वनस्पति अन्वेषण
Plant Discoveries
2020

नये वंश, जातियाँ एवं नये अभिलेख
NEW GENERA, SPECIES AND NEW RECORDS

5 जून • June-2021

पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
Ministry of Environment, Forest & Climate Change

भारतीय वनस्पति सर्वेक्षण
BOTANICAL SURVEY OF INDIA
भारतीय वनस्पति सर्वेक्षण
Botanical Survey of India

1890 ई० में स्थापित, भारतीय वनस्पति सर्वेक्षण अपने सर्वेक्षण, वस्तुसूची, प्रलेखन, वर्गीकी शोध एवं पर्यावरण के प्रति जागरूकता द्वारा वन्य पादप विविधता के संरक्षण एवं सतत उपयोग हेतु वैज्ञानिक आधार प्रदान करते हुये राष्ट्र की सेवा में कार्यरत है।

1954 ई० में भारतीय वनस्पति सर्वेक्षण के पुनर्गठन के बाद से विभाग के वैज्ञानिकों ने

- 01 नया कुल,
- 43 नवीन वंश,
- 1776 नयी जाति, उपजाति एवं प्रभेदों का अन्वेषण किया।

वर्ष 2020 के दौरान भारतीय वनस्पति सर्वेक्षण एवं अन्य संस्थानों के पादप वर्गीकर वैज्ञानिकों ने

- 05 नवीन वंश
- 187 नवीन जातियों
- 10 अवजातीय विशिष्ट वनस्पतिजात का भारत से विज्ञान हेतु नवीन अन्वेषण

एवं

- 1 कुल, 62 जातियों एवं 02 अवजातीय विशिष्ट वनस्पतिजात के नवीन अभिलेखों का भारतीय वनस्पति हेतु अन्वेषण किया।

वर्ष 2020 के दौरान रोचक आंकड़ों में बागवानी, कृषि, औषधीय एवं सजावटी महत्व की वनस्पतियों की वन्य किस्मों जैसे *अमोमम* (जंगली इलायची), *इंपेशियंस* (बालसम), *सिजाईजियम* (जंगली जामुन), जिंजिबर्स, बिगोनिया एवं 8 वृक्ष, 13 क्षुप एवं 11 आर्किड की जातियों का अन्वेषण किया गया है। इस क्रम में बीजीय पौधों के अन्वेषण के दौरान आईयूसीएन के निर्धारित मापदंडों के आधार पर 22 जातियों को अति संकटग्रस्त श्रेणी में एवं 6 जातियों को संकटग्रस्त सूची, अल्प खतरे एवं सुभेद्य सूची में क्रमशः 2 जातियों को मूल्यांकित किया गया है।

Botanical Survey of India (BSI), established in 1890, serves the nation by providing scientific basis for conservation and sustainable utilization of wild plants through survey, inventory, documentation, taxonomic research and creating environmental awareness.

Since reorganization of BSI in 1954, the scientists of BSI have discovered

- 01 new family
- 43 new genera
- 1776 new species, subspecies and varieties and records

During 2020, the Plant Taxonomists of BSI and other institutes have discovered

- 05 new genera
- 187 new species
- 10 infra specific taxa as new to science from India

and

- 1 Family, 62 species and 2 infra specific taxa as new records for Indian Flora

Interestingly, during last 2020 discoveries include wild relatives of many potential horticulture, agriculture, medicinal and ornamental plants such as *Amomum* (wild cardamom), *Impatiens* (Balsams), *Syzygium* (Wild Jamun), *Terminalia*, Zingibers, Begonia, and also 8 trees, 13 Shrubs and 11 orchids. It is also pertinent to mention that in Seed plant discoveries, 22 new species has been assessed as Critical Endangered (CR) and 6 species as Endangered (EN), 2 each as Least Concern (LC) and Vulnerable (VU) category following the IUCN category and criteria.

Plant Discoveries 2020

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MINISTER
ENVIRONMENT, FOREST & CLIMATE CHANGE,
INFORMATION & BROADCASTING AND
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GOVERNMENT OF INDIA

प्रकाश जावडेकर
Prakash Javadekar

MESSAGE

Being one of the mega-biodiversity countries, India is home to enormous floristic wealth that contributes wide range of ecosystem services for sustenance of life. The huge gene pool stored in the wild plant species has supported the human population in various ways – from providing food to the life-saving drugs. Therefore, it is imperative to document systematically the plant resource of our country for safeguarding against global bio-piracy, bio-trade and bio-politics. Botanical Survey of India, the premier research organization of this Ministry has been engaged in systematic survey and documentation of country's plant resource since its inception.

I am pleased to know that Botanical Survey of India is bringing out the latest volume of "Plant Discoveries", which is the fourteenth of the series started in 2007. This volume serves as a compendium of all plant species new to science and distributional novelties discovered from India during year 2020. It is not only important to a record of all these new discoveries but also to know their possible contributions for deriving maximum benefits for man-kind.

The present compilation "Plant Discoveries 2020" include more than 260 new species and new distributional records discovered from India during the past one year. It comprises 119 Angiosperms; 3 Pteridophytes; 5 Bryophytes; 44 Lichens; 57 Fungi, 21 Algae and 18 microbes. I am sure, this publication would definitely serve as the referral book for all the stakeholders, policy makers in particular, and the common people as a whole to update the status of current plant diversity of our country.

I congratulate the Botanical Survey of India for their significant contribution in bringing out this publication.

With best wishes.

(Prakash Javadekar)

Place : New Delhi
Dated : 24.05.2021

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बाबुल सुप्रियो
केन्द्रीय राज्य मंत्री
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
भारत सरकार

MESSAGE

The Global Strategy for Plant Conservation (GSPC) under the targets 2, 7 and 8 of Convention on Biodiversity (CBD) call for the status assessment of all known plant species and ex-situ or in-situ conservation of 75 percent of the threatened species in every country. For this purpose, each country must have a working list of all plant species with data recorded for their distribution and occurrence. This can be achieved through systematic inventorization, exploration and documentation of the floristic wealth of the respective region.

Botanical Survey of India (BSI) being the premier and oldest research institute of government of India has been mandated with the systematic inventorization, exploration, conservation and documentation of plant diversity of the country. Through the floristic surveys and taxonomic studies, BSI and other research institutes regularly discover plant species new to science as well as new distributional records for Indian Flora. Periodical consolidation of these new findings will not only update our knowledge on the latest numerical status, but also open possibilities of finding a new economically important plant species.

I am delighted to know that; BSI has been compiling these new plant records from our country in a yearly manner since last 13 years and publishing the series "Plant Discoveries". This compilation serves as the widely referred document to know the updated status of plant diversity of our country. It is a matter of highly appreciation that, in spite of pandemic situation, the 14th volume, the "Plant Discoveries 2020" is ready with 267 taxa of novel species that are added to the country's floristic wealth. These are 119 angiosperms; 3 Pteridophytes; 5 Bryophytes; 44 Lichens; 57 Fungi, 21 Algae and 18 microbes of novelties discovered during the year 2020.

I congratulate the Director, BSI and his team for their indefatigable efforts to explore the unknown and update the current status of plant diversity of our country. I am sure, similar to the previous year, this "Plant Discoveries-2020" will also widely referred to showcase the plant diversity of our country and create awareness among general public at large.

(Babul Supriyo)

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SECRETARY
GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

MESSAGE

The comprehensive documentation and identification of the biological resources of any region are crucial for ensuring sustainable development of ecological and economics growth for future generation. These activities enhance the understanding of important linkages among various sectors and helps in implementing suitable action for identifying lacunas. India's diverse ecosystems demands continuous surveys and explorations in the biodiversity rich regions. The more we explore coupled with critical analytical studies, more we discover new species and distributional novelties. These new findings have great potential to open up different arena of applied research. Botanical Survey of India has been compiling the new discoveries and regularly updating the status of plant diversity of the country through a publication series "Plant Discoveries" since 2007.

It is a matter of immense pleasure to learn that, despite the COVID-19 pandemic situation, Botanical Survey of India has been able to present the compilation "Plant Discoveries 2020" with more than 260 taxa. This is the fourteenth consecutive issue of "Plant Discoveries" presented to the nation on the occasion of World Environment Day.

During the year 2020, a total of 267 taxa have been added to the Indian flora, which include 119 Angiosperms; 3 Pteridophytes; 5 Bryophytes; 44 Lichens; 57 Fungi; 21 Algae and 18 new microbes. This will surely enhance our knowledge on native plant resource and some of these new discoveries may have the potential gene pool for exploitation in agriculture, horticulture, pharmaceuticals and other plant-based sectors.

I congratulate the Director BSI and his dedicated team of scientists for bringing out this volume on time and presenting to the people of this country.

(R.P. Gupta)

New Delhi
May 25, 2021

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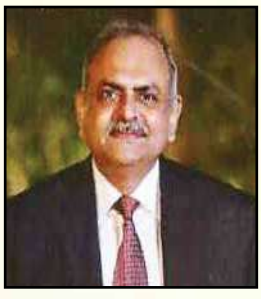

FOREWORD

India being a signatory to the 'Convention on Biological Diversity' (CBD) is committed to work towards the prime objective of Global Strategy of Plant Conservation and for comprehensive documentation and identification of plant diversity of the country. With wide range of diverse ecosystems and rich floristic composition of India, continuous systematic survey and taxonomic studies in these areas result in discovery of new species every year. These newly discovered species may offer potential source of wild edible plants, traditional drugs, cosmetics and wild relative of crop plants. Botanical Survey of India (BSI), has played a pivotal role in documenting the plant resources of the country. During the year 2020, Scientists of BSI and other research institutes have discovered 267 taxa of plants which include 119 angiosperms; 3 Pteridophytes; 5 Bryophytes, 44 Lichens; 57 Fungi, 21 Algae and 18 microbes.

I am happy to note that, like every year, BSI is publishing "Plant Discoveries 2020" by compiling all the new plant species discovered from India during the year 2020. This will definitely update our knowledge on Indian plant diversity and help in exploring the ecosystem services. The sincere efforts of the plant scientists to explore such vast areas of our country in order to document the plant wealth are appreciated. The novelties that are brought to the limelight by the dedicated team will definitely enhance our knowledge on the country's plant resources.

I congratulate the Director, BSI and his team of scientists in bringing out this publication and hope, like previous years, it will be widely acclaimed as a valued compilation on newly described and reported plants.

(Ravi Agrawal) 25/5/2021.

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निदेशक

Dr. A. A. Mao
Director

भारतीय वनस्पति सर्वेक्षण
BOTANICAL SURVEY OF INDIA

PREFACE

The Year 2020 will remain marked in Global history for the outbreak of COVID-19 pandemic, with the havoc it caused and still continues in 2021. The nationwide travel restrictions and lockdown for breaking the COVID-19 infection chain has made life difficult for people of all strata. The floristic surveys and exploration work supposed to be conducted got halted to a substantial low because of this unprecedented situation. The scientists and research scholars were mostly made to work from home during this pandemic period. However, this period also witnessed an overwhelming addition of 267 plant taxa to the Indian Flora which were discovered as either new species or as new distributional records for India. This figure is nowhere less than the average number of new plant discoveries made from India during the past one and half decade. This is an encouraging sign which imparts positivity and strength in these testing times.

Amid this pandemic, I am delighted to present the fourteenth edition of Plant Discoveries, on the occasion of World Environment Day. This is an annual compendium series started by Botanical Survey of India (BSI) in the year 2007 and since then Botanical Survey of India is publishing this compilation every year. These new discoveries remain scattered in individual papers in a wide array of scientific journals which may or may not have enough publicity and circulation. It is quite satisfying to inform that, the objective of this publication in updating the status of the plant diversity of our country and to create a public awareness has been successfully achieved with the overwhelming response from the botanical fraternity. While in the post-pandemic era, our country aspires to be self-reliant, concerted efforts would emerge to address the relationship between the different drivers of biodiversity loss and human health; policy on utilization of plant products and more prominently a comprehensive documentation of all the available resources of plant diversity. Botanical Survey of India, which is the premier and oldest research institute in the country to document its Flora, is working relentlessly to assign correct names and signature characters to all the plant species native to and distributed in our country. So far, more than 54000 plant taxa have been recorded and identified from India which includes the flowering plants as well as the cryptogams and microbes.

The trends of taxonomic research since last decade shows significant increase in interesting findings particularly pertaining to wild relatives of many economic plants viz., *Musa, Gingers, Balsams, Syzygium, Palms, Begonias, fodder grasses, legumes, and orchids*. Inevitably, plants have offered a myriad of possibilities to therapeutic uses to sustain mankind. Cutting-edge technologies have unveiled unique advantages on plant identification and utilization. The enormous metabolic potential of plants has enabled the production of medicinal compounds that have served to cure or ameliorate symptoms of many diseases, many of which are still prevalent today. Therefore, an authenticate database on occurrences, distribution, utilization pattern on plants is need of the hour, which BSI is working relentlessly to fulfill with this publication every year.

During the year 2020, total 267 species and infra-specific categories of flowering plants, pteridophytes, bryophytes, fungi, lichens, algae and microbes have been added to the Indian Flora. Angiosperms contributed 119 taxa which is more than 45 percent of total discoveries. Fungi contributed 21% percent while 16% percent discoveries made from Lichen, 8 percent from Algae and remaining 10 percent were contributed by the Microbes, Bryophytes and Pteridophytes.

