Parijatak
Pharmacogn. Res.	:	Pharmacognosy Research
Phykos	:	Phykos
Phytotaxa	:	Phytotaxa
Phytotaxonomy	:	Phytotaxonomy
Pl. Sci. Res.	:	Plant Science Research
Prakruti	:	Prakruti
Proc. Indian Acad. Sci.	:	Proceedings of the Indian Academy of Sciences
Proc. Indian Acad. Sci., Pl. Sci.	:	Proceedings, Indian Academy of Sciences, Plant Sciences
Proc. Indian Natl. Sci. Acad.	:	Proceedings of the Indian National Science Academy
Proc. Natl. Acad. Sci. India	:	Proceedings of National Academy of Science, India
Proc. Natl. Acad. Sci. India, B	:	Proceedings of National Academy of Science, India Sect. B. Biological Science
Proc. Orissa Bot. Soc.	:	Proceedings of Orissa Botanical Society
Proc. Prod. Utilis. Forest Prod. (Jammu)	:	Proceedings of Product Utilisation of Forest Product (Jammu)
Quart. J. Mythic Soc.	:	The Quarterly Journal of Mythic Society
Rec. Bot. Surv. India	:	Records of Botanical Survey of India
Recent Res. Sci. Technol.	:	Recent Research in Science & Technology
Report & Opinion	:	Report & Opinion
Res. J. Berhampur Univ.	:	Research Journal of Berhampur University
Res. J. Bot.	:	Research Journal in Botany
Res. J. Forest.	:	Research Journal in Forestry
Res. J. Pharmaceut. Biol. & Chem. Sci.	:	Research Journal of Pharmaceutical, Biological and Chemical Science
Res. J. Recent Sci.	:	Research Journal of Recent Sciences
Rheedea	:	Rheedea
Sabujima	:	Sabujima

Sci. & Cult.	:	Science and Culture
Seaweed Res. Utilis.	:	Seaweed Research and Utilisation
Similipal Biosphere Reserve	:	Similipal Biosphere Reserve
Taiwania	:	Taiwania
Taxon	:	Taxon
The Botanique	:	The Botanique
The Ecoscan	:	The Ecoscan
Trees Life J.	:	Trees for Life Journal
Trop. Ecol.	:	Tropical Ecology
Vanyajati	:	Vanyajati
Vegetos	:	Vegetos
Wetlands Ecol. Managem.	:	Wetlands Ecology and Management
World Environm.	:	World Environment
World J. Pharm. Pharmaceut. Sci.	:	World Journal of Pharmacy and Pharmaceutical Science
ZOO's Print	:	ZOO's Print

AUTHOR INDEX WITH ABSTRACT NUMBER IN PARENTHESIS

Tropical dry deciduous forest in Kandhamal

View of the Deomali hilltop in Koraput

View of a creek in the mangroves of Bhitarkanika National Park

Pure strand of *Rhizophora* community

Aegiceras corniculatum

Cycas sphaerica

Habenaria grandifloriformis

Lasiococca comberi

Photos: S.P. Panda