



**United Nations Decade on Biodiversity**

**BIBLIOGRAPHY AND ABSTRACTS  
OF PAPERS ON FLORA OF  
GOA**



**ENVIS Centre on Floral Diversity**

**2015**



जहाँ है हरियाली।  
वहाँ है खुशहाली॥

**BOTANICAL SURVEY OF INDIA  
MINISTRY OF ENVIRONMENT, FORESTS & CLIMATE CHANGE**

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PAPERS ON FLORA OF  
GOA**

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under ENVIS Programme



**भारतीय वनस्पति सर्वेक्षण  
BOTANICAL SURVEY OF INDIA**

ENVIS Centre on Floral Diversity

**BOTANICAL SURVEY OF INDIA**

**MINISTRY OF ENVIRONMENT, FORESTS AND CLIMATE CHANGE**

**2015**

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## FOREWORD

The ENVIS Centre on Floral Diversity of the Botanical Survey of India has been publishing State-wise Bibliography and Abstracts of Papers pertaining to Floras. In this attempt, the Centre has already published consolidated bibliography and abstracts on flora of West Bengal (in two parts), North East India – I, Andaman and Nicobar Islands, Maharashtra, Kerala and Tamil Nadu. In due course the comprehensive bibliography and abstracts, for other States and Union Territories of India will also be made.

Goa is the smallest state among the 29 states of India. It is situated on the west coast and nestled between the states of Karnataka and Maharashtra, and constitutes only 0.11% of total geographical area of the country. Administratively, the state is divided into two districts, viz. North Goa and South Goa, whereas, based on physiography, it can be divided into two remarkable zones, namely the Western Ghats and Coastal Plains. It is a tourism popular state, known for its beautiful beaches, and the climate in Goa is generally humid, with usual four seasons. The state supports five different types of forests. The part of Western Ghats lying in Goa covers about 800 km<sup>2</sup> area of the state, and almost 754 km<sup>2</sup> area is under Protected Area Network. Though Goa occupies just 2% area of the Western Ghats, it harbours 7% of the endemic flowering plant species found in the Western Ghats. The present analysis on the flora of Goa by Botanical Survey of India reports a total of 1332 species belonging to 690 genera among 152 families of angiosperms, 4 gymnosperms and 29 pteridophytes, including 231 cultigens. A total of 224 species, which are endemic to India are found to occur in Goa.

Some of the important publications pertaining to the Flora of Goa are a two-volume, “Flora of Goa, Diu, Daman & Nagar-Haveli by Rao (1985–1986)”, “Forest flora of Goa” by Naithani & al. (1997) and “Flora of Bhagwan Mahavir (Molem) National Park and adjoining” by Datar & Lakshminarasimhan (2013). 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 Goa state. This present issue of Bibliography and Abstracts of Papers on Flora of Goa state consisting a total of 191 references, which include 126 references on angiosperms and 65 on fungi/lichens, algae, bryophytes and pteridophytes; they are majorly about general issues on biodiversity, flora, vegetation/habitat, ecology, distribution, diversity and conservation of species, novelties, new records, revision, phylogeny, endemism, rediscovery, ethnobotany and medicinal plants. An electronic version of this publication will be made available on ENVIS-BSI website ([www.bsienvs.nic.in](http://www.bsienvs.nic.in)).



(Paramjit Singh)  
Director



## INTRODUCTION

Goa, the smallest state in India, is located on the west coast and nestled between the states of Karnataka and Maharashtra. The state lies between 14°53'–15°40' N and 73°40'–74°21' E, and covers an area of 3702 km<sup>2</sup>, constitutes 0.11% of total geographical area of the country. Administratively, the state is divided into two districts, viz. North Goa and South Goa. Tiswadi, Bardez, Pernem, Bicholim, Satari and Ponda taluks constitute North Goa district (1736 km<sup>2</sup>), whereas South Goa district (1966 km<sup>2</sup>) comprises of Mormugao, Salcette, Canacona and Quepem taluks.

The state falls under two physiographic zones, namely the Western Ghats and Coastal Plains, with three types of soils, viz. laterite along Western Ghats, red-gravelly soil in adjoining river banks and alluvial soil along 131 km long coastal belt. The climate in Goa is generally humid, with usual four seasons. The annual rainfall is about 3,790 mm. The mean temperature in the state ranges between 16.2°C and 36.7°C, and the state experiences its maximum temperature (35°C to 36.7°C) during summer from April to May, and the minimum temperature (15°C to 16°C) in January.

The forest cover in the state, based on 2009 satellite data is 2219 km<sup>2</sup>, which is 59.94% of the state's total geographical area; and the state has 543 km<sup>2</sup> area under very dense forests, 585 km<sup>2</sup> area under moderately dense forests and 1091 km<sup>2</sup> area under open forests (FSI, 2011). The major forests types are (i) Southern Tropical Wet Evergreen Forests, (ii) Southern Tropical Semi-evergreen Forests, (iii) South Indian Moist Deciduous Forests, (iv) Southern Tropical Dry Deciduous Forests, and (v) Littoral and Swamp Forests (Champion & Seth, 1968). The moist deciduous and plateau vegetation are most dominant habitats, compared with the evergreen and the semi-evergreen forests, which are restricted to a few patches at higher elevations and along streams. Besides, generally the vegetations of Goa can be broadly classified under the following four categories

- (1) **Estuarine Vegetation** consisting of mangroves along swampy river banks. According to Kothari & Rao (2002) mangrove vegetation in Goa supports 16 true mangrove species, 6 obligate halophytes with 67 associates. Some of the dominant species found are *Avicennia alba*, *A. marina*, *A. officinalis*, *Excoecaria agallocha*, *Kandelia candel*, *Rhizophora apiculata*, *R. mucronata* and *Sonneratia alba*.
- (2) **Strand Vegetation** found in sandy and rocky coastal areas. *Calophyllum inophyllum*, *Hyphaene dichotoma*, *Pandanus odorifer* and *Thespesia populnea* are some of the commonly found species.

- (3) **Plateau Vegetation** found along undulating terrain and foot hills. It includes (i) open scrub jungles, and (ii) moist deciduous forests.
- (4) **Semi-evergreen and Evergreen Vegetation** found along upper ghats

The part of Western Ghats (the Sahyadris), one of the biodiversity hotspots, lying in Goa covers about 800 km<sup>2</sup> area of the state, and almost 754 km<sup>2</sup> area is under protected area network, and the average elevation is 600 m. The state has 1 National Park (Bhagwan Mahavir) and 6 Wildlife Sanctuaries (Mhadai, Bhagwan Mahavir, Netrawali, Cotigaon, Salim Ali and Bondla) that cover about 52% of the forest area of the state. The state also has seven estuarine areas, and a famous Dudhsagar Waterfall.

Garcia da Orta (1563), a Portuguese physician and naturalist was the first person, who studied the drugs, spices and other natural products (altogether 57) of Goa and published a detailed account in his "Colóquios dos simples e drogas he cousas medicinais da Índia" (Conversations on the simples, drugs and medicinal substances of India), which is considered as one of the earliest scientific works in India. Vartak (1966) enumerated a total of 1512 species from Gomantak based on literature and plant explorations, which included only about 200 species from Goa. Rao (1985–1986) in his two-volume, "Flora of Goa, Diu, Daman, Dadra and Nagar-Haveli" recorded about 1,115 species from Goa. The 'Forest Flora of Goa' by Naithani & al. (1997) reported 494 arboreal species from Goa region. Janarthanam & al. (1999) in their project report have listed c. 1585 species from Goa and is by far the most comprehensive list available for the state. The compiled list comprising a total of 1373 species of angiosperms from Goa is available in Goa State Biodiversity Strategy and Action Plan (Anonymous, 2000). Datar & Lakshminarasimhan (2013) reported 47 species of Pteridophytes from the Western Ghats of Goa. The current analysis on the flora of Goa by Botanical Survey of India reports a total of 1332 species belonging to 690 genera among 152 families of angiosperms, 4 gymnosperms and 29 pteridophytes, including 231 cultigens (in ed.).

#### **Endemic and Threatened Plants**

The Western Ghats of Goa harbours 113 endemic species (Joshi & Janarthanam, 2004). Goa occupies just 2% area of the Western Ghats but harbours 7% of the endemic flowering plant species found in the Western Ghats. Plateaus of the Western Ghats harbour larger number of herbaceous endemic species. A total of 41 endemic species are found in these plateau habitats, of which 26 are exclusively restricted to plateaus. Endemic species on the plateaus have a narrow distribution range, mostly restricted to the northern and central parts of the Western Ghats, thus deserving conservation efforts. However, these species-rich plateaus appear as dry barren lands during drier months. According to Botanical Survey of India, nearly 224 species that are endemic

to India are found to occur in Goa that include strict endemics such as *Amorphophallus commutatus* var. *anmodensis*, *Cinnamomum goaense*, *Curcuma scaposa*, *Dimeria veldkampii*, *Dipcadi goaense*, *Euphorbia erythroclada*, *Glyphochloa goaensis*, *G. henryi*, *G. talbotii*, *Ischaemum yadavii*, *Mussaenda laxa*, *Syzygium salicifolium* and *Taxillus danseriana*.

Some of the threatened plants from Western Ghats of Goa are *Amorphophallus commutatus* var. *anmodensis*, *Arisaema sivasanii*, *Aspidopteris canarensis*, *Begonia trichocarpa*, *Decaschistia trilobata*, *Discospora sphaerocarpa*, *Eranthemum capense* var. *concanensis*, *Glyphochloa veldkampii*, *Habenaria multicaudata*, *Oberonia brachyphylla*, *Paracaryopsis coelestina*, *Strobilanthes ciliate* and *Wiesneria triandra*. Recently, Prabhugaonkar (2014) has reported three IUCN Red-listed species, viz. *Myristica fatua* var. *magnifica*, *Semecarpus kathalekanensis* and *Syzygium travancoricum* from sacred groves of Goa.

### **Economically Important Plants**

Many species from Western Ghats of Goa yield valuable timber. Some of the economically important timber-yielding arboreal species are *Gmelina arborea*, *Grewia tiliifolia*, *Haldina cordifolia*, *Lagerstroemia microcarpa*, *Tectona grandis*, *Terminalia paniculata*, *T. tomentosa* and *Xylia xylocarpa*. Canes and bamboos found in the forests of Western Ghats of Goa are used for making furniture. Canes namely *Calamus pseudo-tenuis* and *C. thwaitesi*, and bamboos such as *Bambusa arundinacea*, *Dendrocalamus strictus* and *Pseudoxytenanthera stocksii* are predominantly used in furniture industry. *Justicia adhatoda*, *Mallotus philippensis*, *Memecylon umbellatum*, *Symplocos cochinchinensis* and *Syzygium cumini* are some of the dye-yielding plants, while resin of *Canarium strictum* and flowers of *Jasminum malabaricum* are used to obtain perfumes.

Fruits of *Anacardium occidentale*, *Antidesma acidum*, *Artocarpus gomezianus* subsp. *zeylanicus*, *A. heterophyllum*, *Artocarpus hirsutus*, *Dillenia pentagyna*, *Elaeagnus conferta*, *Garcinia gummi-gutta*, *G. indica*, *Mangifera indica*, *Mimusops elengi*, *Momordica dioica*, *Phyllanthus emblica*, *Solanum anguivi*, *Syzygium cumini*, *S. hemisphericum*, *Ziziphus mauritiana*, *Z. oenopolia* and *Z. rugosa* are edible. The whole plant or especially leaves of *Amaranthus spinosus*, *Begonia crenata*, *Smilax zeylanica*, tubers of *Ensete superbum*, *Dioscorea hispida*, stem portion and young leaves of *Caryota urens* are eaten by local people. Leaves, fruits or entire plant of *Gnidia glauca* and *Catunaregam spinosa* are used as fish-poison.

The Western Ghats of Goa harbours many medicinal plants used in the treatment of various ailments. Some of the important medicinal plant species are *Baliospermum montanum*, *Bombax ceiba*, *Calophyllum calaba*, *Calotropis gigantea*, *Canarium strictum*, *Catunaregam spinosum*, *Celastrus paniculatus*, *Centella asiatica*, *Costus speciosus*, *Crateva magna*, *Curculigo orchoides*, *Embelia basal*, *Ficus racemosa*, *Gloriosa superba*, *Gmelina arborea*, *Helicteres isora*, *Hemidesmus*

*indicus, Ixora coccinea, Justicia adhatoda, Kalanchoe pinnata, Mesua ferrea, Murraya paniculata, Naregamia alata, Oroxylum indicum, Salacia chinensis, Saraca asoca, Solanum anguivi, Spilanthes paniculata, Terminalia bellirica, T. chebula, Vitex altissima, Woordfordia fruticosa and Zingiber zerumbet.*

### **Threats to the Biodiversity of Western Ghats of Goa**

Mining and tourism are the two major threats to the biodiversity of Goa. These two have severely shown their impact on the integrity of Goa's ecologically diverse landscapes. There are over 100 mines located in the various notified Wildlife Sanctuaries and National Parks of Goa. Mining and associated activities have greatly affected the natural landscape in and around these areas, which is characterised by the presence of pits and waste rejects. Mining has created a degraded environment across the state. Sensitive zones, where mining is slowly making inroads include Bhagwan Mahavir (Molem) National Park, Bondla, Netravali and Cotigao Wildlife Sanctuaries. The Mhadei Wildlife Sanctuary faces threats due to extensive habitat degradation by open-cast mining and formation of diversion dams for the Mhadei Hydroelectric Project. A report states that the mining sector has been categorised as a red industry, which has grown without "consideration for impacts on the ecology and livelihood security".

The major environmental problems caused due to mining operations are deforestation, land degradation, ground and surface water pollution, air pollution (due to dust) and damage also to beaches. In 2013, the Goa government has brought a Goa Mineral Policy in Official Gazette in which it is mentioned that if mining leases fall under forest areas, the Forest Conservation Act 1986, is applicable in addition to the MMRD Act and EP Act.