This year also, the type specimens of many of these newly described species and voucher specimens for the new distribution records were not found to have been deposited in the designated repositories as notified with the Biological Diversity Act 2002. Under the Section 39, subsection (3) the act clearly stipulates that "Any new taxon discovered by any person shall be notified to the repositories or institutions designated for this purpose and they shall deposit the voucher specimens with such repository or institution". This is a gross violation of the Act, which is being seriously communicated by BSI to the concerned authors and editorial board. Such species, for which specimens are not made available for future reference and study, will not be understood properly for their optimum utilization and conservation. Botanical Survey of India is the custodian of more than 2 million plant specimens and is one of the designated repositories equipped with modern infrastructure and storage facilities of type material. Therefore, it is expected from the authors to act upon the National guidelines and voluntarily deposit the type specimens in the designated repositories, preferably at BSI.

Information and some of the photographs included in this book have been sourced from the various papers published in National and International journals, i.e. Acta Botanica Hungarica, Annales Botanici Fennici, Antonie van Leeuwenhoek, Archieve for Lichenology, Asklepios, Asian Journal of Conservation Biology Blumea, Bioinfolet, Botany Letters, Bull. Natl. Mus. Nat. Sci., Cryptogamie Mycologie, Curr. Res. Environ. App. Mycol., Edinburgh J. Bot., Feddes Repertorium, Fungal Biodiversity, Gardens Bulletin Singapore, Indian Forester, Indian J. Foresty, Int. J. Adv. Res., Int. J. Sys. Evol. Microbiol., Int. J. Life Sci., J. Asia-Pacific Biodivers. J. New Biological Reports, J. Bryol., J. Eco. Tax. Bot., J. Orch. Soc. India J. Jap. Bot., Journal of Asia-Pacific Biodiversity, Journal of Mycology & Plant Pathology, Journal of Threatened Taxa, KAVAKA, Kew Bulletin, Lankersteriana, MycoKeys, Mycosphere, Mycotaxon, Natl. Acad. Sci. Lett., Bot., Nova Hedwigia, Phytokeys Phytotaxa, Plant Science Today, Plant Systematics & Evolution; Pleione, Revision of Indian Musaceae, Rheedea, Richardiana, Species, Taiwania, Tropical Plant Research, Turczaninowia, Webbia: J. Pl. Tax. Geog.; etc. I personally acknowledge them all for sharing these published research works and hope they will continue to do so in future. The support of the entire Botanical fraternity and Ministry of Environment, Forest and Climate Change in bringing out the Plant Discoveries-2020 is highly acknowledged.

A. A Mao
Director
Botanical Survey of India

PREAMBLE

One should follow the general wisdom of calling things by their name, at least the living organisms including the plants must have an identity based on their signature character. It is important to identify a plant species for understanding and harnessing its value. All plant based experimental research explicitly requires the identification of the candidate species. Botanical Survey of India has been fulfilling this aspiration of the entire scientific fraternity by providing the correct identity of the plants occurring in our country. In a giant step in achieving this goal, BSI has brought out the latest checklist of Flowering plants of India by enlisting more than 21000 flowering taxa occurring in India under 268 families and 2774 genera.

The science of plant taxonomy has become more sophisticated due to integration of modern tools and techniques. Biosystematics and phylogenetics have become more prominent including evidence-based studies for solving the species complex to establish the evolutionary relationships in plant species across the globe. With this fresh approach, the frequency of describing new species has been amplified at the global scale. Molecular systematics has revolutionized our current understanding of the species concept and the pattern of diversification during the evolutionary process. Further, integration of data on ecology, phytogeography, phenology, ethnobotany etc. has enabled us to take more informed decisions on conservation and sustainable use of our genetic resources.

India, the land of diversity, possesses a wide range of variation in the topography from snowcapped mountains and cold deserts of the mighty Himalayas; Gangetic plains; Deccan plateau; hot and arid region of the Thar Desert; the peninsula; guarding coastal lines with mangroves; Islands grouped amidst the ocean. It shares its territory in four global biodiversity hot spots – The Western Ghats; The Himalayas; Indo-Burma; and the Sundaland. Eventually it has given rise to a mesmerizingly diverse plant wealth with more than 50000 species comprising the phanerogams, cryptogams and microbes. Many are yet to be identified and described.

The latest estimate of plant diversity in India stands at 54733 taxa including 21849 angiosperms, 82 gymnosperms, 1310 pteridophytes, 2791 bryophytes, 2961 lichens, 15504 fungi, 8979 algae and 1257 microbes. These represent approximately 14 percent of the total recorded plant species in the world. The groupwise current number of taxa known from India and their percentage contribution to the known Indian plants has been presented in the following table.

Group	No. of taxa in India	Percentage of plant diversity in India
Virus/Bacteria	1257	2.29
Algae	8979	16.4
Fungi	15504	28.33
Lichens	2961	5.41
Bryophytes	2791	5.11
Pteridophytes	1310	2.39
Gymnosperms	82	0.15
Angiosperms	21849	39.92
Total	**54733**	**100**

During the year 2020, scientists of BSI and other organizations have discovered 1 family, 05 genera, 249 species, 12 infraspecific taxa as new to Indian flora. Of these 202 taxa are new to science and 65 are new distribution record from India. 45% of novelties published in various National and International journals are of seed plants, 21% fungi, 8% Algae, 16% Lichen and 7% microbes while 2% are bryophytes and 1% Pteridophytes. This year one new monogeneric family *Hanguanaceae* has been recorded for the first time from India. Among plants groups seed plant contributed the maximum discoveries of which dicotyledons contributes 66% and monocotyledons 34%.

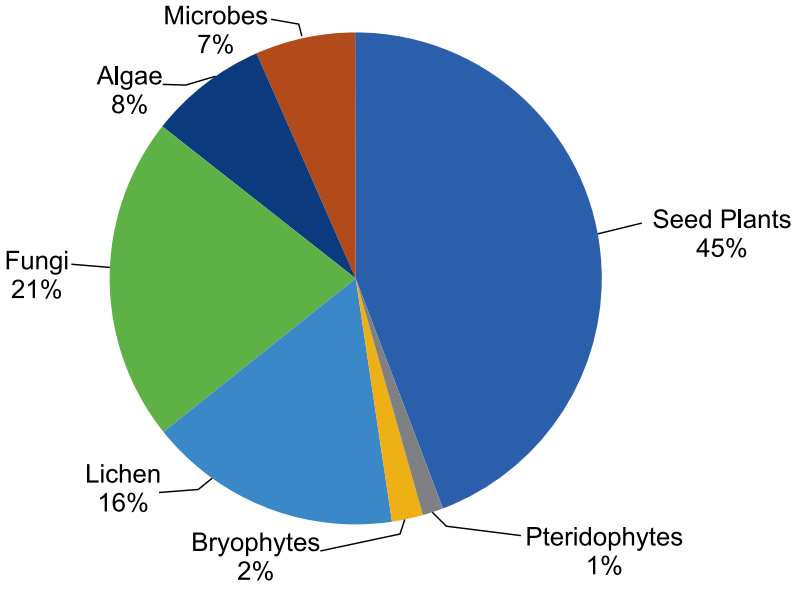


Figure 1. Percentage of contribution of different Plant groups during 2020

22% of total discoveries were made from Western Ghats during the year 2020 followed by Western Himalaya (15%), Eastern Himalaya (14%) and North East Ranges (12%). The West coast contributes 10% while East Coast contributes (9%) in total discoveries; Eastern Ghats and South Deccan contributes 4% of each while Central Highland and North Deccan (3%) of each. Minimum contribution has been made from East Deccan (2%) and Western Plains and North Deccan 1% each. The Northern Plains which is not represented in chart has only 1 new algae species *Westiellopsis akinetica* discovered from Varanasi, Uttar Pradesh. The hotspot regions such as Western Ghats, North Eastern Regions have contributed 48% of total discoveries. In state wise analysis, maximum discoveries were made from Kerala with more than 40 taxa, followed by Maharashtra and Arunachal Pradesh.

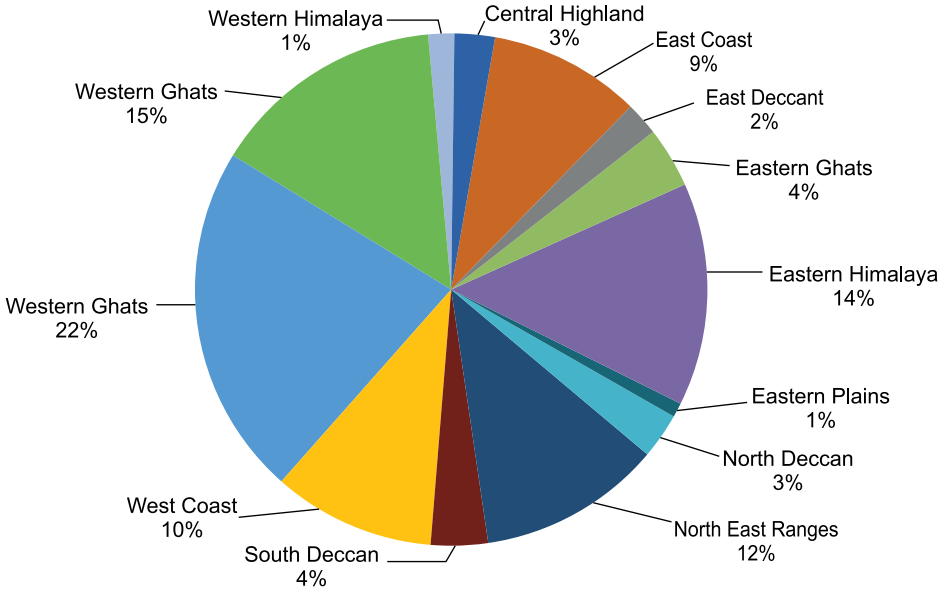


Figure 2. Percentage of contribution from different phyto-geographical regions of India during 2020

बीजीय पौधे/SEED PLANTS

Courtesy : K. V. C. Gosavi

बीजीय पौधे/SEED PLANTS

बीजीय पौधे (स्पर्मेटोफाइट्स) पृथ्वी के सबसे विकसित स्थलीय पौधे हैं तथा परम्परागत रूप में आवृतबीजी और अनावृत्तबीजी पुष्पीय पादपों में विभाजित है। हमारे वर्तमान ज्ञान के अनुसार भारत में आवृतबीजी जातियों की संख्या लगभग 21849 है, जबकि अनावृत्तबीजी जातियों की संख्या लगभग 82 है। भारतीय वनस्पतिजात में बीजीय पौधों का लगभग 39.92 प्रतिशत हिस्सा है। इस प्रकार अनेकानेक जातियों का अन्वेषण एवं वर्णन अभी बाकी है।

इस क्रमवार सूचना में वर्ष 2020 के दौरान भारत से विज्ञान के लिये 99 नयी जातियों, 01 उपजाति एवं 06 प्रभेदों को अन्वेषित किया गया है, जिनमें (एकबीजीपत्री की 34 जातियां और द्विबीजपत्री की 72 जातियां) शामिल हैं।

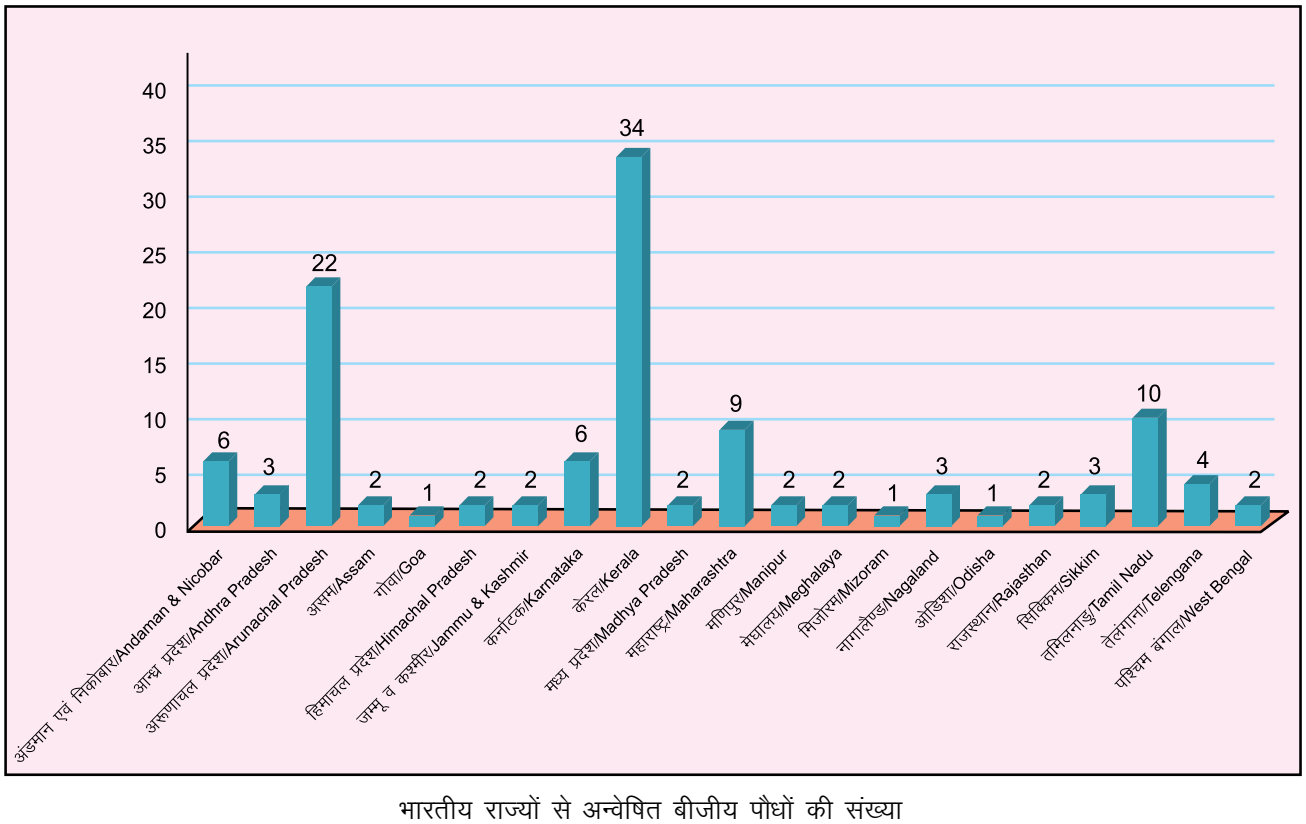
राज्यवार अंडमान एवं निकोबार से 6, नागालैंड एवं सिक्किम में प्रत्येक से 3, अरूणाचल प्रदेश से 22 जातियां, असम, हिमाचल प्रदेश, जम्मू एवं कश्मीर, मध्य प्रदेश मणिपुर, मेघालय, राजस्थान और पश्चिम बंगाल में प्रत्येक राज्य से 02, गोवा, मिजोरम, ओडिशा से प्रत्येक से 01 जाति, कर्नाटक से 06, 34 जातियां केरल से 9 जातियां, महाराष्ट्र से, 10 जातियों को तमिलनाडु से जबकि तेलंगाना राज्य से 04 जातियों को अन्वेषित किया गया है।

इसमें 13 नए वितरणपरक अभिलेख भी सम्मिलित हैं जिनको भारत से प्रथम बार अन्वेषित एवं वर्णित किया गया है।

Seed plants(Spermatophytes) are the most evolved land plants on earth and are traditionally divided into flowering plants (or angiosperms) and gymnosperms. In the present state of our knowledge India has about 21,849 species of angiosperms and 82 species of gymnosperms. The seed plant account for about 39.92 per cent of the total Indian flora. Many more are yet to be identified and described.

The collated information presented here for year 2020 includes 99 species, 1 subspecies and 06 varieties as new to science from India, in which (34 species of monocotyledons and 72 species of dicotyledons) State wise 6 species from Andaman & Nicobar, 3 each from Andhra Pradesh, Nagaland and Sikkim, 22 species from Arunachal Pradesh, 2 each from Assam, Himachal Pradesh, Jammu & Kashmir UT, Madhya Pradesh, Manipur, Meghalaya, Rajasthan and West Bengal, 01 species each from Goa, Mizoram and Odisha, 6 from Karnataka, 34 from Kerala, 09 from Maharashtra, 10 taxa from Tamil Nadu and 4 species from Telangana state has been discovered.

This includes 13 new distributional records described first time for India during year 2020.



भारतीय राज्यों से अन्वेषित बीजीय पौधों की संख्या

NUMBER OF SEED PLANTS DISCOVERED FROM INDIAN STATES

NEW SPECIES

Aconitum haridasanii Raghuvar Tiwary, Harsh Singh & D. Adhikari, Phytotaxa 440(3): 232. 2020 (Ranunculaceae)

The species has been discovered and described based on the collection made towards Taktsang Chu lake, Tawang, Arunachal Pradesh, India at 3798 m altitude. The holotype and isotypes are deposited in Herbarium of CSIR-National Botanical Research Institute, Lucknow (LWG). The species is named to honour Dr. Krishnankutty Ezhuthachan Haridasan for his immense contribution towards the flora of North-East India. The species is assessed as "Critically Endangered B1b(i,ii,iii,v)c(i,ii,iii)+2b(i,ii,iii,v)c; C2a(i); D" following the criteria of IUCN 2017.

Aloe trinervis C.S. Purohit, R.N. Kulloli & Suresh Kumar, J. Asia-Pacific Biodivers. 13: 329. 2020 (Aloaceae)

The species has been discovered and described based on the collection made from Bikaner district, near Shivbari-Jorbhir, Rajasthan, India. The holotype and isotypes are deposited in Arid Zone Regional Centre, Botanical Survey of India, Jodhpur (AZRC). The species name refers to the three nerved floral bracts which are distinctive and unique to this new species. The species is assessed as "Endangered (EN) criteria B1ab(i, ii)+2ab(i,ii)" as per criteria of IUCN 2013.

Amaranthus rajasekharii S. Arya, V.S.A. Kumar, W.K. Vishnu & Iamonico, Phytotaxa 433(2): 154. 2020 (Amaranthaceae)

The species has been discovered and described based on the collection made from Thiruvananthapuram district, Palode, way to Kulathupuzha, Kerala, India at 110 m altitude. The holotype is deposited in Herbarium of Jawaharlal Nehru Tropical Botanical Garden and Research Institute, Thiruvananthapuram (TBGT) and isotypes are in CMPR, HFLA. The species is named in honour of Sh. Narayana Pillai Rajasekhar, father of the first author. The species is assessed as Data Deficient (DD) as per recent IUCN criteria.

Amomum arunachalense Hareesh & M. Sabu, Ann. Bot. Fennici 58: 69. 2020 (Zingiberaceae)

The species has been discovered and described based on the collection made from Nirjuli, Papum Pare district of Arunachal Pradesh, India. The holotype is deposited in Malabar Botanical Garden and Institute for Plant Sciences, Olavanna, Kozhikode (MBGH) and isotypes are in CAL. The species is named after the state of its occurrence.

Amomum raoii V.P. Thomas & M. Sabu, Phytotaxa 430: 046. 2020 (Zingiberaceae)

The species has been discovered and described based on the collection made from Pangthang, East Sikkim district of Sikkim, India at 1890 m altitude. The holotype is deposited in Department of Botany, University of Calicut, Kerala (CALI) and isotypes are in CAL and CATH. The specific epithet is in honour of Dr. Raghavendra R. Rao, former Director, CIMAP, Bengaluru for his contributions in plant taxonomy.

Aquilegia bashahrica Erst, Phytotaxa 439: 112. 2020 (Ranunculaceae)

The species has been discovered and described based on the collection made from Bagi forest, Bashahr district (now Shimla) of Himachal Pradesh, India. The holotype is deposited in Royal Botanic Garden Edinburgh, (E). The species is named after its type locality in Bashahr.

Argyreia lakshminarasimhanii S. Shalini, Sujana, Arisdason & D. Maity, Rheedea 30(4): 444. 2020 (Convolvulaceae)

The species has been discovered and described based on the collection made from foothill of Megamalai, on the Ghat road, Theni district, Tamil Nadu of India at 999 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL), isotypes are in MH, CUH. The species is named in honor of late Dr. P. Lakshminarasimhan, former senior scientist of Botanical Survey of India and for his significant contributions to Indian taxonomy.

Ariopsis macrosperma N.V. Page, Ingalh. & Sardesai, Nordic J. Bot. 1. e02460. 2020 (Araceae)

The species has been discovered and described based on the collection made near village Umbare, on the way to Umberkhind, Raigad district of Maharashtra, India at 999 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL), isotypes are in AHMA, BSI, K, MH, SPPU and WII. The specific epithet 'macrosperma' refers to the larger seeds as compared to other species of the genus. The species is assessed as data deficient (DD) as per recent IUCN criteria.

Begonia oyuniae M. Taram & N. Krishna, Gardens' Bulletin Singapore 72(1): 110. 2020 (Begoniaceae)

The species has been discovered and described based on the collection made from Sikem, Upper Siang district of Arunachal Pradesh, India at 300m altitude. The holotype is deposited in Herbarium, Botanical Survey of India, Central National Herbarium, Howrah (CAL) and isotypes are in ASSAM. The species is named after the mother of the first author, Mrs Oyun Taram. The species is assessed as Least Concern (LC) following the IUCN guidelines 2017.

Biophytum agasthyamalayanum Jisha, E.S.S. Kumar, Decruse & Rajendraprasad, Phytotaxa 438(1): 049. 2020 (Oxalidaceae)

The species has been discovered and described based on the collection made from Agasthyamala Biosphere Reserve, Pongalappara, Thiruvananthapuram district of Kerala, India at 1442 m altitude. The holotype is deposited in Herbarium of Jawaharlal Nehru Tropical Botanical Garden and Research Institute, Thiruvananthapuram (TBGT) and isotypes are in MH. The new species is named after its type locality, i.e. Agasthyamala Biosphere Reserve. The species is assessed as Critically Endangered [CR B2ab(v)] following the IUCN Red list criteria (IUCN 2013).

Boeica arunachalensis D. Borah, R. Kr. Singh, M. Taram & A.P. Das, Indian Forester 146(9): 871. 2020 (Gesneriaceae)

The species has been discovered and described based on the collection made from Nirjuli, Papum Pare district of Arunachal Pradesh, India at 166m altitude. The holotype is deposited in Herbarium of Eastern Regional Centre, Botanical Survey of India, Shillong (ASSAM) and isotypes are in ASSAM & ARUN respectively. The specific epithet refers to the state of its occurrence.

Boucerosia penduliflora Frandsen & Aditya, Asklepios 126: 11. 2020 (Asclepiadaceae)

The species has been discovered and described based on the collection made from Nilagiri Hills, Balasore district of Odisha, India at 200 m altitude. The holotype is deposited in Herbarium South African National Biodiversity Institute, Pretoria (PRE). The species is named after its unique morphology.

Brachystelma telanganense Rasingam & J. Swamy, Rheedea 30(3): 379. 2020 (Apocynaceae)

The species has been discovered and described based on the materials introduced from Mallayalodhi, Mahbubnagar district of Telangana state, India, cultivated in the experimental garden of Botanical Survey of India, Deccan Regional Centre, Hyderabad. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in BSID. The species is named after the state of its occurrence.

Bulbostylis maritima Sunil, V.P. Prasad & Naveen, Phytotaxa 430(1): 051. 2020 (Cyperaceae)

The species has been discovered and described based on the collection made from Munambam Ernakulam district of Kerala, India. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in MH, CALI, SNMH. The specific epithet of this new species 'maritima' refers to its coastal habitat.

Calamus mahanandensis S. Mondal, S. K. Basu & M. Chowdhury, Turczaninowia 23(3): 92. 2020 (Arecaceae)

The species has been discovered and described based on the collection made from hill slopes along the Mahananda river near Shivkhola temple, Choklong forest (Mahananda Wildlife Sanctuary), Darjeeling district of West Bengal, India. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in CUH. The species name refers to its type locality, Mahananda Wildlife Sanctuary, Darjeeling, India.

Canscorinella deccanensis Sardesai & Kambale, Phytotaxa 453(3): 297. 2020 (Gentianaceae)

The species has been discovered and described based on the collection made near Aurangabad Caves, Aurangabad district of Maharashtra, India. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in BSI, SPPU, SUK. The species is named after the region of its occurrence i.e. Deccan plateau.

Capparis danielii Murugan, R. Manik., S.P. Nithya, B. Karthik & Arisdason, Phytotaxa 472(3): 284. 2020 (Capparaceae)

The species has been discovered and described based on the collection made near Gulf of Mannar Biosphere Reserve, Muruganandapuram, Tirunelveli district of Tamil Nadu, India. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in MH. The species is named to honor Dr. P. Daniel, former Scientist 'E', Botanical Survey of India, Southern Regional Centre, Coimbatore, for his valuable contribution to the Flora of India.

Ceropegia ariyittaparensis P. Biju, Josekutty & Augustine, Phytotaxa 452(2): 181. 2020 (Asclepiadaceae)

The species has been discovered and described based on the collection made from Ariyittapara lateritic plateau, Kasaragod district of Kerala, India at 100 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in MH. The species is named after the type locality i.e. *Ariyittapara.*

Chloris telanganae Nagaraju, Prasanna, Y.V. Rao & S.B. Padal, Phytotaxa 434(2): 195. 2020 (Poaceae)

The species has been discovered and described based on the collection made from Prof. Jayashankar Telangana State Agricultural University, Rajendranagar, Ranga Reddy district of Telangana, India at 538 m altitude. The holotype is deposited in Deccan Regional Centre, Botanical Survey of India, Hyderabad (BSID) and isotypes are in BSID and CAL. The species is named after the state 'Telangana', which is the type locality.

Chrysopogon shrirangii Tarbej, Pooja Mane & Potdar, Nordic J. Bot. 38(7)-e02753: 1. 2020 (Poaceae)

The species has been discovered and described based on the collection made from Saundatti, Belgaum district of Karnataka, India at 673 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in BSI, K, SUK respectively. The specific epithet is given in honor of Prof. Shrirang Ramchandra Yadav, Dept. of Botany, Shivaji University, Kolhapur (Maharashtra), India, for his valuable contribution in the field of Angiosperm Taxonomy.

Cleisocentron neglectum M.J. Mathew & J. Mathew, Species 21(67): 111. 2020 (Orchidaceae)

The species has been discovered and described based on the collection made 12 km away from Bhadra Wildlife Sanctuary, Chikmagalur district of Karnataka, India at 1500 m altitude. The holotype is deposited in Southern Regional Centre, Botanical Survey of India, Coimbatore (MH) and isotypes are in KUBH. The specific epithet 'neglectum' refers to its a neglected status in past.

Coleus anthonyi Jebin Joseph & J. Mathew, Species 21(68): 338. 2020 (Lamiaceae)

The species has been discovered and described based on the collection made from Neyar Dam, on way to Dam top, Thiruvananthapuram district of Kerala, India at 1500 m altitude. The holotype is deposited in Southern Regional Centre, Botanical Survey of India, Coimbatore (MH) and isotypes are in RHK. The species is named in honor of Dr. Antony V.T., a renowned educator and environmentalist, in recognition of his valuable contributions to research on plant taxonomy.