Goa is also one of the high pressure tourist areas in the northern Western Ghats. Bhagwan Mahavir (or Molem) National Park is facing threats due to tourist activities because of the presence of the famous Dudhsagar Waterfall. The National Highway 4A and Mormugao Londa Railway line also run through this area and Collem Railway station also lies within this Protected Area. The roads give easy access to poachers and tree cutters. A few cases of cutting of canes for furniture in and around the highway are also recorded. Bondla Wildlife Sanctuary is also a main tourist destination. Increased growth of invasive alien weeds like *Eupatorium odoratum* is also limiting the growth of native herbaceous species, which are consumed by herbivores. Firewood collection by local people also adds pressure on the flora and fauna of Protected Areas. Dependence of local people from villages in and around the Protected Areas on the water sources inside the forest is also a limiting factor for sustainable management of these Protected Areas. Frequent accidents occur on the highway, damaging forest trees and sometimes causing forest fire. The Govt. of Goa, especially the competent personnel of Forest Department

should take necessary efforts to revegetating degraded lands, especially the mining areas. They should also monitor regularly various tourism and developmental activities that show adverse impacts on the existing biodiversity, and should take necessary preventive measures to conserve, especially the natural habitats with unique flora and fauna of the Goa state.

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 Goa state. This issue of Bibliography and Abstracts of Papers on Flora of Goa state consisting a total of 191 references, which include 126 references on angiosperms and 65 on fungi/lichens, algae, bryophytes and pteridophytes. There are 85 general references on biodiversity, flora, vegetation/habitat, ecology, distribution and diversity, 44 new records of taxa, of which 37 are angiosperms and 7 belong to various other plant groups, 34 novelties, which include 26 mycotaxa. Besides, this issue consists 10 references on medicinal plants, 6 on endemism, 3 each on revisions and systematic/phylogeny, 2 each on ethnobotany and nomenclature and 1 each on palynology and rediscovery. An electronic version of this publication will be made available on ENVIS-BSI website ([www.bsienvnis.nic.in](http://www.bsienvnis.nic.in)).

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Abstract: It is a catalogue of medicinal plants in Latin, furnished with information on medicinal uses of plants from Goa and Savantwadi.

19. **Dalzell, N.A. 1850–1852.** "Contributions to the Botany of Western India". *Hooker J. Bot. & Kew Gard. Misc.* 2: 33–41, 133–145, 257–265, 336–344. 1850; 3: 33–39, 89–90, 120–124, 134–139, 178–180, 206–212, 225–233, 279–282, 343–346. 1851; 4: 107–114, 289–295, 341–347. 1852.

20. **Dalzell, N.A. 1858.** *Catalogue of the Indigenous flowering plants of the Bombay Presidency.* Irish Presbyterian Mission Press, Surat.

Abstract: This catalogue forms an Index to the Bombay Flora.

21. **Dalzell, N.A. & Gibson, A. 1861.** *The Bombay Flora: or, Short descriptions of all the indigenous plants hitherto discovered in or near the Bombay presidency: together with a supplement of introduced and naturalised species.* 2 Volumes. Education Society's Press, Bombay.

22. **Das, K., Miller, S.L., Sharma, J.R. & Hemenway, J. 2008.** "Two new species of *Russula* from Western Ghats in India". *Indian J. Forest.* 31: 473–478.

Abstract: Two new species, viz. *Russula koleggiensis* and *R. netrabaricus* have been described and illustrated from Koleggi, Karnataka and Netrabari, Goa, respectively. Their phylogenetic positions within the genus *Russula* are supported by macroscopic, microscopic characters and rDNA sequences in the ITS gene region.

23. **Das Das, S.K. & Chakraborty, T. 2010.** "On the status of *Eriocaulon sahyadricum* Puneekar et al.(Eriocaulaceae)". *J. Econ. Taxon. Bot.* 34: 413–414.

Abstract: *Eriocaulon sahyadricum* Puneekar & al. is relegated to a synonym of *E. stellulatum* Körn., a species distributed in Karnataka, Goa and Maharashtra.

24. **Datar, M.N. & Lakshminarasimhan, P. 2009.** "Additional plant records for Goa". *Rheedea* 19: 18.

Abstract: Six species, viz. *Diplacrum caricinum* R. Br., *Lipocarpha squarrosa* (L.) Goetgh. (Cyperaceae), *Gastrochilus flabelliformis* (Blatt. & McCann) C.J. Saldanha, *Tropidia angulosa* (Lindl.) Blume (Orchidaceae), *Homalium zeylanicum* (Gardner) Benth. (Flacourtiaceae) and *Pennisetum pedicellatum* Trin. (Poaceae) collected from Molem National Park, are reported as additions to the flora of Goa.

25. **Datar, M.N. & Lakshminarasimhan, P. 2010.** "Habitat based pteridophyte diversity from Western Ghats of Goa, India". *Phytotaxonomy* 10: 70–76.

Abstract: A total of 11 habitats have been identified and the distribution of 47 species of pteridophytes belonging to 32 genera and 20 families in these habitats has been recorded. Habitat specificity of pteridophyte species spread over three taluks of Goa, viz. Sattari, Sanguem and Canacona has been given.

26. **Datar, M.N. & Lakshminarasimhan, P. 2011.** "Endemic plants of Bhagwan Mahaveer National Park, Goa An analysis based on their habitat, phenology and life form types". *Indian Forester* 137: 1451–1456.

Abstract: Bhagwan Mahaveer (Molem) National Park is the only National Park in Goa. It lies on the western escarpment of the Western Ghats. The National Park harbours 719 species of flowering plants, of which 127 are endemics. These endemics are distributed along seven major habitat types such as plateaus, moist deciduous forests, semi-evergreen forests, evergreen forests, fields, streams, lakes, rivers and open areas other than plateaus. Analysis of life-forms for endemic species indicates that herbs are dominant followed by trees. Moist deciduous forests shelter more number of endemics as compared to other habitat types. Leguminosae and Orchidaceae are dominant amongst families with endemics. Recent discoveries of new taxa, new distributional records and documentation of 127 endemic species in 107 km<sup>2</sup> area of the National Park highlights the importance of Protected Areas in conservation of floral diversity, especially endemic species.

27. **Datar, M.N. & Lakshminarasimhan, P. 2013.** "Check list of wild angiosperms of Bhagwan Mahaveer (Molem) National Park, Goa, India". *Check List* 9: 186–207.

Abstract: Bhagwan Mahaveer (Molem) National Park, the only National Park in Goa, was evaluated for its diversity of angiosperms. The check list provides a total of 721 wild species, of including 126 endemics belonging to 119 families that have been recorded from this National Park.

28. **Datar, M.N. & Lakshminarasimhan, P. 2013.** *Flora of Bhagwan Mahavir (Molem) National Park and adjoining, Goa.* Botanical Survey of India, Kolkata.

Abstract: The flora deals with 722 species of flowering plants belonging to 492 genera and 123 families, which include 721 species of angiosperms (561 dicots and 160 monocots) and 1 gymnosperm. Besides, 37 species of pteridophytes have been reported.

29. **Datar, M.N., Lakshminarasimhan, P. & Rao, P.S.N. 2007.** “*Hyptis capitata* Jacq. (Lamiaceae) A new record for northern Western Ghats”. *Indian J. Forest.* 30: 355–356.

Abstract: *Hyptis capitata* Jacq. is collected for the first time for Goa from Dudhsagar Road and reported as a new record for northern Western Ghats.

30. **Datar, M.N., Salelkar, P.D. & Lakshminarasimhan, P. 2011.** “Eco-traditions of people living around Bhagwan Mahavir National Park in Goa”. *Asian Agri-History* 15: 303–313.

Abstract: Bhagwan Mahavir National Park is the only national park in Goa. People living in the vicinity have harmonious relationship with the National Park, which is evident from the direct and indirect dependence of people of the park and their urge to protect the forests. Their culture and traditions have enabled them to protect the ecological endowments. The naturalistic relationships between the people and the National Park are discussed.

31. **Datar, M.N., Manikandan, R., Lakshminarasimhan, P. & Rao, P.S.N. 2005.** “New plant records for Goa and Karnataka”. *Rheedea* 15: 133–135.

Abstract: Molem National Park in Goa state and Rajiv Gandhi National Park in Karnataka state were floristically explored. A total of 17 species collected from Molem National Park and 18 species from Rajiv Gandhi National Park have been reported as new records for Goa and Karnataka, respectively.

32. **Deokule, S.S., Kavade, S.P., Lakshminarasimhan, P. & Berde, V.B. 2013.** “An endemic and critically endangered species, *Gymnema khandalense* Santapau (Apocynaceae: Asclepiadoideae) A new record to Goa state, India”. *J. Threatened Taxa* 5: 4598–4600.

Abstract: *Gymnema khandalense* Santapau (Apocynaceae Asclepiadoideae), an endemic and Critically Endangered species, is reported here for the first time from Goa state. A detailed description, phenology, distribution and ecology along with a photo plate are provided for its easy identification.

33. **Dessai, J.R.N. & Janarthanam, M.K. 2008.** “Taxonomy and distribution of *Impatiens talbotii* A rare endemic balsam from Western Ghats”. *J. Econ. Taxon. Bot.* 32: 624–627.

Abstract: The paper deals with a rare and poorly known species of balsam, viz. *Impatiens talbotii* Hook.f. from Goa and Karnataka of the Western Ghats. The historical account, a detailed description, distribution and illustrations based on fresh specimens are provided.

34. **Dessai, J.R.N. & Janarthanam, M.K. 2011.** "The genus *Impatiens* (Balsaminaceae) in the northern and parts of central Western Ghats". *Rheedea* 21: 30–80.

Abstract: The genus *Impatiens* L. comprises over 1,000 species worldwide. It is represented by c. 210 species in India and most of them are neither endemic to the Himalaya or Western Ghats. Species of *Impatiens* distributed in the northern and part of central Western Ghats are studied. A total of 26 species and 2 varieties, including a new species with detailed descriptions, illustrations, distribution, critical note, updated nomenclature and IUCN threat status are provided.

35. **Dhargalkar, S. & Bhat, D.J. 2009.** "*Echinospaeria pteridis* sp. nov. and its *Vermiculariopsiella* anamorph". *Mycotaxon* 108: 115–122.

Abstract: *Echinospaeria pteridis* sp. nov. and its anamorph, *Vermiculariopsiella pteridis* sp. nov., was isolated as an endophyte from a pteridophyte, *Pteris vittata*, collected from the Western Ghats in India. This is the second report of culture-based teleomorph-anamorph connection in *Vermiculariopsiella*. *Echinospaeria pteridis* has been reported from Goa.

36. **Dias, S.S.E. 2012.** "Some poisonous plants of Goa". *J. Econ. Taxon. Bot.* 36: 283–291.

Abstract: A total of 44 plant species belonging to 40 genera and 17 families that have been collected from various parts of Goa were identified to be toxic to humans and animals. Botanical name, family name, vernacular name, poisonous parts, toxic constituents and toxic aspects of these poisonous plants have been provided. About 6 plants were found to be abortifacients, 13 plants cause dermatitis, 5 plants cause purgation, 10 plants cause gastrointestinal disorders, 8 plants cause stomatitis, 2 plants are cardiac poisons, 1 plant each cause deliriant cerebral poisoning and spinal poisoning, respectively. *Calotropis* and *Semecarpus* show more than one type of symptoms.

37. **D'Souza, M.A. & Bhat, D.J. 2001.** "A new species of *Trichobotrys* from the Western Ghat Forests, India". *Mycotaxon* 80: 105–108.

Abstract: A new dematiaceous hyphomycete, *Trichobotrys ramosa* sp. nov., isolated from decaying leaves of *Dendrocalamus strictus* is described and illustrated from the forests of Western Ghats in southern India.

38. **D'Souza, M.A. & Bhat, D.J. 2001.** Two new Hyphomycetes from India. In: Sinha, A. (Ed.), *Microbes and Plants: Professor R. Dayal Festschrift*. Campus Books International, New Delhi. pp. 17.

39. **D'Souza, M.A. & Bhat, D.J. 2002.** "*Didymobotryum spirillum*, a new synnematos hyphomycete from India". *Mycologia* 94(3): 535–538.  
Abstract: A new synnematos hyphomycete, *Didymobotryum spirillum* D'Souza & Bhat collected from decaying culms of bamboo, *Dendrocalamus strictus*, is described and illustrated from the forests of Western Ghats in Goa, India. The fungus produces monotretic, catenate didymoconidia on spirally twisted synnemata.
40. **D'Souza, M.A. & Bhat, D.J. 2002.** "*Bharatheeya*, a new hyphomycete genus from India". *Mycotaxon* 83: 397–403.  
Abstract: A new genus of the dematiaceous hyphomycetes, *Bharatheeya*, is proposed for *Spadicoides goanensis* on the basis of its production of solitary, distoseptate conidia on non-cicatrized polytretic, verrucose conidiogenous cells and mononematous conidiophores. In addition, *Bharatheeya mucoidea* anam. sp. nov. isolated from decaying leaves of *Calamus thwaitesii*, is described from the forests of Western Ghats in Goa, India.
41. **D'Souza, M.A. & Bhat, D.J. 2007.** "Diversity and abundance of endophytic fungi in four plant species of Western Ghat forest of Goa, southern India". *Kavaka* 35: 11–20.
42. **Fonseca, M.A. & Janarthanam, M.K. 2003.** "A new species of *Glyphochloa* W.D. Clayton (Poaceae) from Goa, India". *Rheedea* 13: 35–38.  
Abstract: A new species of *Glyphochloa* Clayton, viz. *G. veldkampii* is described from Kasauli, along the Panaji-Belgaum Highway (NH 4A) in the outskirts of Bhagwan Mahavir Wildlife Sanctuary, Goa. It is allied to *G. talbotii* (Hook.f.) Clayton and *G. henryi* Janarth. & al. but it is distinct from the two species in having a prominent single transverse, cap-like collar on the lower glume of the sessile spikelet. The species is so far known only from the type collection. The type locality has now been covered with fresh soil for afforestation programme.
43. **Francis, J.W., Dandu, M.M., Sardesai, M.M. & Dhabe, A.S. 2012.** "Notes on *Celastrus paniculatus* Willd. ssp. *aggregatus* K.M. Matthew ex K.T. Matthew (Celastraceae)". *J. Threatened Taxa* 4: 3450–3453.  
Abstract: *Celastrus* L., a large genus of the family Celastraceae, is represented by 31 species in the world. In India, the genus is represented by seven species and one subspecies. This paper deals with addition of *Celastrus paniculatus* subsp. *aggregatus* to the flora of Andhra Pradesh, Kerala, Goa and Andaman and Nicobar Islands. A note on its distribution is also provided in this paper.
44. **Gad, H.S. & Janarthanam, M.K. 2007.** "New distributional records of grasses to the state of Goa". *J. Econ. Taxon. Bot.* 31: 154–159.  
Abstract: Grass flora of Goa is poorly documented. The present studies on grasses resulted in the addition of 20 species to the state. Nomenclature, description, field notes and specimens examined are provided for all species.