Crotalaria shrirangiana K.H. Rokade, Dalavi, S.S. Gaikwad & N.B. Gaikwad, Phytotaxa 449(2): 191. 2020 (Fabaceae)

The species has been discovered and described based on the collection made from Pasarni Ghat, Near Wai, Satara district of Maharashtra, India at 713 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in BSI, CAL and SUK respectively. The specific epithet 'shrirangiana' honor Prof. Shrirang Yadav, INSA Senior Scientist, Department of Botany, Shivaji University, Kolhapur, for his significant contribution in Botany and Plant Taxonomy. The species is assessed as Data Deficient (DD) following the IUCN guidelines (IUCN 2012).

Cryptocarya sheikelmudiyana A.K.H. Bachan & P.K. Fasila, Taiwania 65(3): 266. 2020 (Lauraceae)

The species has been discovered and described based on the collection made from Sheikelmudi, Parambikulam Tiger Reserve, on way to Pooppara, Thrissur district of Kerala, India at 1100m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in CALI and KFRI respectively. The species is named after its type locality i.e. Sheikelmudi. The species is assessed as 'Endangered' following the IUCN guidelines (IUCN 2012).

Cymbidium viride Sanjeet Kumar, Richardiana n.s. 4: 17. 2020 (Orchidaceae)

The species has been discovered and described based on the collection made from Hunter Valley, Indo-Burma Biodiversity Hotspot, Manipur, India at 616 m altitude. The holotype is deposited in Herbarium of Biodiversity and Conservation Lab, Ambika Prasad Research Foundation, Bhubaneswar (APRFH). The species is named after its *latin* term of greenish-yellow color of the sepals and petals.

Dendrobium nageswarayanum Chowlu, Natl. Acad. Sci. Lett., 2020. https://doi.org/10.1007/s40009-020-00919-x (Orchidaceae)

The species has been discovered and described based on the collection made from Koloriang Hill, Kurung Kumey district of Arunachal Pradesh, India at 823 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL). This species is named in honor of Dr. A. Nageswara Rao, for his valuable contributions to the Orchidology of Northeast India. The species is assessed as 'Critically Endangered' [CR B1ab (iii)+2ab(iii); D] following the IUCN guidelines (IUCN 2012).

Dendrophthoe gamblei L.J. Singh, V. Ranjan, Rasingam & J. Swamy, J. Asia-Pacific Biodiv. 13: 489. 2020 (Loranthaceae)

The species has been discovered and described based on the collection made from Yarlampalli, Anantapur district of Andhra Pradesh, India. The holotype and isotypes are deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL). This species is named to honor James Sykes Gamble (1847-1925) a great botanist of colonial period in British India.

Didymocarpus sinoindicus N.S. Prasanna, Lei Cai & V. Gowda, Rheedea 30(1): 136. 2020 (Gesneriaceae)

The species has been discovered and described based on the collection made from Mount Saramati, Kiphire district of Nagaland, India at 2580 m altitude. The holotype is deposited in Indian Institute of Science Education and Research, Bhopal (BHPL) and isotypes are in ASSAM. The specific epithet 'sinoindicus' refers to its two collections localities in China and India.

The species is categorized as data deficient (DD) following the IUCN guidelines (IUCN, 2019).

Dipcadi coimbatorensis V. Ravich., R. Kr. Singh & Murugan, Kew Bull. 75(1): 16-1. 2020 (Asparagaceae)

The species has been discovered and described based on the collection made from rocky hill-top of Seengapathy beat of Bolambatty forest range, Nilgiri Biosphere Reserve, Coimbatore district of Tamil Nadu, India at 700 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in MH. The species is named after district of its occurrence. The species is assessed as 'Endangered' following the IUCN guidelines (IUCN 2013).

Echinops sahyadricus S. More, F. Conti & H.S. Bhosale, Nordic J. Bot. 38(10)-e02860: 2. 2020 (Asteraceae)

The species has been discovered and described based on the collection made from Velhe Taluka, Rajgad, Pune district of Maharashtra, India at 1289 m altitude. The holotype is deposited in the Blatter Herbarium, St. Xavier's College, Mumbai (BLAT) and isotypes are in CAL. The specific epithet 'sahyadricus' refers to the Sahyadri Mountains where the new species occurs. The species is assessed as 'Least Concern' (LC) following the IUCN guidelines (IUCN 2019).

Elatostema agasthyanum Jeomol & Sunojk, Phytotaxa 430(1): 34. 2020 (Urticaceae)

The species has been discovered and described based on the collection made from Agasthyamala hills, Attayar, Thiruvananthapuram district of Kerala, India at 568 m altitude. The holotype is deposited in the Department of Botany, University of Calicut, Kerala, (CALI) and isotypes are in MH. This species is named after its type locality in Agasthyamala hills. The species is assessed as 'Data Deficient (DD) following the IUCN guidelines (IUCN 2017).

Eriocaulon vamanae Dani & Nampy, Edinburgh J. Bot. 77(2): 282. 2020 (Eriocaulaceae)

The species has been discovered and described based on the collection made from Meesapulimala, Munnar, Idukki district of Kerala, India at 2445 m altitude. The holotype is deposited in the Department of Botany, University of Calicut, Kerala, (CALI) and isotypes are in CAL. The specific epithet *vamanae* means 'dwarf' in Sanskrit and refers to the small size of the plant. The species is assessed as 'Critically Endangered (CR) following the IUCN guidelines (IUCN 2017).

Eugenia bolampattiana V. Ravich., Murug. & Murugan, Gard. Bull. Singapore 72(1): 118. 2020 (Myrtaceae)

The species has been discovered and described based on the collection made from Bolambatty hills, above Kovai Courtallum, Coimbatore district of Tamil Nadu, India at 758 m altitude. The holotype is deposited in Southern Regional Centre, Botanical Survey of India, Coimbatore (MH) and isotypes are in CAL, MH. The new species is named after the type locality, Bolampatty Hills, Tamil Nadu. The species is assessed as 'Critically Endangered (CR B1ab(iii)+2ab(iii)). following the IUCN guidelines (IUCN 2017).

Eugenia sphaerocarpa Vadhyar, Sujana, J.H.F. Benj. & Murthy, Phytotaxa 442(2): 122. 2020 (Myrtaceae)

The species has been discovered and described based on the collection made from Malabar Wildlife Sanctuary, Kakkayam, Ambalapara, Kozhikode district of Kerala, India at 768 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in MH. The new species is named after its large, showy spherical fruits. The species is assessed as 'Data Deficient (DD) following the IUCN guidelines (IUCN 2017).

Gentiana sasidharanii K.M.P. Kumar & Sunil, Phytotaxa 443(3): 295. 2020 (Gentianaceae)

The species has been discovered and described based on the collection made from Meesappulimala, Chinnakkanal, Idukki district of Kerala, India at 2640 m altitude. The holotype is deposited in Centre for Medicinal Plants Research (CMPR), Arya Vaidya Sala, Kottakkal, Malappuram (CMPR) and isotypes are in CATH, MH and SNMH. The species is named in honor of Dr. N. Sasidharan, Emeritus Scientist, Kerala Forest Research Institute, Peechi, for his immense contribution to the Indian Plant Taxonomy especially on the flora of Kerala. The species is assessed as 'Data Deficient (DD) following the IUCN guidelines (IUCN 2017).

Geranium jainii Imtiyaz Hurrah & Vijay Wagh, Nordic J. Bot. e02850.2020 (Gentianaceae)

The species has been discovered and described based on the collection made from Rohtang, Lahul and Spiti district of Himachal Pradesh, India at 3948 m altitude. The holotype is deposited in Plant Diversity, Systematics and Herbarium Division, CSIR-National Botanical Research Institute, Lucknow (LWG). The species is named in honor of Prof. Ashok K. Jain, Jiwaji University, Gwalior, Madhya Pradesh. The species is assessed as 'Critically Endangered [CR B1ab(iii)+2ab(iii)] following the IUCN guidelines (IUCN 2019).

Goniothalamus sericeus Sujana & Vadhyar, Taiwania 65(2): 176. 2020 (Annonaceae)

The species has been discovered and described based on the collection made from Kanyakumari Wildlife Sanctuary, Balmore Forest Beat, Muthukuzhivayal, Kanyakumari district of Tamil Nadu, India at 1194 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in MH. The specific epithet 'sericeus' refers presence of dense sericeous hairs on its petals. The species is assessed as 'Critically Endangered [CR B1ab(iii)+2ab(iii)] following the IUCN guidelines (IUCN 2012).

Gymnanthemum sahyadricum Balan & Robi, Ann. Bot. Fenn. 57(4-6): 314. 2020 (Asteraceae)

The species has been discovered and described based on the collection made from Thangalpara, Vagamon Hills (Western Ghats), Kottayam district of Kerala, India at 1100 m altitude. The holotype is deposited in Southern Regional Centre, Botanical Survey of India, Coimbatore (MH) and isotypes are in MBGH and MH. The species name is derived from Malayalam name of Western Ghat, i.e. Sahyadri.

Habenaria rangatensis M.C. Naik & K. Prasad, Phytotaxa 442(1): 027. 2020 (Orchidaceae)

The species has been discovered and described based on the collection made from Rangat hills, Middle Andamans, of Andaman & Nicobar Islands, India at 51 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL). The new species is named after the type locality, Rangat (Middle Andaman Islands). The species is assessed as 'Critically Endangered [CR B1ab(iii)+2ab(iii)] following the IUCN guidelines (IUCN 2019).

Hedychium mechukanum M. Sabu & Hareesh, Gardens' Bulletin Singapore 72(2): 292. 2020 (Zingiberaceae)

The species has been discovered and described based on the collection made from 130 km from Along towards Mechuka, Shi-Yomi district of Arunachal Pradesh, India at 1450m altitude. The holotype is deposited in Malabar Botanical Garden and Institute for Plant Sciences, Olavanna, Kozhikode (MBGH) and isotypes are in CAL. The species is named after its type locality, i.e. Mechuka.

Hedyotis shoolamudianus Sunil, Naveen Kum. & K.M.P. Kumar, Phytotaxa 438(2): 159. 2020 (Rubiaceae)

The species has been discovered and described based on the collection made from Variyam forest, Shoolamudi, Ernakulam district of Kerala, India at 1251 m altitude. The holotype is deposited in Centre for Medicinal Plants Research (CMPR), Arya Vaidya Sala, Kottakkal, Malappuram (CMPR) and isotypes are in MH and CALI. The specific epithet is named after the type locality, Shoolamudi hills.

Hedyotis sithiravaraiensis Muruganand., Devanath., S. Ravik. & D. Naras., J. Asia-Pacific Biodivers. 13: 750. 2020 (Rubiaceae)

The species has been discovered and described based on the collection made from Sethavarai (Sithiravarai) slope, Gingee taluk, Pakkamalai reserve forest area, Villupuram district of Tamil Nadu, India at 359 m altitude. The holotype is deposited in Southern Regional Centre, Botanical Survey of India, Coimbatore (MH) and isotypes are in PCM. The species is named after its type locality, i.e. Sithiravarai. The species is assessed as 'Critically Endangered [CR B1ab(iii)+2ab(iii)] following the IUCN guidelines (IUCN 2012).

Henckelia siangensis Taram, D. Borah & Tag, Phytokeys 160: 1. 2020 (Gesneriaceae)

The species has been discovered and described based on the collection made from Pasighat, East Siang district of Arunachal Pradesh, India at 375 m altitude. The holotype is deposited in Eastern Regional Centre, Botanical Survey of India, Shillong (ASSAM) and isotypes are in ARUN. The species is named after the type locality, the Siang valley.

Henckelia umbellata Kanthraj & K.N. Nair, Rheedea 30(1): 144. 2020 (Gesneriaceae)

The species has been discovered and described based on the collection made from Yangte village of Arunachal Pradesh, India at 1295 m altitude. The holotype is deposited in Plant Diversity, Systematics and Herbarium Division, CSIR-National Botanical Research Institute, Lucknow (LWG). The species is named after its umbellate inflorescence. The species is assessed as 'Data Deficient (DD)' under the IUCN Red List Categories and Criteria (version 3.1) (IUCN 2001, 2012, 2019).

Henckelia wayanadensis Janeesha & Nampy, Rheedea 30(1): 144. 2020 (Gesneriaceae)

The species has been discovered and described based on the collection made from Kaduvakuzhi hill top, Wayanad district of Kerala, India at 1200 m altitude. The holotype is deposited in the Department of Botany, University of Calicut, (CALI) and isotypes are in MH. The species is named after its district of occurrence. The species is assessed as 'Critically Endangered [CR B2ab(iii,iv,v)] according to IUCN guidelines (IUCN, 2019).

Hopea sasidharanii Robi & Sujanapal, Phytotaxa 429(2): 167. 2020 (Dipterocarpaceae)

The species has been discovered and described based on the collection made from Choondippara Shenduruny Wildlife Sanctuary, Kollam district of Kerala, India at 500 m altitude. The holotype is deposited in Kerala Forest Research Institute, Peechi, Thrissur (KFRI) and isotypes are in MH. The species is named in honor of Dr N. Sasidharan, for his valuable contributions to the field of angiosperm taxonomy and floristics.

Impatiens bakthangensis Chhetri, Sherpa & Gogoi, Nordic J. Bot. e02872.2020 (Balsaminaceae)

The species has been discovered and described based on the collection made from Bakthang falls, Gangtok, East Sikkim district of Sikkim, India at 1700 m altitude. The holotype and isotypes are deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL). The specific epithet is named after its type locality.