45. **Gad, H.S. & Janarthanam, M.K. 2007.** "A new species of *Ischaemum* (Poaceae) from Goa, India". *Kew Bull.* 62: 499–501.

Abstract: A new species of *Ischaemum* L. (Poaceae) from lateritic rocky plateau of Surla, Goa, India, is described as *I. yadavii*. This species is similar to *I. santapau* Bor, but differs in its crustaceous bulged, lower glume of sessile spikelet; dorsally humped, narrowly winged keel of upper glume of sessile spikelet and well-developed pedicellate spikelet.

46. **Garcia de Orta. 1891.** *Colloquios dos simples e Drogas da India.* 2 Volumes. Lisbon. Edited and annotated by Conde de Ficalho.
47. **Garcia de Orta. 1913.** *Colloquios on the Simples and Drugs of India* (New edition Lisbon, 1895). Edited and annotated by Conde de Ficalho. Translated with an introduction and Index by Sir Clements Markham, London. pp. 1–509.
48. **Garcias, C.F.X. 1896.** *Memoria sobre Pogostemon parviflorus.* Margao, Goa. pp. 1–10.
49. **Garcias, C.F.X. 1899.** *Os legumes e os Cereaes de Goa e Damao. Suas propriedades usos economicos e therapeuticos e analyse chimica.* Bombay. pp. 1–23.
50. **Garcias, C.F.X. 1902.** "Flora Economica e Industrial da Provincia de Pragana Nagarhaveli (India Portugueza)". *Memorias da Academia Real das Sciencias de Lisboa, nov. ser. Classe de Sciencias Mathematicas* 7(1): 1–70.
51. **Garcias, C.F.X. 1912.** *Flora sagrada da India on mythologia das plantas indianas. Com sua classificacao, nomenclatura, descricao, propriedades e usos medicinales, economicos e industria es e composicao chimica.* Margao.
52. **Garcias, C.F.X. 1927.** *Catalogo descritivo dos produtos uteis de Flora de Goa e do distrito de Damao.* Tipografia Rangel, Bastora, Goa.
53. **Gaunkar, T. & Kerkar, V. 2004.** "Studies on algal diversity in Temple ponds from North Goa". *Indian Hydrobiology* 7(1&2): 67–71.
54. **Geeta, K. & Kerkar, V. 2009.** "Freshwater green algal flora from Parsem (Pernem) Goa, India". *Indian Hydrobiology* 12: 114–119.
55. **Gosavi, K.V.C., Yadav, U.S., Janarthanam, M.K. & Yadav, S.R. 2011.** "Karyomorphological analysis of recently described rare species of *Dipcadi* Medik. (Hyacinthaceae) from northern Western Ghats". *Cytologia* 76: 63–66.

Abstract: *Dipcadi goaense* Prabhug. & al. is so far known only from the type locality with a single population spread over about 1 km<sup>2</sup> in South Goa. It is allied to *D. concanense* (Dalzell) Baker, but differs in its small flowers and funnel-shaped perianth tube. The present paper describes the distribution, ornamental potential and karyotype analysis and reports meiotic count in the species. The haploid chromosome number  $n = 6$ , somatic chromosome number  $2n = 12$  and karyotype analysis is reported for the first time for

the species. The bimodal asymmetrical karyotype represents an advanced nature of the taxon. It has glistening white fragrant flowers of considerable ornamental potential. The species can be best conserved through its utilisation as an ornamental bulbous plant by introduction in gardens.

56. **Govindarajalu, E. 1972.** "Studies in Cyperaceae VIII. Novelties in *Fimbristylis* (L.) Vahl". *Proc. Indian Acad. Sci., Pl. Sci.* 76B: 181–193.

Abstract: Four novelties belonging to the genus are recognised during the course of the revision of this genus. Four new species, viz. *Fimbristylis dauciformis* (sect. *Trichelostylis*) allied to *F. glabra* Steud. from Sholayar, Kerala, *F. eligulata* (sect. *Fimbristylis*) allied to *F. dichotoma* (L.) Vahl from Ennore, Tamil Nadu, *F. ligulata* (sect. *Fimbristylis*) allied to *F. tenuinervis* Kern from Borivili, Maharashtra and Goa and *F. longistigmata* (sect. *Cymosae*) allied to *F. dura* (Zoll. & Merr.) Merr. from Kodhaiyar, Kanyakumari district, Tamil Nadu have been described.

57. **Graham, J. 1837.** "Catalogue of plants collected at Bombay". *Madras J. Lit. Sci.* 5: 178–183, 367–370. (Reprinted from Records of General Science, July–Oct. 1836).

58. **Graham, J. 1839.** *A catalogue of the plants growing in Bombay and its vicinity; spontaneous, cultivated or introduced, as far as they are ascertained.* Government Press, Bombay.

59. **Irudayaraj, V. & Bir, S.S. 1997.** "Notes on some pteridophytes from the Western Ghats of Goa state, South India". *Indian Fern J.* 14: 113–117.

Abstract: Present preliminary account of pteridophytes of Goa is consequential to our studies on biosystematics of Indian ferns and deals with sixteen species of fern and one fern ally collected from the Western Ghats of Goa state, southern India. Chromosome number of *Christella dentata* (Forssk.) Brownsey & Jermy from this area has been confirmed as  $n = 72$  ( $4x$ ). Information on the distribution and ecology of the recorded species in the area has been provided. Two endemic ferns, namely *Athyrium hohenackerianum* (Kuntze) T. Moore (endemic to southern India and Sri Lanka and *Bolbitis ? prolifera* (Bory) C. Chr. & Tardieu (endemic to southern India) have been newly recorded from Goa. All the species are also present elsewhere in the Western Ghats of southern India.

60. **Jacob, M. & Bhat, D.J. 2000.** "Two new endophytic conidial fungi from India". *Cryptog. Mycol.* 21: 81–88.

61. **Jacob, M. & Bhat, D.J. 2000.** Diversity and abundance of microfungi on decaying leaf-litter of *Ficus benghalensis* L. In: Bhat, D.J. & Raghukumar, S. (Eds.), *Ecology of Fungi.* Goa University Publications. pp. 33–39.

62. **Jalal, J.S. & Jayanthi, J. 2012.** "Endemic orchids of Peninsular India: A Review". *J. Threatened Taxa* 4: 3415–3425.

Abstract: The present analysis of endemic orchids shows that a total of about 130 species belonging to 38 genera are found in Peninsular India. Of these, 43 are terrestrial, 85

epiphytic and 2 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.

63. **Janarthanam, M.K. 1994.** "Distributional and ecological note on *Utricularia malabarica* (Lentibulariaceae) A recently described bladderwort". *J. Econ. Taxon. Bot.* 18: 230–232.  
Abstract: *Utricularia malabarica* Janarth. & A.N. Henry, hitherto known only by its type collection from Kerala is reported for the first time from Konkan and Goa. Description, illustration and ecological details are provided.
64. **Janarthanam, M.K., Vaishali, C.J. & Rajkumar, S. 2000.** "*Glyphochloa henryi*, a new species of Poaceae from Goa, India". *Rheedea* 10: 99–102.  
Abstract: A new species of *Glyphochloa* Clayton, viz. *G. henryi* allied to *G. talbotii* (Hook.f.) Clayton has been described and illustrated from Tisk-Usgao, Goa.
65. **Joshi, V.C. & Janarthanam, M.K. 2004.** "The diversity of life-form type, habitat preference and phenology of the endemics in the Goa region of the Western Ghats, India". *J. Biogeogr.* 31: 1227–1237.  
Abstract: A floristic survey of endemic plants of the Western Ghats in Goa resulted in the collection of 113 endemic species. Life-form analysis reveals that herbaceous endemics are the most dominant followed by trees, shrubs and climbers. Plateaus in the study area harbour the largest number of endemic species, especially herbs. Endemic trees are distributed in the semi-evergreen and evergreen forests. Endemic species in the study area show different peak and lean seasons of flowering depending on their life-form type, habitat and ecological factors such as temperature and rainfall/moisture content in the soil.
66. **Joshi, V.C., Rajkumar, S. & Janarthanam, M.K. 1997.** "Additions to the dicotyledonous flora of Goa". *J. Econ. Taxon. Bot.* : 495–500.  
Abstract: The flora of Goa is relatively underexplored as compared to other neighbouring states. The present paper adds 31 dicotyledonous species belonging to 26 genera and 15 families to the flora of Goa.
67. **Joshi, V.C., Rajkumar, S. & Janarthanam, M.K. 2001.** "Distribution of *Oberonia brachyphylla* Blatt. & McCann A rare, endemic orchid of Western Ghats". *J. Bombay Nat. Hist. Soc.* 98: 153–154.  
Abstract: In the present paper, *Oberonia brachyphylla* Blatt. & McCann has been reported from two new localities, viz. Molem-Anmode, Goa and Agumbe, Shimoga district,

Karnataka. Earlier this species is reported from North Kannara, Karnataka and Ponnudi, Kerala.

68. **Joshi, V.C., Rajkumar, S. & Janarthanam, M.K. 2001.** "New records of the family Eriocaulaceae from Goa". *J. Bombay Nat. Hist. Soc.* : 155–156.

Abstract: Six species of the family Eriocaulaceae, viz. *Eriocaulon fysonii* R. Ansari & N.P. Balakr., *E. lanceolatum* Miq. ex Körn., *E. palghatense* R. Ansari & N.P. Balakr., *E. parviflorum* (Fyson) R. Ansari & N.P. Balakr., *E. quinquangulare* L. and *E. reductum* Ruhland have been reported for the first time for the state of Goa.

69. **Kale, M.V. & Upadhye, A.B. 2005.** "Study of proteins in the dimorphic leaves of three ferns of Western Ghats, south India". *Indian Fern J.* 22: 89–91.

Abstract: The present paper deals with the protein contents of dimorphic leaves of three different pteridophytes, viz. *Bolbitis appendiculata* (Willd.) K. Iwats., *Ceratopteris thalictroides* (L.) Brongn. and *Drynaria quercifolia* (L.) J. Sm. growing in different habitats of Goa.

70. **Kanodia, K.C. & Reddi, B.V. 1964.** "*Ceropegia fantastica* Sedgwick (Asclepiadaceae) An imperfectly known species". *Bull. Bot. Surv. India* 6: 311–312.

Abstract: *Ceropegia fantastica* Sedgw. has been reported for the first time for the state of Goa from Ordofond to Tudal, Canacona Cancilloh area. Previously, this species was only known from Sulgeri in Mysore district (type locality).

71. **Karhikeyan, S., Sharma, B.D. & Mudaliar, S.K. 1982.** "New distributional records of plants for N. Kanara, S.M. Country and Goa". *J. Econ. Taxon. Bot.* 3: 609–615.

Abstract: Studies on herbarium specimens collected from Goa, S.M. Country (areas falling under the present Karnataka state only) and N. Kanara reveal that 34 species have not been so far recorded from these areas, though they have been reported from Gujarat or Maharashtra. Extended distributional records of these species are reported here.

72. **Kerkar, V. 2003.** "Deep water calcareous algae from submerged Banks of India". *Seaweed Res. Utiln.* 25(1&2): 21–25.

73. **Kerkar, V. 2004.** "Addition to the marine algal flora of Goa". *Seaweed. Res. Utiln.* 26: 1–3.

74. **Kerkar, V. 2004.** "Addition to the marine algal flora of Goa". *Seaweed Res. Utiln.* 26: 19–21.

Abstract: Seven species of marine algae (two Chlorophyta, two Phaeophyta and three Rhodophyta) are recorded from various localities of Goa for the first time. In the present

paper, a detailed account on habitat, distribution, morphological and reproductive features of these algae is given.

75. **Kerkar, V. 2009.** Preliminary studies on diversity of green algae from the various habitats of Goa. In: Anand, N. (Ed.), *Biology and Biodiversity of Microalgae*. Aksharamuthraalayam, Chennai. pp. 190–195.
76. **Kerkar, V. & Lobo, A. 2011.** Desmid diversity for Northern Goa, India. In: Krishnamurthy, V. (Ed.), *Proceedings of the International Conference on Algal Biomass and Utilization*. pp. 132–141.
77. **Kerkar, V. & Madakaikar, S. 2003.** “Fresh water blue green algal flora of Goa”. *Indian Hydrobiology* 6(1&2): 45–48.
78. **Kerkar, V. & Shetkar, P. 2009.** Diversity and distribution of Pteridales (Pteridophyta) from Goa. In: Krishnan, S. & Bhat, D.J. (Eds.), *Plant and Fungal Biodiversity and Bioprospecting*. pp. 123–129.
79. **Khade, S.W. 2010.** “*Dentiscutata nigerita* A new species of Arbuscular Mycorrhizal fungi from India”. *Mycosphere* 1(3): 241–247.

Abstract: *Dentiscutata nigerita* Khade (Family Dentiscutataceae), a new species is reported and described from the rhizosphere of *Carica papaya* plants from Kodar, Goa. The diagnostic features are discussed including the characteristic feature that the bulbous suspensor is attached at an angle to the spore.

80. **Khade, S.W., Bukhari, M.J., Jaiswal, V., Gaonkar, U.C. & Rodrigues, B.F. 2002.** “Arbuscular Mycorrhizal status of medicinal plants: A field survey of AM fungal association in shrubs and trees”. *J. Econ. Taxon. Bot.* 26: 571–578.