Impatiens dindigulensis Ramas., Anjana & Chandra, Taiwania 65(4): 426. 2020 (Balsaminaceae)

The species has been discovered and described based on the collection made from Palni hills, Kodaikanal Wildlife Sanctuary, Dindigul district of Tamil Nadu, India at 1938 m altitude. The holotype is deposited in Jawaharlal Nehru Tropical Botanic Garden and Research Institute, Trivandrum (TBGT) and isotypes are in GUD and TAI. The species is named after the district of its occurrence.

Impatiens grandispora Nampy & M. Vishnu, Taiwania 65(2): 191. 2020 (Balsaminaceae)

The species has been discovered and described based on the collection made from Edathattu-Mankulam, Idukki district of Kerala, India at 1395 m altitude. The holotype is deposited in the Department of Botany, University of Calicut, (CALI) and isotypes are in (K). The specific epithet refers to its large pollen grains. The species is assessed as 'Critically Endangered [CR] according to IUCN guidelines (IUCN, 2017).

Impatiens nidholapathra Vishnu & Nampy, Taiwania 65(2): 187. 2020 (Balsaminaceae)

The species has been discovered and described based on the collection made from Mile-Mankulam Idukki district of Kerala, India at 1023 m altitude. The holotype is deposited in the Department of Botany, University of Calicut, (CALI) and isotypes are in (K). The specific epithet is derived from Sanskrit term 'nidholam' means pendulum and 'pathra' leaves, the whole referring to the pendulous nature of the leaves. The species is assessed as 'Endangered (EN) according to IUCN guidelines (IUCN, 2019).

Impatiens palniensis Ramasubbu, Phytotaxa 460(4): 250. 2020 (Balsaminaceae)

The species has been discovered and described based on the collection made from Palni hills, Kodaikanal Wildlife Sanctuary, Dindigul district of Tamil Nadu, India at 1938 m altitude. The holotype is deposited in Southern Regional Centre, Botanical Survey of India, Coimbatore (MH) and isotypes are in GUD. The species is named after its type locality, i.e. Palni hills. The species is assessed as Critically Endangered [CR B1ab(iii,v)] in accordance with the IUCN guidelines (IUCN 2016).

Impatiens periyarensis B. Mani, Sinj. Thomas & Britto, Taiwania 65(4): 451. 2020 (Balsaminaceae)

The species has been discovered and described based on the collection made from Alady, Idukki district of Kerala, India at 900 m altitude. The holotype is deposited in the Rapinat Herbarium and Centre for Molecular Systematics Tiruchirapalli, (RHT) and isotypes are in (MH). The species is named after Periyar river of Kerala, which is running through the type locality.

Impatiens shiyomiensis Hareesh & M. Sabu, Phytotaxa 437(5): 294. 2020 (Balsaminaceae)

The species has been discovered and described based on the collection made from 57 km away from Siko Dido Water fall towards Mechuka, Arunachal Pradesh, India at 1200 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in CAL and MBGH. The species is named after the type locality in Shi-Yomi, Arunachal Pradesh.

Impatiens tamilnadense Ramasubbu, Phytotaxa 460(4): 250. 2020 (Balsaminaceae)

The species has been discovered and described based on the collection made from Megamalai hills, way to Highwavies, Theni district of Tamil Nadu, India at 1938 m altitude. The holotype is deposited in Southern Regional Centre, Botanical Survey of India, Coimbatore (MH) and isotypes are in GUD. The species is named after its state of occurrence. The species is assessed as Endangered [EN B1ab(iii,v)] in accordance with the IUCN guidelines (IUCN 2016).

Impatiens tirbinensis Hareesh & M. Sabu, Phytotaxa 437(5): 291. 2020 (Balsaminaceae)

The species has been discovered and described based on the collection made from 5 km away from Tirbin towards Along from Daporijo, West Siang district of Arunachal Pradesh, India at 787 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in CAL and MBGH. The species is named after the type locality Tirbin, West Siang district, Arunachal Pradesh.

Ischaemum janarthanamii S.A Bokil, Datar & R. K. Choudhary, Ann. Bot. Fenn. 57(4-6): 323. 2020 (Poaceae)

The species has been discovered and described based on the collection made from Devsada near Dharbandora, South Goa district of Goa, India at 85 m altitude. The holotype is deposited in Agharkar Research Institute, Pune (AHMA) and isotypes are in BSI. The species is named in honor of Prof. M.K. Janarthanam, Goa University, for his immense contribution to the Indian grass taxonomy.

Iseilema kunhikannanii K.C. Mohan, Y. Mahesh & K. Prasad, Phytotaxa 434(1): 113. 2020 (Poaceae)

The species has been discovered and described based on the collection made from Bundi forest division, Near Garrada village, Bundi district of Rajasthan, India at 452 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in BSID and BSJO. The species is named in honor of Dr. C. Kunhikannan, Scientist-"G", Institute of Forest Genetics and Tree Breeding, Coimbatore for his contributions to the forest ecology and plant biodiversity in India.

Knema flavostamina M.G. Govind & Dan, Phytotaxa 461(1): 40. 2020 (Myristicaceae)

The species has been discovered and described based on the collection made from B Kallar Forest, Thiruvananthapuram district of Kerala, India at 375 m altitude. The holotype is deposited in Herbarium of Jawaharlal Nehru Tropical Botanical Garden and Research Institute, Thiruvananthapuram (TBGT) and isotypes are in CALI and KUBH. The species is named after its striking yellowish androecium.

Lepidagathis ananthapuramensis V. S. A. Kumar, P. Biju, S. Arya, Josekutty & Augustine, Phytotaxa 460(4): 270. 2020 (Acanthaceae)

The species has been discovered and described based on the collection made from Ananthapuram, Kasaragod district of Kerala, India. The holotype is deposited in Herbarium of Jawaharlal Nehru Tropical Botanical Garden and Research Institute, Thiruvananthapuram (TBGT) and isotypes are in CALI. The species is named after its type locality, Ananthapuram. The species is assessed as Data Deficient (DD) according to the IUCN guidelines (IUCN, 2019).

Lepidagathis rajasekharae K. Prasad & A.M. Reddy, Phytotaxa 470(1): 112. 2020 (Acanthaceae)

The species has been discovered and described based on the collection made from Seshachalam hills, way to Mogalipenta from Talakona top, Kadapa district of Andhra Pradesh, India. The holotype is deposited in Deccan Regional Centre, Botanical Survey of India, Hyderabad (BSID) and isotypes are in CAL and BSID. The species is named after Dr. Yeduguri Sandinti Rajasekhara Reddy (1949–2009), former Chief Minister of Andhra Pradesh state, for his significant contribution in field of education and conserving natural resource. The species is assessed as 'Critically Endangered [CR B1+2ab(iii)] as per IUCN guidelines (IUCN, 2019).

Lepidagathis sabui Chandore, Borude, Madhav & S.R. Yadav, Phytotaxa 464(2): 159. 2020 (Acanthaceae)

The species has been discovered and described based on the collection made from Rantale Village, Rajapur tehsil, Ratnagiri district of Maharashtra, India at 210 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in BSI, K and SUK. The species is named in honour of Prof. (Dr.) M. Sabu, University of Calicut, Kerala for his credible contribution in Plant taxonomy especially in Zingiberales. The species is assessed as 'Critically Endangered [CR B1ab(iii,v)] as per IUCN guidelines (IUCN, 2019).

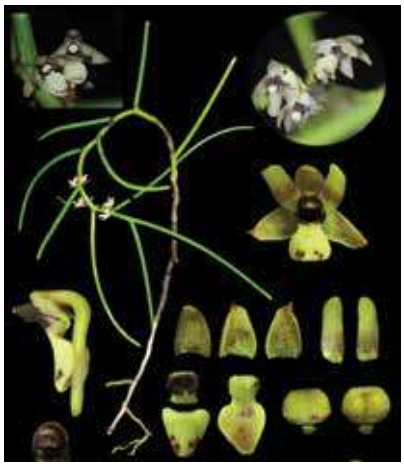
Lepidagathis ushae Borude, Gosavi & Chandore, Kew Bulletin 75: 19. 2020 (Acanthaceae)

The species has been discovered and described based on the collection made from Rajapur, Hativale, Rajapur tehsil, Ratnagiri district of Maharashtra, India at 220 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in BSI, K and SUK. The species is named in honour of Dr. Usha Shrirang Yadav, Kolhapur, Maharashtra, India for her valuable contributions to the cytology and taxonomy of the plants of the Western Ghats. The species is assessed as 'Critically Endangered [CR B1ab(iii,v)]. as per IUCN guidelines (IUCN, 2017).

Ludwigia venugopalanii S. Arya, V. Suresh, P. Biju & V.S.A. Kumar, Phytotaxa 474(2): 192. 2020 (Onagraceae)

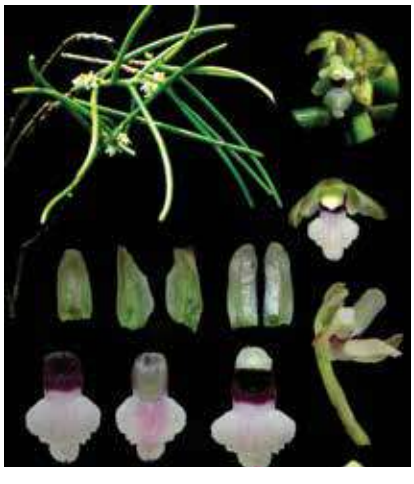
The species has been discovered and described based on the collection made from Valayamchal on the way to Aaralam, Kannur district of Kerala, India at 110 m altitude. The holotype is deposited in Herbarium of Jawaharlal Nehru Tropical Botanical Garden and Research Institute, Thiruvananthapuram (TBGT) and isotypes are in CALI and KFRI. The species is named in honour of Dr. Venugopalan Nair Balakrishnapilla, father of author V.S.A. Kumar. The species is assessed as 'Critically Endangered (CR) as per IUCN guidelines (IUCN, 2014).

Luisia diglipurensis Sanjay Mishra & Jalal, Phytotaxa 453(3): 255. 2020 (Orchidaceae)



The species has been discovered and described based on the collection made from Diglipur, Shyam Nagar, on roadside mango trees, North Andaman of Andaman & Nicobar Islands, India at 7 m altitude. The holotype is deposited in Herbarium of Andaman & Nicobar Regional Centre, Botanical Survey of India, Port Blair (PBL). The species is named after its type locality.

Luisia jarawana Sanjay Mishra & Jalal, Phytotaxa 453(3): 260. 2020 (Orchidaceae)



The species has been discovered and described based on the collection made on the way to Sagwan nallah, on *Bombax insigne* Kurz, Middle Andaman of Andaman & Nicobar Islands, India at 16 m altitude. The holotype is deposited in Herbarium of Andaman & Nicobar Regional Centre, Botanical Survey of India, Port Blair (PBL). The species is named after the semi-nomadic tribe, Jarawa, who inhabit the west coast of South and Middle Andaman Islands.

Memecylon nervosum Vadhyar, J.H.F. Benj. & Sujana, Edinburgh J. Bot. 77(3): 403. 2020 (Melastomataceae)

The species has been discovered and described based on the collection made from Panagudi forest section, beyond Sengamal Estate, Kanyakumari Wildlife Sanctuary, Kanyakumari district, of Tamil Nadu, India at 785 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in MH. The specific epithet refers to presence of prominently raised lateral and intra-marginal veins on the lower surface of the lamina. The species is assigned a status of Critically Endangered [CR B1ab(ii,iii)+2ab(i,ii)] according to IUCN guidelines (2012).

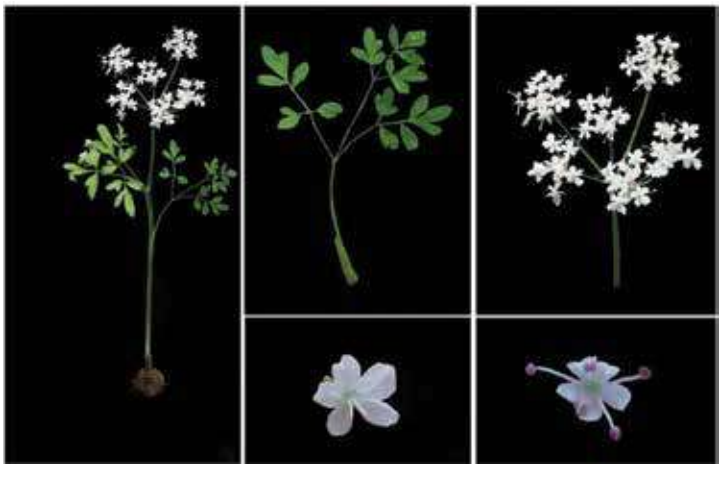
Musa pradhanii A. Joe and M. Sabu, Revision of Indian Musaceae 212. 2019 (Musaceae)

The species has been discovered and described based on the collection made from cultivated site at Everest Nursery area, originally taken from Darjeeling district of West Bengal, India at 785 m altitude. The holotype is deposited in Herbarium Department of Botany, University of Calicut, Kerala (CALI). The species is named in honor of Mr. Keshow Chandra Pradhan of Kalimpong, West Bengal for his efforts to conserve wild banana species.

Myristica trobogarii Govind & M. Dan, Phytotaxa 437(4): 206. 2020 (Myristicaceae)

The species has been discovered and described based on the collection made from Agasthyamala Biosphere Reserve, Sankily forest, Kollam district of Kerala, India at 300 m altitude. The holotype is deposited in Herbarium of Jawaharlal Nehru Tropical Botanical Garden and Research Institute, Thiruvananthapuram (TBGT) and isotypes are in MH and CALI. The species is named after the Jawaharlal Nehru Tropical Botanic Garden and Research Institute, Trivandrum.

Neoconopodium paddarensis S. Thakur, B. Singh, N. Tashi & H.C. Dutt, Phytotaxa 459(4): 286. 2020 (Apiaceae)



The species has been discovered and described based on the collection made from Atholi mountain, Paddar valley, near Gulabgarh bridge, Kishtwar district of Jammu and Kashmir UT, India at 1957 m altitude. The holotype is deposited in Janaki Ammal Herbarium, Indian Institute of Integrative Medicine, Jammu (RRLH) and isotypes are in HBJU. The species epithet is named after the type locality, i.e. Paddar valley in Kishtwar district, Jammu and Kashmir.

Ophiorrhiza meenachilarensis Robi & Balan, Webbia 75(2): 232. 2020 (Rubiaceae)

The species has been discovered and described based on the collection made from Vagamon Hills, Kottayam district of Kerala, India at 1000 m altitude. The holotype is deposited in Southern Regional Centre, Botanical Survey of India, Coimbatore (MH) and isotypes are in KFRI and MBGH. The species is named after Meenachilar River which originates in the type locality. The species is assessed as Data Deficient (DD) according to IUCN standards.

Parahyparrhenia khannae A. P. Tiwari & Chorghe, Phytotaxa 446(1): 056. 2020 (Poaceae)

The species has been discovered and described based on the collection made from Sailana Tahsil, Sailana Bird Sanctuary (Shikarwadi area), Ratlam district of Madhya Pradesh, India. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in BSA. The species is named in honor of Late Dr. K.K. Khanna, Former Scientist, Botanical Survey of India Allahabad, for his contributions in the field of angiosperms taxonomy, specially to the Flora of Madhya Pradesh.

Pedicularis khoiyangii D. Borah & R.Kr. Singh, Phytotaxa 430(4): 288. 2020 (Orobanchaceae)

The species has been discovered and described based on the collection made from Sela pass, Tawang district of Arunachal Pradesh, India at 4200 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in ASSAM. The species is named after Late Mr. Hawtoo Khoiyang, an admirable botanist, who died battling cancer at a young age. The species is provisionally assessed as vulnerable according to the criteria D of the IUCN (2019) guidelines.

Pedicularis raghvendrae Arti Garg & R.Kr. Singh, Phytotaxa 452(1): 111. 2020 (Orobanchaceae)

The species has been discovered and described based on the collection made from Bansoi, North Sikkim district of Sikkim, India at 2200 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in BSA and BSHC. The species is named in honour of Dr. R. Raghvendra Rao, an eminent former BSI Scientist for his commendable contributions to Indian plant taxonomy. The species is provisionally assessed as vulnerable according to the criteria D of the IUCN (2019) guidelines.

Peliosanthes ashihoana D.K. Roy, N. Odyuo & N. Tanaka, Taiwania 65(4): 493. 2020 (Asparagaceae)

The species has been discovered and described based on the collection made from experimental garden of Eastern Regional Centre, Shillong, East Khasi Hill district of Meghalaya, India. The holotype is deposited in Eastern Regional Centre, Botanical Survey of India, Shillong (ASSAM). The new species is named in honour of Dr. Ashiho Asosii Mao, Director, Botanical Survey of India, for his excellent contributions to the plant taxonomy of northeastern India.

Peliosanthes bipiniana D.K. Roy, N. Odyuo & N. Tanaka, Taiwania 65(4): 496. 2020 (Asparagaceae)

The species has been discovered and described based on the collection made from experimental garden of Eastern Regional Centre, Shillong, East Khasi Hill district of Meghalaya, India. The holotype is deposited in Eastern Regional Centre, Botanical Survey of India, Shillong (ASSAM). The new species is named in honour of Late Dr. Bipin Kumar Sinha, former Scientist from Botanical Survey of India, Kolkata, for his contribution to plant taxonomy of North-East India.

Peliosanthes ligniradicis N. Tanaka, M. Taram & D. Borah, Phytotaxa 438(1): 044. 2020 (Asparagaceae)

The species has been discovered and described based on the collection made from Pasighat, East Siang district of Arunachal Pradesh, India at 400 m altitude. The holotype is deposited in Eastern Regional Centre, Botanical Survey of India, Shillong (ASSAM) and isotypes are in ARUN. The specific epithet refers to its thick, semi-woody roots.

Peliosanthes nagalandensis N. Odyuo, D.K. Roy, N. Tanaka & A.A. Mao, Phytotaxa 456(3): 286. 2020 (Asparagaceae)

The species has been discovered and described based on the collection made from experimental garden of Eastern Regional Centre, Shillong, East Khasi Hill district of Meghalaya, India. The species was originally from Mon district, Tobu Town Subdivision, Pessao village, Nagaland. The holotype is deposited in Eastern Regional Centre, Botanical Survey of India, Shillong (ASSAM). The new species is named after the area of its origin in Nagaland.

Peliosanthes tobuensis N. Odyuo, D.K. Roy, R. Lytan, N. Tanaka & A.A. Mao, Phytotaxa 456(3): 290. 2020 (Asparagaceae)

The species has been discovered and described based on the collection made from experimental garden of Eastern Regional Centre, Shillong, East Khasi Hill district of Meghalaya, India. The species was originally from Mon district, Tobu Town Subdivision, Tobu village, Nagaland. The holotype is deposited in Eastern Regional Centre, Botanical Survey of India, Shillong (ASSAM). The new species is named after its type locality in Tobu village, Nagaland.

Peucedanum pradeepianum K.M.P. Kumar, Hareesh & Indu, Phytotaxa 446(1): 043. 2020 (Apiaceae)

The species has been discovered and described based on the collection made from Dhoni hills, Palamala, Palakkad district of Kerala, India at 1950 m altitude. The holotype is deposited in Centre for Medicinal Plants Research, Arya Vaidya Sala, Kottakkal, Malappuram (CMPR) and isotypes are in CAL, CALI and CATH respectively. The new species is named in honor of Dr. A.K. Pradeep, Assistant Professor, Department of Botany, University of Calicut, for his outstanding contributions to the field of Plant Taxonomy. The species is assessed as Critically Endangered [CR B1B2biiciii] as per IUCN 2017.

Phalaenopsis arunachalensis K. Gogoi & Rinya, Lankesteriana 20(3): 275. 2020 (Orchidaceae)

The species has been discovered and described based on the collection made from Ziro, Lower Subansiri district of Arunachal Pradesh, India at 1400 m altitude. The holotype is deposited in Herbarium of the Orchid Research Centre Tippi, (OHT) and isotypes are in ASSAM and TOSEHIM. The new species is named after state of its occurrence.

Pinda shrirangii Gosavi & Chandore, Nordic J. Bot. 38(7)-e02771: 2. 2020 (Apiaceae)

The species has been discovered and described based on the collection made from Harishchandragad, Ahmednagar district of Maharashtra, India at 1080 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in BSI. The species is named in honour of Emeritus Scientist Prof. (Dr.) Shrirang Ramchandra Yadav, Shivaji University, Kolhapur for his extensive contribution in the field of angiosperm taxonomy.

Portulaca laljii Sivaram. & Yugandhar, J. Asia-Pacific Biodivers. 13: 756. 2020 (Portulacaceae)

The species has been discovered and described based on the collection made from Bhairavakona, Prakasam district of Andhra Pradesh, India. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in BSID. The species is named in honour of Dr. Lal Ji Singh, Head, Botanical Survey of India, Andaman and Nicobar Regional Centre, Port Blair, for his significant contributions to the taxonomy of flowering plant.

Pothos boyceanus G. Rajkumar, Shaju, Nazarudeen & Prakashk., Taiwania 65(2): 114. 2020 (Araceae)

The species has been discovered and described based on the collection made from Valara, Idukki district of Kerala, India at 300 m altitude. The holotype is deposited in Herbarium of Jawaharlal Nehru Tropical Botanical Garden and Research Institute, Thiruvananthapuram (TBGT) and isotypes are in MH. The species is named in honour of Dr. Peter C. Boyce, for his remarkable contributions on the systematics of Araceae of South East Asia. The species is assessed as Critically Endangered [CRB1; C2+a (i); D] as per IUCN (2014).

Pseuderanthemum arunachalense D. Borah, R.Kr. Singh & Taram, Indian Forester 146(7): 660. 2020 (Acanthaceae)

The species has been discovered and described based on the collection made from Nirjuli, Papum Pare district of Arunachal Pradesh, India at 165 m altitude. The holotype is deposited in Eastern Regional Centre, Botanical Survey of India, Shillong (ASSAM) and isotypes are in ARUN. The new species is named after state of its occurrence.

Rhynchotechum nirijuliense Taram & D. Borah, Gard. Bull. Singapore 72(1): 126. 2020 (Gesneriaceae)

The species has been discovered and described based on the collection made from Nirjuli, Bage Hills, tropical bamboo forest, Papum Pare district of Arunachal Pradesh, India at 166 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in ASSAM and E. The species is named after its type locality i.e. Nirjuli, Arunachal Pradesh.

Rivina andamanensis L. J. Singh & M. Chennakesavulu Naik, J. Asia-Pacific Biodiv. 13: 484. 2020 (Petiveriaceae)

This new species has been discovered and described based on the collection made from Kalsi forest, Middle Andaman, Andaman and Nicobar Islands, India at 12 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in PBL. The species epithet is named after the type locality in Andaman Islands. It has been assessed as "Data Deficient" based on the IUCN guidelines (IUCN, 2015).

Salacia megacarpa N.V. Page & Nandikar, Nordic J. Bot. 38(4)-e02647: 2. 2020. (Celastraceae)

This new species has been discovered and described based on the collection made from Abailu Antipoaching Camp, Bramhagiri Wildlife Sanctuary, Virajpeth Taluk, Kodagu district of Karnataka, India at 850 m altitude. The holotype is deposited in Southern Regional Centre, Botanical Survey of India, Coimbatore (MH) and isotypes are in JCB, WII and NGCPR respectively. The species epithet refers to its large fruits; the largest among Indian *Salacia*. It has been assessed as "Data Deficient" based on the IUCN guidelines.

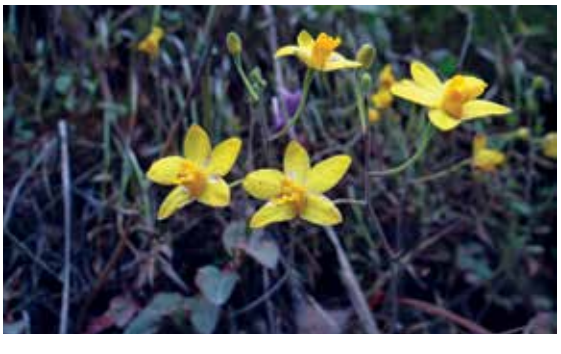
Sida sivarajanii Tambde, Sardesai & A.K. Pandey, Phytotaxa 428(2): 110. 2020 (Malvaceae)

This new species has been discovered and described based on the collection made from Kailas Nagar, Aurangabad district of Maharashtra, India at 569 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in BAMU, BSD, BSI, DUH and MH respectively. The species epithet is named in honour of Prof. V.V. Sivarajan for his great contributions in the field of angiosperm taxonomy in India.

Sonerila sulpheyi P.M. Salim & J. Mathew, Phytotaxa 435(1): 77. 2020 (Melastomataceae)

This new species has been discovered and described based on the collection made from South Wayanad Forest Division, way to Thollayiram Hill region, Wayanad district of Kerala, India at 1350 m altitude. The holotype is deposited in Southern Regional Centre, Botanical Survey of India, Coimbatore (MH). The species is named in honour of Dr. Sulphey M.M., Prince Sattam bin Abdulaziz University, Saudi Arabia, for valuable contributions to research on pedagogy and ecology. It has been assessed as 'Critically Endangered' [CR 1ab and 2ab] as per the guidelines of IUCN (2012).

Spathoglottis arunachalensis J. Tsering & K. Prasad, Phytotaxa 432(3): 289. 2020 (Orchidaceae)



This new species has been discovered and described based on the collection made from Sessa Orchid Sanctuary, West Kameng district of Arunachal Pradesh, India at 1235 m altitude. The holotype is deposited in Herbarium of the Orchid Research Centre Tipi (OHT) and isotypes are in CAL and OHT. The new species is named after state of its occurrence. It has been assessed as 'Critically Endangered [CR B1 B2 ab(iii)]' as per the guidelines of IUCN (2014).

Stereochilus arunachalensis Chowlu & A.N. Rao, Phytotaxa 433(2): 177. 2020 (Orchidaceae)

This new species has been discovered and described based on the collection made from Hunli, Lower Dibang Valley district of Arunachal Pradesh, India. The holotype is deposited in Herbarium of Arunachal Pradesh Regional Centre, Botanical Survey of India, Itanagar (ARUN). The new species is named after state of its occurrence. It has been assessed as "Data Deficient" based on the IUCN categories and criteria.

Strobilanthes bourdillonii A.K. Pradeep, Sinj. Thomas, B. Mani & Britto, Phytotaxa 472(1): 50. 2020 (Acanthaceae)

This new species has been discovered and described based on the collection made from Peermed, Idukki district of Kerala, India. The holotype is deposited in Herbarium of Southern Regional Centre, Botanical Survey of India, Coimbatore (MH). The new species is named in honor of its collector, Thomas Fulton Bourdillon, conservator of forests of the former princely state of Travancore during 1891–1908.