Abstract: A total of 20 medicinal plant species belonging to 16 angiospermic families were surveyed for the occurrence of Arbuscular Mycorrhizae. The samples were collected from two places in South Goa. All the plants surveyed were colonised with Arbuscular Mycorrhizae. The colonization in shrubs and trees ranged from 47% to 98% and 29% to 85%, respectively, whereas the spore density in the rhizosphere soil showed variation from 12 spores/100g soil to 530 spores/100g soil in shrubs and 13 spores/100g soil to 464 spores/100g soil in tree species. Species composition of AM fungi revealed the presence of four genera, viz. *Acaulospora*, *Glomus*, *Sclerocystis* and *Scutellospora* in the rhizosphere soil of the medicinal plants studied.

81. **Kostermans, A.J.G.H. 1983.** “The south Indian species of *Cinnamomum* Schaeffer (Lauraceae)”. *Bull. Bot. Surv. India* 25: 90–133.

Abstract: *Cinnamomum* is represented in southern India by 12 endemic species and the imported cultivated *C. verum* (synonym *C. zeylanicum*) from Sri Lanka. Of these *C. filipedicellatum*, *C. walaiwarensense*, *C. goaense* and *C. keralense* are described for the first

time. The first two species are from Tamil Nadu, third from Goa and the last one from Kerala. *Cinnamomum heyneanum* Nees reduced to *C. pedunculatum* var. *angustifolium* Hemsl. by Allen and later to *C. burmanii* var. *angustifolium* Hemsl. and quite recently reduced to forma *heyneanum* by H.W. Li in 1978, is re-established. The single collection known is from southern India and is certainly different from the Chinese *C. angustifolium*; with *C. burmanii* it is not related to all. A complete bibliography of *C. malabatum* (Burm.f.) Blume is presented, this was in antiquity the source of *Cassia lignea* bark and of *Folium indum*. The history of this bark and the leaves is presented.

82. **Kothari, M.J. & Rao, K.M. 1990.** "Studies in mangroves of Goa". *Indian Bot. Contactor* 7: 185–188.
83. **Kothari, M.J. & Rao, K.M. 1991.** "Two new records for Goa and Gujarat". *Indian Bot. Contactor* 8: 58–61.
84. **Kothari, M.J. & Rao, K.M. 1995.** Interesting ecosystems of mangroves along West coast of India (Goa and Gujarat State). In: Pandey, A.K. (ed.), *Taxonomy and Biodiversity*. CBS Publishers & Distributors, Delhi. pp. 52–58.
85. **Kothari, M.J. & Rao, K.M. 1995.** "*Dolichandrone spathacea* (L.f.) K. Schum. (Bignoniaceae) – A little known plant for Goa". *J. Econ. Taxon. Bot.* 19: 323–324.

Abstract: *Dolichandrone spathacea* (L.f.) K. Schum. (Bignoniaceae) is reported for the first time for the state of Goa from Dapoli. Earlier this species is known from Kerala, West Bengal, Odisha and Andaman and Nicobar Islands.

86. **Kothari, M.J. & Rao, K.M. 2002.** *Mangroves of Goa*. Botanical Survey of India, Kolkata.
- Abstract: The book enumerates about 180 taxa belonging to 143 genera under 73 families; of the 180 taxa 142 from dicots, 30 from monocots, and 4 each from algae and pteridophytes.
87. **Kothari, M.J. & Singh, N.P. 1998.** "Mangrove diversity along the north-west coast of India". *J. Econ. Taxon. Bot.* 22: 571–585.

Abstract: Plant diversity along the coastal region of Goa, Gujarat and Maharashtra states is presented in the paper. The study revealed that there are 17 species of mangroves belonging to families such as Avicenniaceae, Combretaceae, Myrsinaceae, Rhizophoraceae and Sonneratiaceae; 9 species of non-mangrove halophytes belonging to families, namely Aizoaceae, Chenopodiaceae, Cyperaceae, Poaceae and Tamaricaceae, and 10 other associated plant species, which are not strictly mangroves but seen along tidal swamps under freshwater conditions along the coastal regions. This study also resulted in the publication of two new records for West coast and three for the state. This phytodiversity also includes several hundred species (c. 500), including various epiphytic and terrestrial ferns, orchids, parasites, sea-grasses, sea-weeds and soil binders collected or noted from creeks, wetlands, islands, (e.g., Chorao, Elephanta, Pirotan) and

sandy/stony beach areas. The environmental impact on mangroves and other species due to various biotic (e.g., grazing, over-exploitation, industrialisation, urbanisation, chemicals and mining operations) and abiotic (e.g., cyclones, high temperature and drought) factors, besides regeneration and conservation aspects of mangroves are discussed.

88. **Kumar, R. 1995.** "Mangrove plantations in Goa". *Indian Forester* 121: 3–8.
- Abstract: Due to the degradation of mangrove forests in Goa in the past mainly due to biotic interference, the Forest Department of Goa has started planting mangrove species in the degraded areas to restore these forests to their pristine glory. The plantations raised so far can be graded as very successful on the basis of overall results and are playing crucial role in the improvement of mangrove ecosystem in Goa. Our endeavour is to have a sound mangrove ecosystem primarily by adopting afforestation and conservation activities.
89. **Kumar, R. 2000.** "Status of natural regeneration in mangroves of Goa". *Indian J. Forest.* 23: 342–348.
- Abstract: Results of natural regeneration survey in mangroves of Goa have been discussed in the paper, which are important for adopting appropriate strategies for conservation and management of mangroves.
90. **Kumar, R. 2000.** "Distribution of mangroves in Goa". *Indian J. Forest.* 23: 360–365.
- Abstract: Detailed information on distribution of mangroves based on ground truth is one of the most important and crucial information required for drawing management plan for effective conservation of mangrove ecosystem. This information would enable us to adapt appropriate strategy and action plan not only for the conservation but also for the development of the mangrove ecosystem. Based on the field realities artificial regeneration of mangroves can be taken up on various degraded sites for its quick restoration. Timely action can also be taken to multiply those species which are threatened or on the verge of extinction. Wherever feasible, a new mangrove species can be introduced after experimental trials in order to enrich the area. In addition to several other utilities, the information on distribution of mangroves can play a significant role in proper planning for sustainable utilisation of mangrove wood. Mangroves occur all along the seven estuaries and Cumbarjua canal in Goa. Details of intensive and extensive field study on species-wise distribution of mangroves in Goa along with other useful information have been presented in this paper.
91. **Lisboa, J.C. 1886.** "Useful plants of Bombay Presidency". *Gaz. Bombay Pres.* 25: 1–307.
92. **Madkaikar, S.M. 2003.** "New records of pteridophytes from Goa". *Indian Fern J.* 20: 60–66.

Abstract: New records of fern and fern allies are reported from the Western Ghats and low lands of Goa state on the basis of extensive collection done recently. The present survey reports a total of 29 ferns and 6 fern allies. Altogether 36 species belonging to 27 genera representing 16 families are reported. In the present study, 8 endemic and 7 rare and endangered pteridophyte species of India are found in this region. Details on ecology and localities are given.

93. **Mascarenhas, M.E. & Janarthanam, M.K. 2009.** "Extended distribution and lectotypification of *Gymnostachyum latifolium* var. *decurrens* Gamble An endemic entity of the Western Ghats". *Indian J. Forest.* 32: 141–144.

Abstract: *Gymnostachyum latifolium* (Dalzell) T. Anderson var. *decurrens* Gamble was considered endemic to Western Ghats of Kerala. The present collection from Verlem, Sanguem taluka, Goa extends its distribution to the northern Western Ghats. A detailed description with illustration is provided and a lectotype has been designated.

94. **Mascarenhas, M.E. & Janarthanam, M.K. 2013.** "Taxonomic status of *Strobilanthes warreensis* (Acanthaceae), an endemic species of Western Ghats, India". *Rheedea* 23: 1–6.

Abstract: *Strobilanthes warreensis* Dalzell (Acanthaceae) is endemic to the Western Ghats. Due to its close resemblance to *S. ciliatus* Nees, it has been critically studied along with the latter and evaluated for its taxonomic status and circumscription. Based on our studies, including that of type and tagged live specimens in the field, it is concluded that both are conspecific. Therefore, *S. warreensis* has been synonymised under *S. ciliatus*.

95. **Meena, S.N., Ghadi, S.C. & Janarthanam, M.K. 2013.** "Evaluation of medicinal properties of *Grewia nervosa* (Lour.) Panigrahi". *Int. J. Pharma Bio Sci.* 4: 821–828.

Abstract: *Grewia nervosa* (Lour.) Panigrahi, belonging to the family Malvaceae s.l. is widely distributed along the Western Ghats of India. Although, it has been commonly used in traditional medicine, the medicinal properties have not been scientifically evaluated. Phytochemical analysis established the presence of phenolic compounds, tannins, alkaloids and saponins in leaves. The aqueous and methanolic extract from leaves and bark of *G. nervosa* were investigated for medicinal properties using *in vitro* assays. The methanolic extract of leaves demonstrated 97.5% inhibition of  $\alpha$ -amylase activity; it also demonstrated antioxidant activity ( $5.41 \pm 0.23$  mmol/g, dw) that was higher compared to aqueous extract ( $3.32 \pm 0.45$  mmol/g, dw). Further, the methanolic extract of bark exhibited anti-lipoxygenase activity indicative of its potential to control inflammatory activity. These results suggest that *G. nervosa* would be potential source for treatment of diabetes and its associated complications such as oxidative stress and inflammation.

96. **Mulgaonkar, M.S. 2005.** "Study of pollinium of three beautiful Indian orchids under electron microscopy". *Phytotaxonomy* 5: 89–92.

Abstract: Palynological observations of three corticolous orchids, namely *Dendrobium transparens* Wall. ex Lindl. (from Sikkim), *Vanda tesellata* (Roxb.) Hook.f. ex G. Don (from Goa) and *Cottonia peduncularis* (Linsl.) Rchb.f. (from Maharashtra) were made under SEM with reference to pollinia. Observations indicate that these pollinia vary in their shape, size, diameter and cellular structure. Connecting threads of elasto-visin observed in *Cottonia peduncularis*.

97. **Naik, S.S., Pagare, R.S., Krishnan, S. & Janarthanam, M.K. 2013.** "Systematic position of *Phyllanthus talbotii* (Phyllanthaceae), a Critically Endangered species of Western Ghats, India". *Rheedea* 23: 13–18.

Abstract: *Phyllanthus talbotii* Sedgw. (Phyllanthaceae) is endemic to Western Ghats regions of Goa and Karnataka, and is Critically Endangered. For a long time, it was known only from the type collection and a subsequent untraceable collection and hence taxonomically not fully understood, though a recent treatment has placed it under subgenus *Eriococcus*. In the present study, attempts were made to confirm its position using morphological characters and sequences of nuclear Internal Transcribed Spacer (ITS) of nuclear ribosomal DNA (nrDNA) and chloroplast *matK* genes. Results from ITS and *matK* phylogenetic analyses supported its placement in subgenus *Eriococcus*.

98. **Nair, S.K. & Bhat, D.J. 2001.** "*Diploospora indica*, a new species of hyphomycetes". *Mycotaxon* 80: 101–104.

Abstract: A new species of Hyphomycetes, *Diploospora indica*, isolated from freshwater foam and submerged leaf litter of *Dipterocarpus laevis*, is described from India. The new taxon is compared with known species of the genus and other similar genera.

99. **Nair, S.K. & Bhat, D.J. 2002.** *Dendrospora yessemreddea* sp. nov. from freshwater foam. In: Manoharachary, C., Purohit, D.K., Reddy, S.R., Singaracharya, M.A. & Girishan, S. (Eds.), *Frontiers in Microbial Biotechnology and Plant Pathology*. Scientific Publishers, Jodhpur. pp. 295–298.

100. **Nairne, A.K. 1877.** "List of trees, shrubs and creepers growing in a small jungle close to the Mandeva Bander, at the mouth of the Nagotna River". *J. Bombay Branch Roy. Asiat. Soc.* 13: 150–151.

101. **Nairne, A.K. 1894.** *The Flowering plants of Western India*. W.H. Allen & Co. Ltd., London.

102. **Naithani, H.B., Sahni, K.C. & Bennet, S.S.R. 1997.** *Forest flora of Goa*. International Book Distributors, Dehra Dun.

Abstract: The flora comprises 494 species of angiosperms belonging to 289 genera in 80 families. Gymnosperms and pteridophytes are represented by *Gnetum edule* and *Angiopteris evecta*, respectively and are found inside the forests of Goa. Besides, the flora includes 82 exotic woody introduced species from this region.

103. **Nayaka, S. & Upreti, D.K. 2007.** "Notes on some interesting microlichens from India". *Indian J. Forest.* 30: 509–510.

Abstract: *Bactrospora lamprospora* (Nyl.) Lendemer (Opegraphaceae) and *Monoblastia pellucida* Aptroot (Monobalstiaceae) are described as new records to the lichen flora of India from Kerala and Goa, respectively.

104. **Nayaka, S., Upreti, D.K., Phatak, S. & Samuel, C. 2006.** "Preliminary observation on lichen flora of coconut and arecanut orchards of Goa, India". *Phytotaxonomy* 6: 23–25.

Abstract: The paper enumerates the occurrence of 23 lichen species of different trees in coconut and arecanut orchards of Goa. The orchard trees are dominated by crustose lichens, represented by 17 species, while foliose and fruticose lichens exhibit scarce growth. The members of Arthoniaceae, Arthopyreniaceae, Collemataceae, Graphidaceae, Physciaceae, Thelotremaaceae and Trichotheliaceae families exhibit their luxuriance on the whole trunk.

105. **Nayar, T.S., Raseeya Beegam, A. & Sibi, M. 2014.** Flowering plants of the Western Ghats, India. 2 Vols. JNTBGRI, Kerala.

Abstract: This work in two volumes comprehensively covers the first time the flowering plants of Western Ghats. It records 7402 species, 117 subspecies and 476 varieties from the area and treats 66 species, 5 subspecies and 14 varieties under doubtful occurrence. Although, it deals with 8080 taxa. Each taxon is provided with correct name, important synonyms, nature of habit, references to good descriptions and illustrations, distribution in the world and the Western Ghats, indigenous, endemic and exotic nature, IUCN threat categories, phenology across the Western Ghats, uses, local names in six Indian languages and other important details.

106. **Noronha, A.D.P. & Pinto, M.S.T.V. 1954.** "Estudo de Principios Activos de *Gymnema sylvestre* R. Br." *Revista Farmacêutica (Goa)* 1(3): 144–158.

107. **Patil, B.B. & Janarthanam, M.K. 2013.** "Distribution of some obnoxious weeds in north Western Ghats of India". *Indian J. Weed Sci.* 45: 267–272.

Abstract: In the present study, potential distribution of three obnoxious weeds, viz. *Chromolaena odorata*, *Lantana camara* and *Parthenium hysterophorus* was modeled using 32 environmental variables and MAXENT modeller. These three species showed distinct potential distribution patterns with only slight overlap between *Chromolaena odorata* and *Lantana camara*, and between *L. camara* and *Parthenium hysterophorus*. Overlap of the former pair was seen mostly along the wet western slopes of Western Ghats, and the latter along the eastern, rain-shade dry areas. The environmental variables that contributed to the model showed that it was basically precipitation and temperature seasonality that defined their distribution. It was interpreted that the weeds might have adapted to different sets of environmental conditions throughout their distributional

range; and hence, the variables operating in the study area contributing to the model may not be useful in predicting their presence elsewhere. It is concluded that to understand the full adaptability of these weeds, environmental variables can be studied at local levels and the results compiled for larger areas to get the full spectrum.

108. **Patil, B.B. & Yadav, S.R. 1998.** "Additions to the aroids of Goa". *J. Econ. Taxon. Bot.* 22: 191–192.

Abstract: Ten wild species of aroids, viz. *Amorphophallus commutatus* (Schott) Engl., *A. konkanensis* Hett. & al., *Ariopsis peltata* Nimmo, *Arisaema neglectum* Schott, *Cryptocoryne cognata* Schott, *C. spiralis* (Retz.) Fisch. ex Wydler, *Remusatia vivipara* (Roxb.) Schott, *Sauromatum pedatum* (Willd.) Schott, *Theriophonum dalzellii* Schott and *Typhonium roxburghii* Schott have been reported for the first time for the state of Goa.

109. **Patil, R.T. & Prasad, V.P. 2009.** "Notes on sedges (Cyperaceae) of Goa, India—I. Ten new records". *Indian J. Forest.* 32: 447–449.

Abstract: Ten taxa, viz. *Cyperus distans* var. *pseudonutans* Kuk., *C. exaltatus* var. *dives* (Delile) C.B. Clarke, *Eleocharis acutangula* (Roxb.) Schult., *E. dulcis* (Burm.f.) Trin. ex Hensch., *Fimbristylis alboviridis* C.B. Clarke, *F. littoralis* Gaudich., *F. merrillii* J. Kern, *F. tenera* Schult., *Lipocarpha squarrosa* (L.) Goetgh. and *Pycnus stramineus* (Nees) C.B. Clarke are reported for the first time from Goa.

110. **Patil, R.T. & Prasad, V.P. 2009.** "Notes on sedges (Cyperaceae) of Goa, India—II. Ten new records". *Indian J. Forest.* 33: 215–216.

Abstract: Ten taxa of Cyperaceae, viz. *Carex filicina* var. *glaucina* (Boeck.) Kuk., *Cyperus alulatus* J. Kern, *C. cyperinus* var. *pictus* (Nees) Kuk., *C. digitatus* Roxb., *C. haspan* subsp. *juncoides* (Lam.) Kuk., *C. paniceus* (Rottb.) Boeck. var. *paniceus*, *C. paniceus* var. *roxburghianus* (C.B. Clarke) Kuk., *Pycnus diaphanous* (Roem. & Schult.) S.S. Hooper & T. Koyama, *P. pumilus* var. *membranaceus* (Vahl) Karthik. and *Scleria levis* var. *pubescens* (Steud.) C.Z. Zheng are added to the flora of Goa.

111. **Patil, S. & Dongare, M. 2013.** "*Adiantum tenerum* Swartz (Adiantaceae Pteridophyta): A new distribution record for India". *Indian Fern J.* 30: 115–118.

Abstract: *Adiantum tenerum* Sw. (Brittle Maidenhair) is recorded for the first time for India from Bondla forest region, Goa state. Description and illustration are provided.

112. **Patil, S., Jayanthi, J., Jalal, J.S. & Jadhav, C.R. 2014.** "*Crotalaria pallida* Aiton var. *obovata* (G. Don) Polhill (Fabaceae) An extended distribution for Gujarat, Maharashtra, Goa and Karnataka". *Zoo's Print J.* 29(9): 14–15.

Abstract: *Crotalaria pallida* Aiton var. *obovata* (G. Don) Polhill (Fabaceae) is reported as new distributional record for the states of Gujarat, Maharashtra, Goa and Karnataka. In India, it was earlier reported from Sikkim, Tamil Nadu and Kerala. A detailed description of the variety along with a photo plate is provided for easy identification.

113. **Paul, S.R. & Kapoor, S.L. 1979.** "New plant records from Goa". *Indian J. Bot.* 2: 180–181.

Abstract: *Grewia tiliifolia* var. *leptopetala* T. Cooke, *Tithonia diversifolia* (Hemsl.) A. Gray, *Litsea coriacea* B. Heyne ex Meissn., *Loranthus stocksii* Hook.f., *Scurrula parasitica* L., *Bridelia crenulata* Roxb., *Jatropha gossypifolia* L., *Breynia rhamnoides* Müll.Arg. and *Smilax indica* Burm.f. are reported as new records for the flora of Goa.

114. **Pednekar, S.M., Kerkar, V. & Matondkar, S.G.P. 2014.** "Spatiotemporal distribution in phytoplankton community with distinct salinity regimes along the Mandovi estuary, Goa, India". *Turkish J. Bot.* 38: 1–19.

Abstract: Seasonal variations in the composition and abundance of phytoplanktons were investigated fortnightly at three different regions along the Mandovi estuary from June 2007 to May 2008 in relation to salinity and nutrients. A total of 209 species belonging to 7 divisions were identified during the study period. The highest phytoplankton cell density ( $5.17 \times 10^4$  cells L<sup>-1</sup>) and biomass (7.68 mg m<sup>-3</sup> chlorophyll a) were observed in the upper sections during the non-monsoon period, while the highest diversity (3.46) was observed in the upper section during the monsoon period. Bacillariophyta was the dominant phytoplankton group (71%) of the total species identified. This group was dominated by Pennales (88) over Centrales (60) at all three stations. Contributions of Dinophyta, Chlorophyta, Cyanophyta, Haptophyta, Chromophyta, and Chrysophyta to the total species were 25%, 0.5%, 1%, 0.5%, 1% and 1%, respectively. Dinophyta did not show significant variations in percentage distribution among the three sections and seasons. A total of 26 dominant species of phytoplanktons, representing all seasons with cell density of >1000 cells L<sup>-1</sup>, showed spatial adaptability patterns with respect to salinity. *Protoperdinium acbromaticum* and *Alexandrium ostenfeldii* were found to grow only during non-monsoon periods in upper sections and were reported for first time in the present study. Euryhaline *Skeletonema costatum* and *Thalassiothrix frauenfeldii* were present throughout the study period. A total of 36 harmful algal bloom forming species, with 11 toxin-producing species, have been identified. The presence of *Streptotheca thamensis* acts as an indicator to evaluate water quality.

115. **Pednekar, S.M., Matondkar, S.G.P. & Kerkar, V. 2012.** "Spatiotemporal distribution of harmful algal flora in the tropical estuarine complex of Goa, India". *Scientific World J.* 2012: 1–11.

Abstract: Mandovi and Zuari estuarine complex is a monsoon-influenced one located along the central West coast of India. During the past few years, there has been an increase in nutrient loading specially during monsoonal runoff, which is responsible for the growth of harmful algal flora. To understand the occurrence and distribution of harmful algal bloom forming species, daily/alternate day samplings were carried out in Mandovi and Zuari estuaries during 20072008 and 20082009, respectively,

comprising of monsoon (June–November) and non-monsoon (December–May) periods. In Mandovi, total 54 HAB species with 49 in monsoon and 36 during non-monsoon period were reported. In Zuari, total 46 HAB species with 38 in monsoon and 41 were reported during non-monsoon period. Bray-Curtis cluster analysis based on log-transformed phytoplankton density detected seven well-defined groups revealing spatiotemporal variability. The density of the dominant harmful algal species was significantly positively correlated with nutrients, but negatively correlated with salinity. The results of the study indicate that monsoon plays an important role in occurrence and distribution of harmful algal species having direct correlation with salinity variations and nutrient loading.

116. **Pednekar, S.M., Matondkar, S.G.P., Gomes, H.R., Goes, J.I., Parab, S.G. & Kerkar, V. 2011.** “Fine-scale responses of phytoplankton to freshwater influx in a tropical monsoonal estuary following the onset of the southwest monsoon”. *J. Earth Syst. & Sci.* 120(3): 545–556.

Abstract: In May of 2007, a study was initiated by the National Institute of Oceanography, Goa, to investigate the influence of monsoonal rainfall on hydrographic conditions in the Mandovi River, Goa. The study was undertaken at a location approximately 2 km upstream of the mouth of this estuary. During the premonsoon (PreM) in May, when circulation in the estuary was dominated by tidal activity, phytoplankton communities in the high saline (35–37 psu) waters at the study site were largely made up of the coastal neritic species, *Fragilaria oceanica*, *Ditylum brightwellii* and *Trichodesmium erythraeum*. During the later part of the intermonsoon (InterM) phase, an abrupt decline in salinity led to a surge in phytoplankton biomass [Chlorophyll a approximately 14 mg m<sup>-3</sup>], of a population that was dominated by *Thalassiosira eccentricus*. As the southwest monsoon (SWM) progressed and the estuary freshened salinity and Chlorophyll a (Chl a) concentrations decreased during the MoN, *Skeletonema costatum* established itself as the dominant form. Despite the low biomass (Chl a < 2 mg m<sup>-3</sup>), the phytoplankton community of the MoN was the most diverse of the entire study. During the postmonsoon (PostM), the increase in salinity was marked by a surge in dinoflagellate populations comprising of *Ceratium furca*, *Akashiwo sanguinea* and *Pyrophacus horologium*.

117. **Pereira, N. & Almeida, M.R. 2012.** “New records of blue green algae from Goa”. *J. Algal Biomass Utiln.* 3(4): 27–29.

Abstract: A survey along the Goa coast led to findings related to blue green algae that have not been reported earlier from the coast. Four species of blue green algae, viz. *Chroococcus turgidus* (Kützinger) Nägeli (Chroococcaceae), *Microcoleus chthonoplastes* (Martens) Zanardini, *Oscillatoria nigroviridis* Thwaites ex Gomont (Oscillatoriaceae) and *Trichromus variabilis* (Kützinger ex Bornet & Flahault) Komárek & Anagn. (Nostocaceae) belonging to three orders have been recorded in the present study.

118. **Phatak, S., Nayaka, S., Upreti, D.K., Singh, S.M. & Samuel, C. 2004.** "Preliminary observation of lichen flora of Cotigao Wildlife Sanctuary, Goa, India". *Phytotaxonomy* 4: 104–106.
- Abstract: The paper enumerates the occurrence of 43 species of lichen belonging to 24 genera and 12 families. The Cotigao Wildlife Sanctuary is rich in pyrenocarpous and graphidaceous lichens, represented by 14 and 9 species, respectively. The present study has provided baseline information for future lichen studies in the state.
119. **Prabhugaonkar, A. & Bhat, D.J.** "*Rattania setulifera*, an undescribed endophytic hyphomycete on rattans from Western Ghats, India". *Mycotaxon* 108: 217–222.
- Abstract: *Rattania setulifera* gen. et sp. nov., isolated from fresh leaves of rattan (*Calamus thwaitesii*), is described and illustrated from Goa. The endophytic hyphomycete is characterized by setose sporodochia, branched conidiophores, monoblastic, sometimes sympodial conidiogenous cells and slimy, fusiform, aseptate to multiseptate, curved conidia bearing tiny setulae at ends.
120. **Prabhugaonkar, A. & Bhat, D.J. 2011.** "New record of *Megacapitula villosa* and *Paradictyoarthrinium diffractum* from India". *Mycosphere* 2(4): 463–467.
- Abstract: Two monotypic genera, *Megacapitula* and *Paradictyoarthrinium*, are reported for the first time from palm litter from India. ML analysis suggests that they have a close affinity with members of the order *Pleosporales*, *Dothideomycetes*.
121. **Prabhugaonkar, A., Dessai, J.R.N. & Janarthanam, M.K. 2007.** "Extended distribution of *Cassipourea ceylanica*, an inland Rhizophoraceae". *Indian J. Forest.* 30: 81–82.
- Abstract: *Cassipourea ceylanica* (Gardn.) Alston, an inland Rhizophoraceae member, hitherto known only from southernmost parts of Western Ghats and Sri Lanka is being reported from Mainacho Waterfalls, Tudav, Netravali, northern Western Ghats, Goa. It is of considerable phytogeographic interest as it shows disjunct distribution.
122. **Prabhugaonkar, A., Mesta, D.K. & Janarthanam, M.K. 2014.** "First report of three redlisted tree species from swampy relics of Goa state, India". *J. Threatened Taxa* 6: 5503–5506.
- Abstract: *Myristica* swamps, one of the relic ecosystems of Western Ghats, are considered home for many rare and endemic angiosperms. During an inventory of *Myristica* swamps in Goa state, two Critically Endangered species and one Endangered species, viz. *Semecarpus kathalekanensis* Dasappa & Swam., *Syzygium travancoricum* Gamble and *Myristica fatua* Houtt. var. *magnifica* (Bedd.) J. Sinclair, respectively were recorded. Present report forms first record of these three tree species from Goa state. This report highlights the extended distribution of these species from central Western Ghats to northern Western Ghats.