Strobilanthes lakshminarasimhanii Sameer Patil, Nelumbo 62(2): 113. 2020 (Acanthaceae)

This new species has been discovered and described based on the collection made from Mandalpatti-Hamiyalla forest path, Pushpagiri Wildlife Sanctuary, Kodagu district of Karnataka, India at 1149 m altitude. The holotype is deposited in Herbarium of Western Regional Centre, Botanical Survey of India, Pune (BSI). The new species is named in honor of Late Dr. P. Lakshminarasimhan, Scientist (Retd.), Botanical Survey of India, for his immense contribution to the field of angiosperm taxonomy.

Strobilanthes scopulicola A.K. Pradeep, Sinj. Thomas, B. Mani & Britto, Taiwania 65(2): 167. 2020 (Acanthaceae)

This new species has been discovered and described based on the collection made from Meppadi, Nilgiri Biosphere Reserve, Wayanad district of Kerala, India at 1750 m altitude. The holotype is deposited in The Rapinat Herbarium, Tiruchirappalli (RHT). The specific epithet "*scopulicola*" refers to the rock cliffs habitat of high altitude montane grasslands, where the new species is exclusively found.

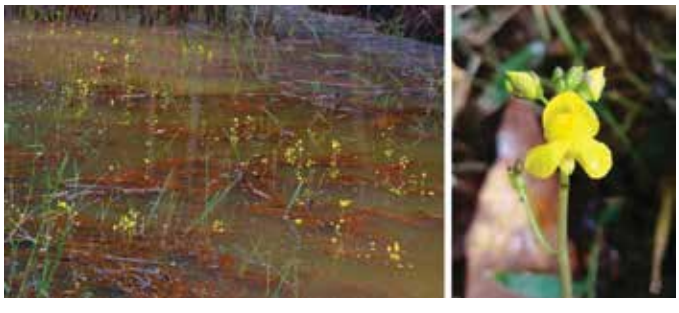
Syzygium anamalaianum Ramasubbu & Anjana, Phytotaxa 460(2): 240. 2020 (Myrtaceae)

The species has been discovered and described based on the collection made from Anamalai Tiger Reserve, near Karumalai, Coimbatore district of Tamil Nadu, India at 1065 m altitude. The holotype is deposited in Herbarium of Jawaharlal Nehru Tropical Botanical Garden and Research Institute, Thiruvananthapuram (TBGT) and isotypes are in GUD. The species is named after its type locality in Anamalai Tiger Reserve. The species is assessed is Critically Endangered (CR) according to the IUCN guidelines (IUCN, 2016).

Tinospora mahajanii Mishra, Khristi & Solanki, Rheedea 30(4): 450. 2020 (Menispermaceae)

This new species has been discovered and described based on the collection made from Awalya forest range, Khandwa district of Madhya Pradesh, India at 318 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in BSI. The species is named in honour of Dr. Shrikrishna Mahajan, retired Professor of Botany, Government College, Rajpur, Madhya Pradesh for his valuable contribution in the field of plant taxonomy.

Utricularia kamarudeenii V.S.A. Kumar & S. Arya, Phytotaxa 447(1): 71. 2020 (Lentibulariaceae)



This new species has been discovered and described based on the collection made from Manarcaud, Kottayam district of Kerala, India. The holotype is deposited in Centre for Medicinal Plants Research, Arya Vaidya Sala, Kottakkal, Malappuram (CMPR) and isotypes are in TBGT and MH respectively. The new species is named in honour of Dr. M. Kamarudeen Kunju, former Associate Professor, University of Kerala, Thiruvananthapuram, for his contributions in the field of angiosperm taxonomy.

Utricularia sainthomia P. Biju, Josekutty, Janarth. & Augustine, Rheedea 30(2):270. 2020 (Lentibulariaceae)

This new species has been discovered and described based on the collection made from Koyithatta lateritic plateau, Kasaragod district of Kerala, India at 155 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in MH. The species is named after the educational institution Saint Thomas College, Pala, Kerala, India, where one of the authors pursuing research work. It has been assessed as Data Deficient (DD) according to IUCN Criteria (2019).

Vicoa gokhalei Gosavi, Madhav, Chandore & S.R. Yadav, Phytotaxa 471(3): 291. 2020 (Asteraceae)

This new species has been discovered and described based on the collection made from Harishchandragad, Ahmednagar district of Maharashtra, India at 1432 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in K, SUK and BSI. The species is named after Gokhale Education Society, Nashik, well known educational institutes of Maharashtra.

NEW SUB SPECIES

Arisaema barnesii *subsp.* **sheshanagae** Sameer Patil, J. Jap. Bot. 95(6): 333. 2020 (Araceae)

This new sub species has been discovered and described based on the collection made from Mandalpatti, Pushpagiri Wildlife Sanctuary, Kodagu district of Karnataka, India at 1147 m altitude. The holotype is deposited in Western Regional Centre, Botanical Survey of India, Pune (BSI) and isotypes are in MH. The new subspecies is named after the Hindu mythological serpent God 'Sheshanaga', due to the presence of the distinct white colored 5-armed radiating patch on the mouth of spathe limb resembling the five hoods of Lord Sheshanaga. The sub species is assessed as 'Endangered' [EN B1ab(iii)+2ab(iii); D] as per the IUCN (2018, 2019) guidelines.

NEW VARIETIES

Abelmoschus pungens *var.* **mizoramensis** K.J. John, Krishnaraj & K. Pradheep, Rheedea 30(4): 459. 2020 (Malvaceae)

This new variety has been discovered and described based on the collection made from Tuithveng, Kolasib district of Mizoram, India. The holotype is deposited in Herbarium of National Bureau of Plant Genetic Resources, Pusa Campus, New Delhi (NHCP) and isotypes are in CAL. The varietal epithet is named after state of its occurrence, i.e. Mizoram.

Amorphophallus konkanensis Hett., S.R. Yadav & K.S. Patil *var.* **kinnerasaniensis** J. Swamy & Rasingam, Nelumbo 62(2): 117. 2020 (Araceae)

This new variety has been discovered and described based on the collection made from experimental garden of BSI Hyderabad the plant was originally introduced from Banjara Beat, Regulagudem Section, Yanambailu Range, Kinnerasani Wildlife Sanctuary of Telangana, India. The holotype is deposited in Herbarium of Deccan Regional Centre, Botanical Survey of India, Hyderabad (BSID). The new variety is named after its type locality in Kinnerasani Wildlife Sanctuary.

Cleistanthus travancorensis Jabl. *var.* **jaleelianus** E. Girish & Sunojk., Rheedea 30(2): 278. 2020 (Phyllanthaceae)

This new variety has been discovered and described based on the collection made from Rayarome, Kuppam river riparian vegetation near Rayarome bridge, on the way to Taliparamba-Coorg road, Kannur district of Kerala, India. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are MH. The varietal epithet is named honour of Late Dr. V. Abdul Jaleel, Assistant Professor, Sir Syed College, Kannur, the research supervisor of the first author.

Musa acuminata Colla *var.* **manipurensis** A. Joe and M. Sabu, Revision of Indian Musaceae 100. 2019 (Musaceae)

The variety has been discovered and described based on the collection made from Tiulanphai, way to Samti from Churchandpur district of Manipur, India at 682 m altitude. The holotype is deposited in Herbarium Department of Botany, University of Calicut, Kerala (CALI). The variety is named after state of its occurrence, i.e. Manipur.

Musa balbisiana Colla *var.* **bheem-kola** A. Joe and M. Sabu, Revision of Indian Musaceae 136. 2019 (Musaceae)

The variety has been discovered and described based on the collection made from Tinsukia district of Assam, India at 159 m altitude. The holotype is deposited in Herbarium Department of Botany, University of Calicut, Kerala (CALI) and isotypes are in ASSAM. The variety is named after its local name which means large size of fruits.

Peliosanthes macrophylla Wall. ex Baker *var.* **assamensis** N. Tanaka & D. Borah, Blumea 65: 121. 2020 (Asparagaceae)

The variety has been discovered and described based on the collection made from Behali Reserve Forest, Siklibandha, Biswanath district of Assam, India at 99 m altitude. The holotype is deposited in Eastern Regional Centre, Botanical Survey of India, Shillong (ASSAM) and isotypes are in ARUN. The varietal epithet refers to the state, where the type locality belongs.

NEW DISTRIBUTIONAL RECORDS

FAMILY RECORD

Hanguanaceae Airy Show

This monogeneric family earlier known from Australia, Borneo, Indonesia, Micronesia, Palau, Peninsular Malaysia, Papua New Guinea, Philippines, Solomon Islands, Southern Thailand, Southern Vietnam and Sri Lanka has been reported for the first time from India based on the collection made from Vembanad-Kol Wetland, Alappuzha district of Kerala, India. The family is represented with species *Hanguana anthelminthica* (Blume ex Schult. & Schult.f.) Masam. The specimens are deposited in Herbarium of Malabar Botanical Garden and Institute for Plant Sciences, Kozhikode, Kerala (MBGH). This has been published by Anoop Puthuparampil Balan, Karadiparambathu Anoop, Vendakkulathil Rajilesh and Nediyaparambu Sukumaran Pradeep in J. Jpn. Bot. 95(4): 240. 2020.

SPECIES RECORD

Anthoxanthum monticola (Bigelow) Veldkamp (Poaceae)

This species earlier known from NE China, Japan, Korea, Mongolia, Russia, North Europe,

North America has been reported for the first time from India based on the collection made from Tawang district of Arunachal Pradesh, India. The specimens are deposited in Herbarium Arunachal Pradesh Regional Centre, Botanical Survey of India, Itanagar (ARUN). This has been published by Manish K. Kandwal, Sandeep Tambe and G. S. Rawat in Pleione 14(2): 249. 2020.

Apocopis collinus Balansa (Urticaceae)

This species earlier known from Borneo, Sulawesi, Sumatra, Thailand and Vietnam has been reported for the first time from India based on the collection made from Teressa Island, Andaman & Nicobar Islands, India. The specimens are deposited in Central National Herbarium, Howrah (CAL) and PBL. This has been published by J Reshma Lakra and Pushpa Kumari in Phytotaxa 62(2): 121. 2020.

Aquilegia lactiflora Karelin & Kirilow (Ranunculaceae)

This species earlier known only from Kazakhstan has been reported for the first time from India based on the collection made from Karsha, Zanskar district of Jammu & Kashmir, India. The specimens are deposited in Herbarium Royal Botanic Garden, Kew (K). This has been published by Andrey S. Erst, Colin A. Pendry, Tatyana V. Erst, Hiroshi Ikeda, Kunli Xiang & Wei Wang in Phytotaxa 439(2): 113. 2020.

Didymocarpus cinereus D. Don (Gesneriaceae)

This species earlier known from Nepal and Bhutan has been reported for the first time from India based on the collection made from Tawang district of Arunachal Pradesh, India. The specimens are deposited in Herbarium of Plant Diversity, Systematics and Herbarium Division, CSIR-National Botanical Research Institute, Lucknow (LWG). This has been published by S. Pandey, A.S. Kanthraj, T.S. Rana & K.N. Nair in Rheedea 30(1): 166. 2020.

Gastrochilus changjiangensis Q. Liu & M.Z. Huang (Orchidaceae)

This species earlier known only from China has been reported for the first time from India based on the collection made from Ziro valley, Lower Subansiri district of Arunachal Pradesh, India. The specimens are deposited in Herbarium of the Orchid Research Centre Tipi (OHT). This has been published by Khyanjeet Gogoi and Koj Rinya in Pleione 14(2): 156. 2020.

Hanguana anthelminthica (Blume ex Schult. & Schult.f.) Masam. (Hanguanaceae)

This species earlier known from Australia, Borneo, Indonesia, Micronesia, Palau, Peninsular Malaysia, Papua New Guinea, Philippines, Solomon Islands, Southern Thailand, Southern Vietnam and Sri Lanka has been reported for the first time from India based on the collection made from Vembanad-Kol Wetland, Alappuzha district of Kerala, India. The specimens are deposited in Herbarium of Malabar Botanical Garden and Institute for Plant Sciences, Kozhikode, Kerala (MBGH). This has been published by Anoop Puthuparampil Balan, Karadiparambathu Anoop, Vendakkulathil Rajilesh and Nediyaparambu Sukumaran Pradeep in J. Jpn. Bot. 95(4): 241. 2020.

Heterocentron subtriplinervium (Link et Otto) A. Braun et Bouche (Melastomataceae)

This species earlier known only from Australia, Belize, Colombia, Costa Rica, El Salvador, Guatemala, Honduras, Mauritius, Mexico, New Zealand, Nicaragua, Panama, South Africa and United States has been reported for the first time from India based on the collection made from Munnar Hills, Idukki district of Kerala India. The specimens are deposited in Herbarium of Malabar Botanical Garden and Institute for Plant Sciences, Kozhikode, Kerala (MBGH) and MH. This has been published by A. P. Balan, A. J. Robi and R. Prakashkumar in Acta Botanica Hungarica 62(1–2): 2. 2020.

Pilea hyalina Fenzl (Urticaceae)

This species earlier known from Central America, Lesser Antilles, Mexico and South America has been reported for the first time from India based on the collection made from different places in four states Karnataka, Kerala, Maharashtra and Tamil Nadu India. The specimens are deposited in Herbarium BSI, CALI, JCB, K, MH, P & TBGT. This has been published by Jeomol K.K. & P. Sunojkumar in Rheedea 30(2): 166. 2020.