123. **Prabhugaonkar, A., Sardesai, M.M. & Janarthanam, M.K. 2009.** "Further additions to the flora of Goa". *J. Econ. Taxon. Bot.* 33: 37–43.

Abstract: The existing floras of Goa are inadequate in their coverage. Hence, occasional articles dealing with additions to the flora of Goa have been published by various authors. The present paper adds 35 more species to the list of flowering plants of the state of Goa

124. **Prabhugaonkar, A., Yadav, U.S. & Janarthanam, M.K. 2009.** "*Dipcadi goaense* (Hyacinthaceae), a new species from the foothills of the Western Ghats, India". *Kew Bull.* 64: 743–746.

Abstract: A new species of *Dipcadi* (Hyacinthaceae) that is allied to *D. concanense* (Dalzell) Baker but differs in its small flowers (13–18 mm long vs 35–47 mm long) and funnel-shaped perianth tube (5–6 x 5–6 mm vs 18–27 x 4.0–5.5 mm) is described as *D. goaense*. The new species is apparently endemic, because it is known only from the type locality in Goa state. The type locality is at the foothills of Western Ghats and the habitat is a soil-covered, lateritic, open area.

125. **Prasad, T.S.K. & Bhat, D.J. 2002.** "*Speiropsis rogergoosensis* sp. nov. from India". *Mycotaxon* 82: 127–131.

Abstract: A new dematiaceous hyphomycete, *Speiropsis rogergoosensis*, producing unicellular conidia connected by narrow isthmi in profusely branched chains on polyblastic discrete conidiogenous cells, recovered from decaying leaves of *Artocarpus hirsutus* (Moraceae) is described from the forests of Western Ghats in southern India.

126. **Prasad, T.S.K. & Bhat, D.J. 2002.** "A new species of *Phalangispora* from India". *Mycotaxon* 83: 405–408.

Abstract: A new dematiaceous setose, sporodochial hyphomycete, *Phalangispora bharathensis*, producing unicellular conidia connected by narrow isthmi in branched chains on polyblastic, discrete conidiogenous cells, isolated from decaying leaves of *Holigarna arnotiana* (Anacardiaceae) is described from the forests of Western Ghats in southern India.

127. **Prasad, T.S.K. & Bhat, D.J. 2002.** "*Stellomyces kendrickii*, a new hyphomycete from India". *Mycotaxon* 84: 61–63.

Abstract: A new species of hyphomycete, *Stellomyces kendrickii*, is described. It produces single, cuneiform or triangular to kite-shaped, unicellular, smooth, colourless, blastic conidia at the tip of each of several very long denticles which radiate from small apical (subsequently intercalary) vesicles on a sympodially extending conidiophore. It was isolated from decaying twigs of *Hopea ponga* (Dipterocarpaceae) in the forests of Western Ghats in southern India.

128. **Prasad, T.S.K. & Bhat, D.J. 2007.** Fungi and development of Mycoinsecticides. In: Ganguli, B.N. & Deshmukh, S.K. (Eds.), *Fungi: Multifaceted Microbes*. Anamaya Publishers, New Delhi. pp. 248–271.
129. **Prasad, T.S.K., Kumar, A. & Bhat, D.J. 2003.** “Mosquito larvicidal and pathogenic fungi from Goa”. In: Madhyastha, M.N., Sridhar, K.R. & Lakshmi, A. (Eds.), *Prospects and Problems of Environment across the Millennium*. Daya Publishing House, Delhi. pp. 142–149.
130. **Prasad, T.S.K., Kumar, A. & Bhat, D.J. 2004.** “New records of *Aschersonia* from forests of Western Ghats, India”. *Indian J. Mycol. Pl. Pathol.* 34: 7–14.
131. **Prasad, T.S.K., D’Souza, M.A. & Bhat, D.J. 2003.** *Vermiculariopsiella* Bender: Present status of species diversity. In: Rao, G.P., Manoharachari, C., Bhat, D.J., Rajak, R.C. & Lakhanpal, T.N. (Eds.), *Frontiers of Fungal Diversity in India (Prof. Kamal Festschrift)*. International Book Distributing Co., Lucknow. pp. 503–511.
132. **Prasad, V.P. 2010.** “Extended distribution of *Kyllinga brevifolia* var. *stellulata* (J.V. Suringar) Ohwi (Cyperaceae) in India”. *J. Econ. Taxon. Bot.* 34: 586–587.
- Abstract: Information on the extended distribution of *Kyllinga brevifolia* var. *stellulata* (J.V. Suringar) Ohwi (Cyperaceae) in India is given here along with detailed citations and particulars of the specimens located in different herbaria. This variety is reported from Kerala, Goa, Maharashtra, Uttar Pradesh, Punjab and Sikkim. Earlier this species was known from Karnataka.
133. **Pratibha, J. 2013.** “*Jayarambhatia rhizophorae* gen. et sp. nov., an asexually reproducing fungus from Goa, India”. *Mycotaxon* 125: 139–144.
- Abstract: A new hyphomycete genus, *Jayarambhatia*, is proposed, characterized by mononematous branched septate pale brown smooth conidiophores with terminal hyaline phialidic conidiogenous cells with long slender necks and minute collarettes. Numerous smooth aseptate narrowly obclavate filiform conidia double over and pack densely together to form ovate mucous heads on the tips of the conidiogenous cells. The type species was collected from decomposing litter of *Rhizophora mucronata* in an intertidal mangrove area in Goa, India.
134. **Pratibha, J. 2013.** “*Sympodioplanus goaensis* sp. nov. from Goa, India”. *Mycotaxon* 125: 145–148.
- Abstract: A new species, *Sympodioplanus goaensis*, occurring on decaying unidentified twigs collected from Goa is described and illustrated. The fungus is characterized by numerous conidiogenous cells that are polyblastic, sympodial, integrated, and terminal as well as intercalary and by naviculiform 1 or 2-septate conidia.
135. **Pratibha, J. & Bhat, D.J. 2005.** “*Natarajania indica* gen. et sp. Nov., a dematiaceous hyphomycete from the Western Ghats, India”. *Kavaka* 33: 129–133.

136. **Pratibha, J. & Bhat, D.J. 2006.** *Bahusutrabeeja manoharachariisp.* nov. a foliicolous hyphomycete from the forests of Western Ghats, India. In: Bagyanarayana, G., Bhandariah, B. & Kumar, I.K. (Eds.), *Emerging Trends in Mycology Plant Pathology and Microbial Biotechnology*. BS Publications, Hyderabad. pp. 1–5.
137. **Pratibha, J. & Bhat, D.J. 2009–2010.** “*Cercospora* spp. from Goa and neighbouring areas”. *Kavaka* 37–38: 69–78.
138. **Pratibha, J., Bhat, D.J. & Raghukumar, S. 2011.** “Four anamorphic fungi (with two new species) from forests of Western Ghats, India”. *Mycotaxon* 117: 269–278.  
 Abstract: *Anaselenosporella indica* and *Arachnophora goanensis*, two new species of anamorphic fungi isolated from decaying plant litter collected from the forest of Goa are described and illustrated. *Anaselenosporella indica*, found growing on dead twig of an unidentified plant, is characterized by polyblastic, sympodial, discrete, conidiogenous cells and cylindrical, rarely curved, aseptate, hyaline conidia. *Arachnophora goanensis*, collected from dry decaying bark of an unidentified tree, is characterized by blastic pigmented stauroconidia and blastic hyaline fusiform synanamorphic conidia. Two other species from the monotypic genera, *Catenosynnema* and *Cheiromyceopsis* are also reported for the first time from India. *Cheiromyceopsis echinulata* has been reported first time for India from Karnataka.
139. **Pratibha, J., Hyde, K.D. & Bhat, D.J. 2004.** “*Ceeveesubramaniomyces*, a new dematiaceous hyphomycetous genus from India”. *Kavaka* 32: 21–26.
140. **Pratibha, J., Raghukumar, S. & Bhat, D.J. 2009.** “New species of *Digitoramispora* and *Spondylocladiopsis* from the forests of Western Ghats, India”. *Mycotaxon* 107: 383–390.  
 Abstract: Two new species of hyphomycetes, *Digitoramispora tambdisurlensis* and *Spondylocladiopsis aseptata*, isolated from decaying plant litter collected from the Western Ghat forests of Tambdi Surla in Goa, and Calicut in Kerala, respectively, are described and illustrated.
141. **Pratibha, J., Raghukumar, S. & Bhat, D.J. 2010.** “New species of *Dendryphiopsis* and *Stauriella* from Goa, India”. *Mycotaxon* 113: 297–303.  
 Abstract: Two new species of hyphomycetes isolated from decaying plant litter collected from Goa, are described and illustrated. *Dendryphiopsis goanensis*, found on decaying bark of an unidentified tree, is characterized by mostly polytretic, integrated, discrete, terminal, and intercalary conidiogenous cells. *Stauriella indica*, collected from decaying spathe of coconut tree, is characterized by sub-hyaline, spinulate, staurosporous conidia with 15–20 cells.
142. **Pratibha, J., Raghukumar, S. & Bhat, D.J. 2012.** Diversity of litter degrading microfungi from the forests of Western Ghats, India. In: Biju Kumar, A., Nayar, M.P., Varma, R.V. & Peethambaran, C.K. (Eds.), *Biodiversity and Taxonomy*. Narendra Publishing House. pp. 195–210.

143. **Pratibha, J., Amandeep, K., Shenoy, B.D. & Bhat, D.J. 2010.** “*Caliciopsis indica* sp. nov. from India”. *Mycosphere* 1: 65–72.

Abstract: *Caliciopsis indica* sp. nov. is described from leaf lesions of Kokum (*Garcinia indica*, Clusiaceae) from Canacona, Mashem, Goa, Western Ghats. *Caliciopsis indica* is morphologically similar to *C. myrticola* but differs in having large ascomata, longer asci and smaller ascospores. Phylogenetic analysis of partial 28S rRNA gene sequence data has confirmed its placement within the Coryneliaceae (Coryneliales, Eurotiomycetes).

144. **Pratibha, J., Bodke, P., Solimabi, W. & Raghukumar, S. 2012.** “The fungus *Gliocephalotrichum simplex* as a source of abundant, extracellular melanin for biotechnological applications”. *World J. Microbiol. Biotechnol.* 28: 505–512.

Abstract: Melanins are commonly produced by bacteria, fungi, plants and animals, where they play a role in many biological functions. They protect organisms against UV and ionizing radiations. Their potential applications in biotechnological industries such as cosmetics and paints, where UV protection is required, are hampered by the lack of suitable organisms or methods to produce them abundantly. The authors report in this paper about the production of high amounts of extracellular melanin by the fungus *Gliocephalotrichum simplex* in cultures supplemented with tyrosine. Their typical UV-absorbance, as well as i.r., <sup>13</sup>C solid-state and <sup>1</sup>H NMR spectra indicated that the melanin is a eumelanin, being a copolymer of dihydroxyindole carboxylic acid and dihydroxyindole, associated with some carbohydrates and proteinaceous matter. Optimal culture conditions established by a Plackett-Burman experiment, followed by a full factorial experiment based on tyrosine and peptone yielded a maximum of up to 6.6 g melanin l<sup>-1</sup>. The high yield of extracellular melanin from *G. simplex* enables its use in biotechnology.

145. **Pratibha, J., Prabhugaonkar, A., Bhat, D.J. & Hyde, K.D. 2014.** “Phylogenetic placement of *Bahusandhika*, *Cancellidium* and *Pseudoepicoccum* (asexual Ascomycota)”. *Phyotaxa* 176(1): 68–80.

Abstract: Most hyphomycetous conidial fungi cannot be presently placed in a natural classification. They need recollecting and sequencing so that phylogenetic analysis can resolve their taxonomic affinities. The type species of the asexual genera, *Bahusandhika*, *Cancellidium* and *Pseudoepicoccum* were recollecting, isolated in culture, and the ITS and LSU gene regions sequenced. The sequence data were analysed with reference data obtained through GenBank. The DNA sequence analyses show that *Bahusandhika indica* has a close relationship with *Berkleasmiium* in the order Pleosporales and *Pseudoepicoccum cocos* with *Piedraia* in Capnodiales; both are members of Dothideomycetes. *Cancellidium applanatum* forms a distinct lineage in the Sordariomycetes.

146. **Pratibha, J., Gawas, P., Shenoy, B.D., Hyde, K.D. & Bhat, D.J. 2005.** “*Chalara indica* sp. nov. and *Sorocybe indicus* sp. nov. from India”. *Cryptog. Mycol.* 26(2): 97–103.

147. **Pratibha, J., Hai, D.T.N., Mel'nik, V.A., Bhat, D.J., White, G.P. & Seifert, K.A. 2014.** Lectotypification, epitypification, and molecular phylogeny of the synnematos hyphomycete *Pseudogliophragma indicum*, the second genus in the Wiesneriomycetaceae. *Mycoscience*. [http:// dx.doi.org/10.1016/j.myc.2014.12.002](http://dx.doi.org/10.1016/j.myc.2014.12.002).

Abstract: The hyphomycete *Pseudogliophragma indicum* produces loosely constructed and often frayed synnemata, with a brown stipe and a divergent capitulum with monoblastic conidiogenous cells and deeply constricted phragmoconidia. *Ramaraomyces corticola* was described nine years after *Pseudogliophragma indicum* with very similar micro-morphological characters. Both genera are monotypic. The holotype of *P. indicum* is depauperate. The authors have re-collected *P. indicum* near the type locality. In this paper, the authors have lectotypified the genus and species with the original illustration, and epitypified the species with a new specimen. An ex-epitype culture was derived from the epitype specimen and used to sequence regions of the nuclear RNA operon to determine the phylogenetic relationships of the species. The fungus belongs to the recently described family Wiesneriomycetaceae in the Tubeufiales, forming a sister group with the sporodochial, slimy spored genus *Wiesneriomyces*. The authors have clarified the generic concept of *Pseudogliophragma*, and proposed *Ramaraomyces* as a synonym, and provided a new description and illustration. *Wiesneriomyces laurinusis* reported for the first time from Canada.

148. **Puja, G., Shenoy, B.D., Hyde, K.D. & Bhat, D.J. 2005.** "*Echinosphaeria macrospora* sp. nov., teleomorph of *Vermiculariopsiella endophytica* sp. nov." *Cryptog. Mycol.* 27(1): 1–11.
149. **Raj, M.S.K. & Sivadasan, M. 2008.** "A new species of *Dimeria* (Poaceae, Panicoideae, Andropogoneae) from Goa, India". *Novon* 18: 183–186.

Abstract: *Dimeria veldkampii* Kiran Raj & Sivad., from North Goa of the northern Western Ghats, is illustrated and described as a new grass species belonging to the subtribe Dimeriinae of the tribe Andropogoneae. The species resembles *D. woodrowii* Stapf, but differs mainly by its inflorescence rachises being singly or doubly circinately recurved and by the immediate shedding of the spikelets as diaspores. Comparative morphological features of the new species and *D. woodrowii* are described, and a dichotomous key to the constitute species of *Dimeria* sect. *Annulares* Bor is provided.

150. **Rajkumar, S., Joshi, V.C. & Janarthanam, M.K. 1999.** "Additions to the grasses of Goa". *J. Bombay Nat. Hist. Soc.* 96: 181–183.

Abstract: In the present paper 24 species of grasses have been reported for the first time for the state of Goa.

151. **Rajkumar, S., Joshi, V.C. & Janarthanam, M.K. 1999.** "Additions to the sedges of Goa". *J. Econ. Taxon. Bot.* 22: 688–690.

Abstract: The Goa state is rich in wetland habitats, which are relatively underexplored. As a result of floristic study of wetlands, 11 species of sedges are being reported in the present paper as additions to the family Cyperaceae of Goa. They belong to the genera such as *Bolboschoenus* (1 sp.), *Cyperus* (3 spp.), *Fimbristylis* (3 spp.), *Kyllinga* (1 sp.), *Mariscus* (1 sp.), *Pycreus* (1 sp.) and *Sorostachys* (1 sp.).

152. **Rao, R.S. 1971.** "Studies on the Indian flora: flora of the erstwhile Portuguese colonies in India, Goa, Diu, Daman and Nagarhaveli of western India". *Agra Univ. J. Res., Sci.* 19: 69–72.

153. **Rao, R.S. 1978.** "Floristic patterns along the Western Ghats of India". *Notes Roy. Bot. Gard. Edinburgh* 37: 95–110.

Abstract: Eight representative areas along the 1200 km of the Western Ghats studied in detail. A progressive increase in evergreen and reduction in deciduous forest occurs from north to south correlated with increasing rainfall and shortening of the day season. Characteristic floristic patterns occur and although some species are of widespread distribution there is a high rate of endemism.

154. **Rao, R.S. 1985–1986.** *Flora of Goa Diu Daman Dadra & Nagarhaveli*. Vol. 1 & 2. Botanical Survey of India, Howrah.

Abstract: The two-volume flora of Goa, Diu, Daman, Dadra and Nagarhaveli comprises 1115 species of angiosperms belonging to 657 genera under 146 families. Of these 891 species under 538 genera under 124 families belong to dicotyledons and 224 species under 119 genera belonging to 22 families are monocotyledons. A total of 27 species of pteridophytes, representing 25 genera under 11 families and 5 species of gymnosperms belonging to 3 genera in 3 families have also been reported. Volume 1 of the flora comprises taxonomic account of families from Ranunculaceae to Caprifoliaceae, and Volume 2 consisting Rubiaceae to Selaginellaceae.

155. **Rao, R.S. & Hemadri, K. 1968.** "A new species of *Manisuris* Linn. (Poaceae) from Goa". *Bull. Bot. Surv. India* 10: 106–109.

Abstract: A new species of *Manisuris* L., viz. *M. goensis* allied to *M. talbotii* (Hook.f.) Bor has been described and illustrated from Verna village on Cortalim/Madgao Road, Goa.

156. **Ravikumar, K., Udayan, P.S. & Subramani, S.P. 2004.** "Notes on distribution of *Capparis rotundifolia* Rottler (Capparaceae) – In Southern India". *Indian Forester* 130: 313–317.

Abstract: *Capparis rotundifolia* Rottler is distributed in India, Myanmar and Sri Lanka. In India, it is restricted to Goa, Maharashtra, Karnataka, Andhra Pradesh and Tamil Nadu. The taxonomy, ecology and distribution of this species are discussed in detail for a better understanding of this uncommon species.

157. **Rodrigues, B.F. 1995.** "Probable constraints and strategies for revegetating iron ore mine wastelands in Goa". *J. Econ. Taxon. Bot.* 19: 515–517.

Abstract: Various probable constraints affecting plant growth and survival on iron ore mine wastelands in Goa have been recorded, and strategies for revegetating such degraded lands have been suggested. The paper also suggests various criteria to be followed while selecting the plant species for revegetating iron ore mine wastelands in Goa.

158. **Rodrigues, B.F. 1996.** "Survey of potential tree species for revegetation of iron ore mine wastelands in Goa". *Indian J. Forest.* 19: 289–292.

Abstract: Vegetation survey of various iron ore mine reject dumps was carried out. The paper enlists 64 tree species belonging to 52 genera distributed among 27 families. The list includes both naturally occurring and cultivated tree species. The former species in particular have survived and grown over the years on the once disturbed and degraded mine lands and hence show a tremendous potential in revegetation programmes of iron ore mine lands in the state. The families recorded are Mimosaceae (7 spp.), Apocynaceae (2 spp.), Ulmaceae (1 sp.), Anacardiaceae (4 spp.), Myrtaceae (3 spp.), Casuarinaceae (1 sp.), Rhamnaceae (2 spp.), Caesalpiniaceae (6 spp.), Bignoniaceae (1 sp.), Euphorbiaceae (4 spp.), Moraceae (5 spp.), Fabaceae (5 spp.), Annonaceae (3 spp.), Bombacaceae (1 sp.), Rutaceae (1 sp.), Arecaceae (2 spp.), Combretaceae (4 spp.), Verbenaceae (2 spp.), Flacourtiaceae (1 sp.), Clusiaceae (1 sp.), Malvaceae (1 sp.), Sterculiaceae (2 spp.), Lecythidaceae (1 sp.), Rubiaceae (1 sp.), Sapotaceae (1 sp.), Loganiaceae (1 sp.) and Musaceae (1 sp.) with the total number of species given in the brackets.

159. **Rodrigues, B.F. 1996.** "Vegetation survey of Orasso Dongor iron ore mines (Goa)". *J. Econ. Taxon. Bot.* 20: 251–259.

Abstract: The present study reports the vegetation survey of abandoned iron ore mine reject dumps at Orasso Dongor mines situated at Advelpal village, Assonora, north of Goa state. A list of species surveyed (both cultivated and naturally occurring plants) includes herbs (including grasses and legumes), climbers, shrubs and trees. In all, a total of 164 species belonging to 139 genera, distributed among 55 families have been recorded.

160. **Rodrigues, B.F. 1996.** "Vegetation survey of iron ore mines at Sanquelim (Goa)". *J. Econ. Taxon. Bot.* 20: 271–282.

Abstract: The present study reports the vegetation survey of naturally occurring and cultivated plant species found growing on various iron ore mine reject dumps at Sanquelim. The list includes a variety of herbs (including grasses and legumes), climbers, shrubs and trees. In all, a total of 241 species belonging to 186 genera, distributed among 71 families have been reported.

161. **Rodrigues, B.F. 1999.** "VAM association in seedlings of some plant species growing on iron mine spoils in Goa". *Indian J. Forest.* 22: 136–140.

Abstract: An assessment of Vesicular Arbuscular Mycorrhizal (VAM) association in 21 naturally occurring seedlings of shrub and tree species belonging to 19 genera and distributed among 16 families collected from a 12-year old iron ore mine reject dump was made. Spore densities of iron ore mine rejects and adjacent undisturbed site were also studied. It was observed that the seedlings of all the species studied, showed mycorrhizal infection. The mycorrhizal infection varied from 25% to 98% in different species. It was observed that the spore densities of the iron ore mine rejects was very low as compared to that of adjacent undisturbed areas.

162. **Rodrigues, B.F. & Jaiswal, V. 2001.** "Arbuscular Mycorrhizal (AM) fungi from coastal sand dune vegetation of Goa". *Indian J. Forest.* 24: 18–20.

Abstract: Arbuscular Mycorrhizae (AM) may be used for rebuilding the vegetation of coastal region under threat. Prior to exploiting the reclaiming potential of these organisms, it is necessary to examine their occurrence and distribution in sand dunes. The occurrence and the number of AM propagules in the rhizospheric soils of six selected saline host plant species were worked out. Arbuscular mycorrhizal propagules were observed in rhizospheric soils of all the selected host plant species. Average spore count was 327.5 spores/100 g rhizospheric soil. Fifteen species of AM fungi were identified from the soil samples. Species of *Glomus* dominated the rhizospheric soils of the sand dune ecosystem.

163. **Rodrigues, B.F., Nyabuto, H.N. & Torne, S.G. 1992.** "Herbaceous flora found in the undisturbed areas of iron ore mines in Goa". *J. Econ. Taxon. Bot.* 16: 95–98.

Abstract: The present study reports herbaceous flora found in the undisturbed areas of Pale-Iron ore mines in Goa. In all 145 herbaceous species belonging to 113 genera under 40 families of pteridophytes, monocotyledons and dicotyledons have been reported.

164. **Sahni, K.C. & Bahadur, K.N. 1979.** "*Voacanga grandifolia* (Miq.) Rolfe (Apocynaceae) A tree new to the flora of Goa". *Indian J. Forest.* 2: 33–35.

Abstract: *Voacanga grandifolia* (Miq.) Rolfe (Apocynaceae), native of Java (Indonesia) has been reported in wild for the first time for the state of Goa from Valpoy. This is the first record of the genus as well as of the species from India from the wild.

165. **Sahni, K.C. & Naithani, H.B. 1975.** "A note on the occurrence of *Solanum hovei* Dunal in India". *Indian Forester* 101: 580–583.

Abstract: *Solanum hovei* Dunal (Solanaceae), a rare woody shrub, endemic to north-western India has so far been known from its type locality from Dolca, Sabermatty (Gujarat state) collected by A.P. Hove in 1819. Dunal 1852 describes Hove's specimen

as *Solanum hovei* Dunal. In this present paper this species is rediscovered from Dudhsagar and Valpoy, Goa after a lapse of over 152 years.

166. **Shahina, P.M. & Namy, S. 2014.** “A taxonomic revision of the genus *Canscora* in South India, and the erection of the new genus *Canscorinella* (Canscorinae, Gentianaceae) with two new combinations”. *Phytotaxa* 164(4): 201–225.

Abstract: The genus *Canscora* in southern India is revised based on field and herbarium studies and in consultation with types and protologues. *Canscora pauciflora*, which was previously treated as conspecific to *C. diffusa* is reinstated while *C. sanjappae* and *C. devendrae* are synonymised under *C. diffusa* and *C. stricta* (= *Canscorinella stricta*), respectively. The present study supports the exclusion of two species of *Canscora*, i.e., *C. stricta* and *C. bhatiana* resulting in the establishment of the new genus *Canscorinella* and two new combinations: *C. stricta* and *C. bhatiana*. The new genus *Canscorinella* is characterized by the presence of actinomorphic corolla and isomorphic stamens. This brings the number of species currently recognized for the genus *Canscora* to eleven worldwide, six (55%) of which occurring in southern India. Description, photo plates and keys to the southern Indian species of *Canscora* and *Canscorinella* are provided in this paper.

167. **Shaikh, S.S. & Chavan, N.S. 2011.** “Critical observations of the family Avicenniaceae from Maharashtra and Goa, India”. *J. Bombay Nat. Hist. Soc.* 108: 2–7.

Abstract: *Avicennia* L. is a widely distributed mangrove genus exhibiting several morphological variations, as well as anomalies. These factors prove to be a constraint in the correct identification of a species and its varieties. The present work is an attempt to confirm the exact species composition of family Avicenniaceae on the coasts of Maharashtra and Goa. The study deals with detailed review of available literature, herbarium studies and field observations for *Avicennia* species on these coasts. The present paper reports the occurrence of *A. marina* as a complex, and *A. officinalis* from Maharashtra and Goa. *Avicennia alba* was not observed during the study. Some problems regarding the identification of existing species are also discussed. As a result, the paper also helps in proper identification of *Avicennia* species.

168. **Shetiya, C. & Kerkar, V. 2004.** “Algal flora of Rice fields from Tiswadi taluka, North Goa”. *Indian Hydrobiology* 7(1&2): 73–76.

169. **Singh, N.P. & Dawre, M.S. 1983.** “On the occurrence of *Acampe rigida* (Buch.-Ham. ex J.E. Smith) P.F. Hunt (Orchidaceae) in Peninsular India”. *J. Econ. Taxon. Bot.* 4: 1021–1022.

Abstract: *Acampe rigida* (Buch.-Ham. ex Sm.) P.F. Hunt has been recorded for the first time for Peninsular India from Karnataka, Kerala, Maharashtra and Goa. Previously, it was known from Assam, Sikkim, Arunachal Pradesh and Uttar Pradesh. So, this is a case of disjunct distribution from northern to southern parts of India.

170. **Singh, N.P. & Deshpande, U.R. 1973.** "Report of an endemic Ceylonese grass from India". *Indian Forester* 99: 674–675.  
Abstract: *Isachne globosa* (Thunb.) Kuntze var. *effusa* (Trim. ex Hook.f.) Senaratna, a grass so far known to be endemic to Sri Lanka, is being reported for the first time from the Union Territory of Goa in India.
171. **Singh, N.P. & Sundararaghavan, R. 1986.** "Materials for plant conservation in Western India". *J. Econ. Taxon. Bot.* 8: 29–38.  
Abstract: The paper deals with 227 vulnerable and threatened plant species of western India, which will facilitate the programme of effective plant conservation in Western Ghats, particularly in the states of Gujarat, Maharashtra, Karnataka and the Union Territory of Goa.
172. **Singh, N.P., Kulkarni, B.G. & Moorthy, S. 1973.** "New plant records from Goa". *Curr. Sci.* 42: 478.  
Abstract: Three plant species, viz. *Melothria leucocarpa* (Blume) Cogn. (Cucurbitaceae), *Ipomoea barlerioides* Benth. & Hook.f. (Convolvulaceae) and *Scleria africa* Benth. (Cyperaceae) have been collected for the first time from the Union Territory of Goa.
173. **Sivadasan, M. & Jaleel, V.A. 2002.** "Two new varieties of *Amorphophallus commutatus* (Schott) Engl. (Araceae) from India". *Rheedea* 12: 159–168.  
Abstract: Two new varieties of *Amorphophallus commutatus* (Schott) Engl., viz. *A. commutatus* var. *anmodensis* from Anmod Ghat, Goa and *A. commutatus* var. *wayanadensis* from Wayanad Ghat, Kerala have been discovered. Detailed description, illustrations and relevant notes are provided.
174. **Sivu, A.R., Prabhugaonkar, A. & Pradeep, N.S. 2014.** "*Memecylon terminale* Dalz. (Melastomataceae) – A new record for Goa". *J. Econ. Taxon. Bot.* 38: 261–262.  
Abstract: *Memecylon terminale* Dalzell (Melastomataceae) is reported as an addition to the flora of Goa; earlier this species is reported from Karnataka.
175. **Souza, J.C. 1944.** "Cataloga botanico das plantas de Goa e terras vizinhas". *Bol. Inst. "Vasco da Gama"* 60: 54–196; 61: 69–79.
176. **Srivastava, S.N., Paul, S.R., Dixit, B.S., Kapoor, S.L. & Singh, A. 1985.** "Survey of Indian plants for saponins, alkaloids and flavonoids V". *J. Econ. Taxon. Bot.* 3: 637–646.  
Abstract: The present report deals with the chemical screening of 268 plant samples, representing 75 taxa, collected from Goa and Maharashtra for the presence of alkaloids, flavonoids and saponins. A total of 48 samples have given positive test for saponins, 64 for alkaloids and 93 for flavonoids.
177. **Subramanyam, K. 1981.** "Distribution of *Utricularia* L. in Peninsular India, south of Vindhyas". *Bull. Bot. Surv. India* 23: 155–164.

Abstract: The distribution of the 24 species in Peninsular India is presented in the present paper. A total of 11 species from Andhra Pradesh, 4 from south Gujarat, 19 from Karnataka, 16 from Kerala, 8 from Madhya Pradesh (Bastar district), 15 from Maharashtra, 14 from Odisha, 18 from Tamil Nadu and 7 species from Goa have been recorded.

178. **Sundaram, R.N.S. & Bhat, D.J. 2000.** Effect of carbohydrate enrichment on biodegradation of lignocellulose wastes with *Pleurotus florida* as animal feed. In: Bhat, D.J. & Raghukumar, S. (Eds.), *Ecology of fungi*. Goa University Publications. pp. 103–106.
179. **Sundararaghavan, R. & Singh, N.P. 1983.** "Endemic and threatened plants of Western India". *Pl. Cons. Bull.* 3: 1–16.
180. **Torne, S.G. & Nyabuto, H.N. 2001.** *Vegetation studies of Goa (close to mining sites)*. Bishen Singh Mahendra Pal Singh, Dehra Dun.

Abstract: This book gives an enumeration of 403 plants belonging to 99 families of indigenous vascular plant species found close to the disturbed sites situated at Pale and Sirigao villages, Goa, although widely separated but lie within the iron ore mining zones, i.e. Bicholim Geological Foundation. Among the 403 species, 135 species are phanerophytes, 59 chamaephytes, 30 hemicryptophytes, 40 cryptophytes, 125 therophytes and 14 are epiphytes.

181. **Untawale, A.G., Dwivedi, S.N. & Singbal, S.Y.S. 1973.** "Ecology of mangroves in Mandovi and Zuari estuaries and inter connecting Cumbarjua canal of Goa". *Indian J. Mar. Sci.* 2: 47–53.
182. **Vaidia, X.R. 1954–1955.** "Estudo Sobre a Historia da Farmacia Ayurvedica". *Revista Farmacêutica (Goa)* 1(3): 185–188. 1954; 1(4): 225–230. 1954; 2(3): 47–56. 1955.
183. **Vartak, V.D. 1966.** *Enumeration of plants from Gomantak, India with a note on botanical excursion around Castlerock*. Maharashtra Association for the Cultivation of Science, Poona.

Abstract: The book comprises a total of 1512 plant species belonging to 858 genera under 174 families. For each species, botanical name, local name, habit, habitat, locality, relative density, flowering & fruiting period and economic uses from Gomantak have been provided. A total 212 species has been collected from Castlerock area.

184. **Vartak, V.D. 1973.** "Some aspects of the vegetation and flora of Konkan and Goa". *Bull. Indian Natl. Sci. Acad.* 45: 245–259.
185. **Vartak, V.D. & Bhadbhade, M. 1973.** "Family Podostemonaceae from Maharashtra and Goa". *J. Univ. Poona, Sci. Technol. Sect.* 44: 181–198.
186. **Vartak, V.D. & Ghate, V.S. 1983.** "Enumeration of sedges from western Maharashtra and Goa". *J. Econ. Taxon. Bot.* 4: 435–451.

Abstract: The paper deals with the enumeration of sedges from western Maharashtra and Goa (14°49'–20°05' N and 73°00'–75°10' E). The enumeration includes 122 species distributed among 21 genera. A total of 14 species have been recorded for the first time from the study area, of which 5 species are endemic. Observations on habit, habitat and occurrence based on field notes along with voucher specimens are given.

187. **Vartak, V.D., Kumbhojkar, M.S. & Ghate, V.S. 1985.** "Studies on living hedges from western Maharashtra and Goa". *J. Econ. Taxon. Bot.* 6: 275–282.

Abstract: Present paper describes 50 species enlisted as living hedges from the area of western Maharashtra and Goa (14°49'–20°05' N and 73°00'–75°10' E). Out of these 50 species, 20 are suitable for field enclosure, 17 as garden enclosure and 15 species under the category of demarcating plants for ornamental beds or garden foot paths.

188. **Vijayan, M.N. 2006.** "Some bryofloral components from Nuvem and Tambdi Surla (Goa, India)". *J. Indian Bot. Soc.* 85: 118–120.

Abstract: A total of 13 species of bryophytes have been collected from two villages, viz. Nuvem and Tambdi Surla of Goa, of which 5 are liverworts and the remaining are mosses. These elements are under threat due to many developmental activities that are going on.

189. **Woodrow, G.M. 1897–1901.** "The Flora of Western India". *J. Bombay Nat. Hist. Soc.* 11: 118–130, 265–273. 1897; 420–430, 635–651. 1898; 12: 162–176. 1898; 354–373, 515–526. 1899; 13: 427–442. 1901.

190. **Zanan, R.L. & Nadaf, A.B. 2011.** "Some new records of *Pandanus* Parkinson species from Maharashtra and Goa states of India". *J. Econ. Taxon. Bot.* 35: 809–815.

Abstract: During the field survey some *Pandanus* Parkinson species were recorded for the first time from Maharashtra and Goa states of India. *Pandanus thwaitesii* Mart. has been reported from Phonda Ghats, Sawantwadi, Danoli, Hiranyakeshi (Sindhudurg district), Keloshi (Kolhapur district) of Maharashtra state and Valpoi (North Goa district) from Goa state. *Pandanus furcatus* Roxb. has been reported from Balli (South Goa district) and *P. kaida* Kurz from Mudgaon (South Goa district) of Goa state. The newly reported species are described in detail with illustrations.

191. **Zanan, R.L., Wakte, K.V. & Nadaf, A.B. 2009.** "*Pandanus unipapillatus* Dennst.: A new record for Maharashtra and Goa, India". *J. Bombay Nat. Hist. Soc.* 106: 130–131.

Abstract: *Pandanus unipapillatus* Dennst. has been reported for the first time for Maharashtra and Goa from Sawantwadi, Sindhudurg district and Paingen, Canacona district, respectively. Earlier this species is reported from Karnataka, Kerala and Tamil Nadu.

## ABBREVIATIONS OF TITLES OF PERIODICALS/JOURNALS

[The titles of periodicals/journals have been standardised following Botanico-Periodicum-Huntianum (Lawrence & al., 1968), B-P-H/Supplementum I (Bridson, 1991) and BPH-2 (Bridson, 2004).

The journals which are not in BPH have been abbreviated as given in the journals]

Agra Univ. J. Res., Sci.	: Agra University journal of research (science)
Asian Agri-History	: Asian Agri-History
Bioinfolet	: Bioinfolet
Bol. Inst. "Vasco da Gama"	: Boletim do Instituto 'Vasco da Gama'
Bull. Bot. Surv. India	: Bulletin of the Botanical Survey of India (up to Vol. 50, 2008)
Bull. Indian Natl. Sci. Acad.	: Bullentin of the Indian National Science Academy
Check List	: Check List
Classe de Ciencias Mathematicas	: Classe de Ciencias Mathematicas
Cryptog. Mycol.	: Cryptogamie- mycologie
Curr. Sci.	: Current Science
Cytologia	: Cytologia
Gaz. Bombay Pres.	: Gazette Bombay Presidency
Hooker J. Bot. & Kew Gdns. Misc.	: Hooker's journal of botany and Kew Garden miscellany
Indian Bot. Contactor	: Indian Botanical Contactor
Indian Fern J.	: Indian Fern Journal
Indian Forester	: The Indian Forester
Indian Hydrobiology	: Indian Hydrobiology
Indian J. Bot.	: Indian Journal of Botany
Indian J. Forest.	: Indian Journal of Forestry
Indian J. Mar. Sci.	: Indian journal of marine science
Indian J. Mycol. Pl. Pathol.	: Indian journal of mycology and plant pathology
Indian J. Traditional Knowledge	: Indian Journal of Traditional Knowledge
Indian J. Weed Sci.	: Indian Journal of Weed Science
Int. J. Pharma Bio Sci.	: International Journal of Pharma Bio Science
J. Algal Biomass Utiln.	: Journal of Algal Biomass Utilization
J. Biogeogr.	: Journal of Biogeography
J. Bombay Branch Roy. Asiat. Soc.	: Journal of the Bombay Branch of the Royal Asiatic Society

- J. Bombay Nat. Hist. Soc. : Journal of the Bombay Natural History Society  
J. Earth Syst. & Sci. : Journal of Earth System and Science  
J. Econ. Taxon. Bot. : Journal of Economic and Taxonomic Botany  
J. Indian Bot. Soc. : The Journal of the Indian Botanical Society  
J. Threatened Taxa : Journal of Threatened Taxa  
J. Univ. Poona, Sci. Technol. Sect. : Journal of the University of Poona. Science and Technology Section
- Kavaka : Kavaka  
Kew Bull. : Kew Bulletin  
Madras J. Lit. Sci. : Madras journal of literature and science  
Mycologia : Mycologia  
Mycosphere : Mycosphere  
Mycotaxon : Mycotaxon  
Notes Roy. Bot. Gard. Edinburgh : Notes from the Royal Botanic Garden, Edinburgh  
Novon : Novon  
Phytotaxa : Phytotaxa  
Phytotaxonomy : Phytotaxonomy  
Pl. Cons. Bull. : Plant Conservation Bulletin  
Proc. Indian Acad. Sci., Pl. Sci. : Proceedings of Indian Academy of Science, Plant Science
- Revista Parmacêutica, Goa : Revista Parmacêutica, Goa  
Rheedeia : Rheedeia  
Scientific World J. : Scientific World Journal  
Seaweed Res. Utiln. : Seaweed Research & Utilization  
Turkish J. Bot. : Turkish Journal of Botany  
World J. Microbiol. Biotechnol. : World journal of microbiology and biotechnology  
Zoos' Print J. : Zoos' Print Journal

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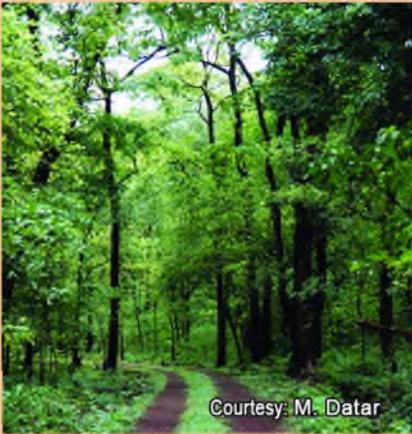
Courtesy: M. Datar

Evergreen Forest near Dudhsagar Waterfalls



Courtesy: N.V. Malpure

Moist deciduous to Semi-evergreen Forest at Pargad, Goa



Courtesy: M. Datar

Moist Deciduous Forest near Molem N.P.



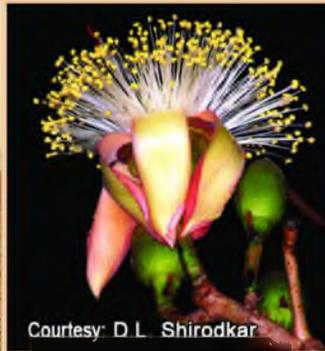
Courtesy: N.V. Malpure

Mangrove Vegetation at South Goa



Courtesy: D.L. Shirodkar

Sandy Coastal Vegetation



Courtesy: D.L. Shirodkar

*Bombax insigne* Wall.



Courtesy: S.R. Yadav

*Erinocarpus nimmonii* J. Graham



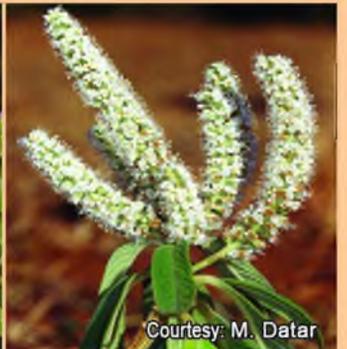
Courtesy: D.L. Shirodkar

*Impatiens dalzellii* Hook.f. & Thomson



Courtesy: N. Page

*Lamprachaenium microcephalum* (Dalzell) Benth.



Courtesy: M. Datar

*Colebrookea oppositifolia* Sm.