Stereochilus erinaceus (Rchb.f.) Garay (Orchidaceae)

This species earlier known from Myanmar, Thailand and Vietnam has been reported for the first time from India based on the collection made from Sessa-Tipi, West Kameng district of Arunachal Pradesh, India. The specimens are deposited in Herbarium of Sikkim Himalayan Regional Centre, Gangtok (BSHC) This has been published by Oindrila Chakraborty, S. Sengupta, Sayak Chakraborty, Rijupalika Roy and D. K. Agrawala in J. Orch. Soc. India 34: 149. 2020.

Tripogonella minima (A. Rich.) P.M. Peterson & Romasch (Poaceae)

This species earlier known from tropical Africa, excluding the Congo basin, and southwards to Natal; Cape Verde Islands and Madagascar has been reported for the first time from India based on the collection made from Chegunta, Medak district of Telangana, India. The specimens are deposited in Herbarium of Deccan Regional Centre, Botanical Survey of India, Hyderabad (BSID). This has been published by J. Swamy in Rheedea 30(3): 397. 2020.

SUB-SPECIES RECORD

Leptoboea multiflora (C.B. Clarke) Benth. ex Gamble *subsp.* **grandifolia** B.L. Burtt (Gesneriaceae)

This sub species earlier known from Thailand has been reported for the first time from India based on the collection made from Western slopes of Mt. Harriet Hill Ranges near Wrightmyo, Parachattan water falls, South Andaman Island of Andaman & Nicobar Island India. The specimens are deposited in Herbarium of Andaman & Nicobar Regional Centre, Port Blair (PBL). This has been published by J.P. Alappatt in Rheedea 30(1): 187. 2020.

VARIETAL RECORD

Meconopsis merakensis Tosh. Yoshida, Yangzom & D.G. Long *var.* **merakensis** (Papaveraceae)

This variety earlier known from Bhutan has been reported for the first time from India based on the collection made from Nagula Tso, Tawang district of Arunachal Pradesh, India. The specimens are deposited in the herbarium of the G.B. Pant National Institute of Himalayan Environment (GBPI) and ARUN. This has been published by K.S. Kanwal, U.L. Tiwari, M.S. Lodhi & R.S. Rawal in Rheedea 30(3): 392. 2020.

पर्णांग/PTERIDOPHYTES

Courtesy : Sanjay Kumar

पर्णांग/FERNS AND FERN-ALLIES

पर्णांग (टेरिडोफाइट्स) प्रायः विभिन्न प्रकार के प्राकृतवासों में पाये जाते हैं, ऐसी प्रतिकूल पर्यावरणीय प्राकृतवासों में भी, जहाँ सामान्यतः पुष्पीय पौधे नहीं पाये जाते, ये सफलतापूर्वक उगते हैं। भारतीय वनस्पतिजात में पर्णांग का लगभग 2.39 प्रतिशत हिस्सा है। हमारी अब तक की जानकारी अनुसार भारतीय पर्णांगों की लगभग 1310 जातियां हैं एवं अनेक जातियों का अन्वेषण एवं वर्णन अभी भी शेष है।

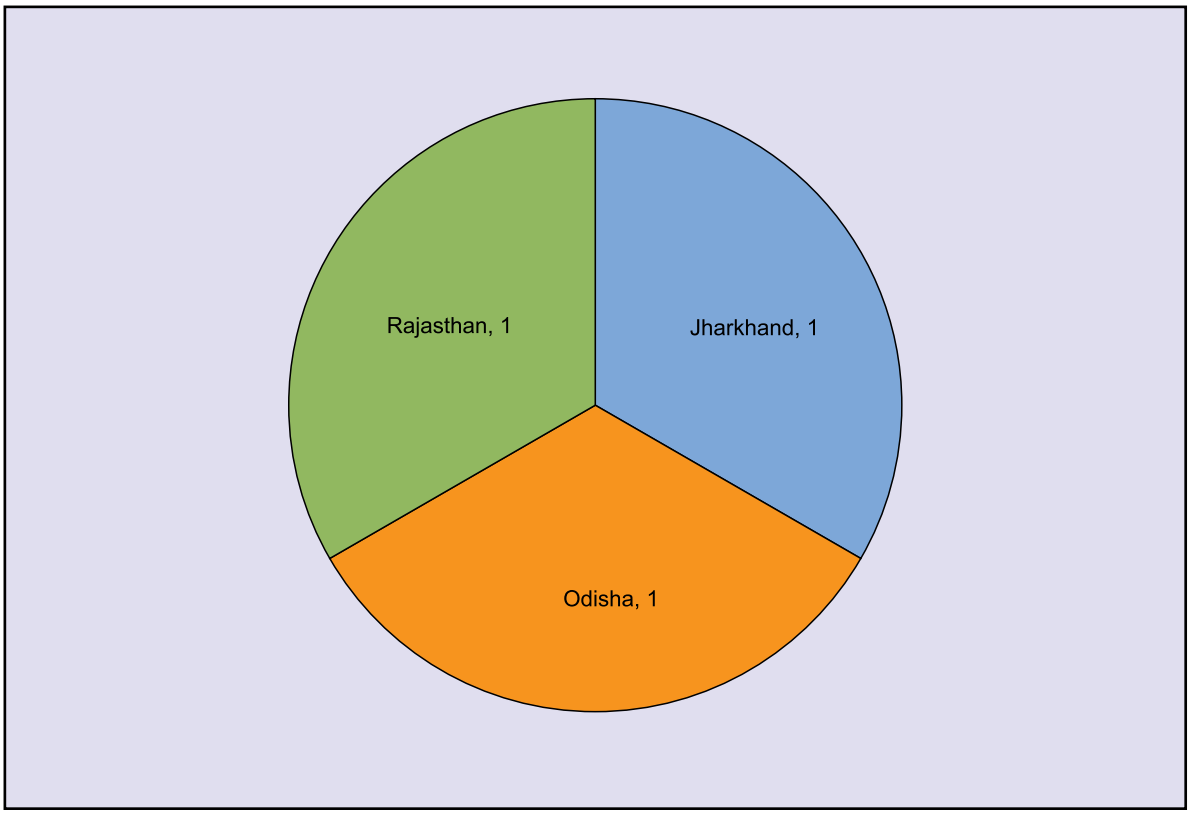
इस क्रमवार सूचना वर्ष 2020 के दौरान भारत से 03 नवीन पर्णांग जातियों को विज्ञान के लिये सर्वथा नई जातियों के तौर पर अन्वेषण किया गया है। जिसमें झारखंड, राजस्थान एवं ओडिशा राज्य में प्रत्येक से 1 नवीन जाति अन्वेषित की गई है।

Ferns and Fern-allies (Pteridophytes) live in a wide variety of habitats and often succeed in places where environmental factors discourage growth of flowering plants.

The Indian ferns account for about 2.39 per cent of the total Indian flora.

In the present state of our knowledge India has about 1310 species of ferns and Fern-allies. Many more are yet to be Identified and described.

The collated information presented here for the year 2020 includes three new species described from India as new to science, which includes 1 species each from Jharkhand, Rajasthan and Odisha.



भारतीय राज्यों से अन्वेषित पर्णांग की संख्या

NUMBER OF FERNS AND FERN-ALLIES DISCOVERED FROM INDIAN STATES

NEW SPECIES

Ophioglossum chaloneri H.K. Goswami, M. Patel & K.K. Nag, Phytotaxa 468(1): 103. 2020 (Ophioglossaceae)

The species has been discovered and described based on the collection made from Hurdulu forest area near Subarnarekha river plateau, Ranchi district of Jharkhand, India at 203 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL). The species is named in honor of the late Professor, W. G. Chaloner (London), who had imparted early lessons on the fundamental importance of spore layers and exine ornamentations to one of the authors (HKG).

Ophioglossum indicum B. L. Yadav & H. K. Goswami, Bull. Natl. Mus. Nat. Sci., Ser. B, 36(4): 155. 2020 (Ophioglossaceae)

The species has been discovered and described based on the collection made from Village area Mainal, Chittorgarh, Rajasthan India. The holotype is deposited in Herbarium of MLV Government College, Bhilwara, and isotypes are in Bio Nature herbarium, Bhopal, and National Museum of Nature and Science Herbarium (TNS). The species is named after country of its occurrence, i.e. India.

Selaginella odishana Sarv. K. Singh, P.K. Shukla & N.K. Dubey, Kew Bull. 75: 44. 2020 (Selaginellaceae)

The species has been discovered and described based on the collection made from Daringbadi Udayagiri forest range, Daringbadi, Kandhamal district of Odisha, India at 834 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL) and isotypes are in DD. The species is named after the state of its occurrence, i.e. Odisha. It has been assessed as 'Critically Endangered (CR), following the IUCN (2017).

हरितोद्भिद/BRYOPHYTES

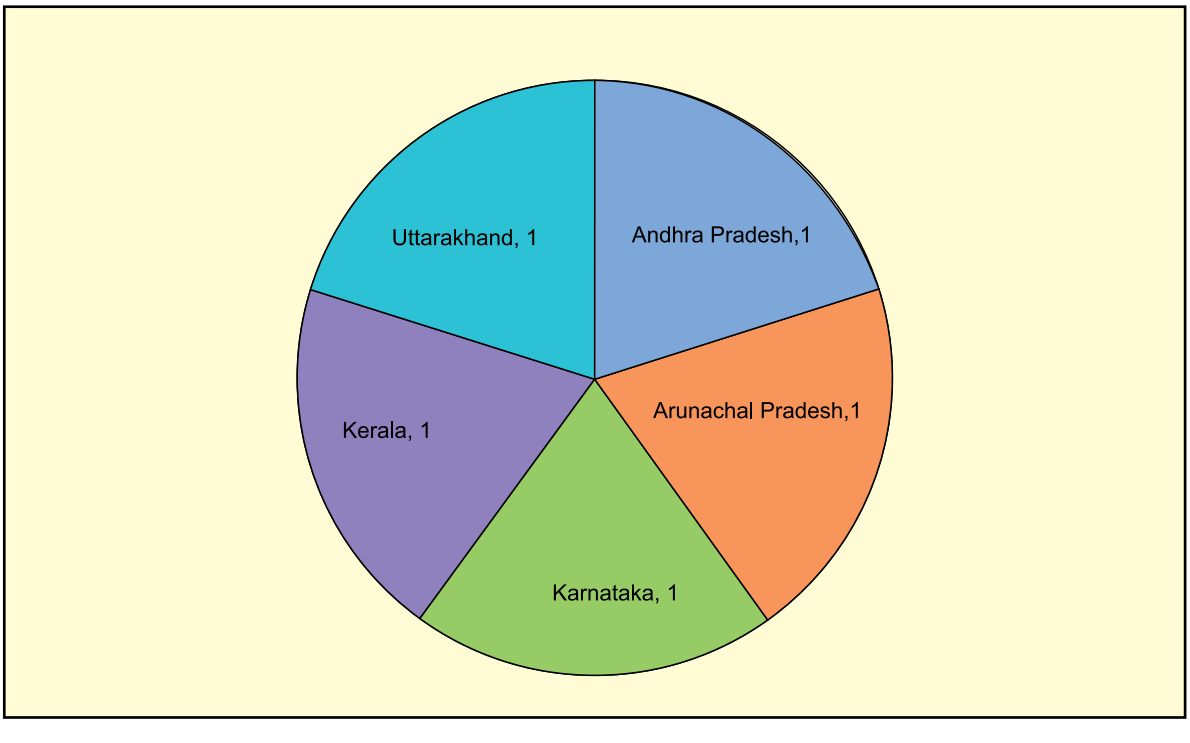
Courtesy : S.K. Singh

हरितोद्भिद/BRYOPHYTES

वनस्पतिजात में उभयचर के रूप में ज्ञात, हरितोद्भिद हरित पादपों में आवृतबीजी वर्ग के बाद दूसरा सबसे बड़ा समूह तथा जैव विविधता का रोचक संघटक हैं। ये पादप लगभग सभी जलवायु परिस्थितियों में व्याप्त हैं तथा अंटार्कटिका महाद्वीप में पाये जाने वाले पादप समूहों में से एक हैं। भारत के कुल वनस्पतिजात में हरितोद्भिदों का लगभग 5.11 प्रतिशत हिस्सा है। हमारी अब तक की जानकारी अनुसार भारतीय हरितोद्भिदों की लगभग 2791 जातियाँ ज्ञात हैं। इस प्रकार अनेकानेक जातियों का अन्वेषण एवं वर्णन अभी भी शेष है।

इस क्रमवार सूचना में वर्ष 2020 के दौरान भारत के उत्तराखंड राज्य से 01 नये प्रभेद को विज्ञान के लिये नयी जाति के रूप में अन्वेषित किया गया है। इसके अतिरिक्त 4 जातियों, (केरल, अरूणाचल प्रदेश, कर्नाटक और आंध्र प्रदेश में प्रत्येक से 01 जाति) को भारत के लिये एक नये अभिलेख को भी दर्ज किया गया है।

Bryophytes, the amphibians of the 'Plant Kingdom', and the second largest group of green plants next only to the angiosperms constitute a fascinating component of biodiversity and are widely spread in almost all climatic conditions. They are among the very few groups of plants foundin Antarctica. The Indian bryophytes account for about 5.11 per cent of the total plant species of India. In the present state of our knowledge India has about 2791 species of bryophytes. Many more are yet to be identified and described. The collated information presented here for year 2020 includes 01 new variety from Uttarakhand as new to science from India and 4 species (1 each from Kerala, Arunachal Pradesh, Karnataka and Andhra Pradesh) described as new distributional records for India.



भारतीय राज्यों से अन्वेषित हरितोद्भिदों की संख्या

NUMBER OF BRYOPHYTES DISCOVERED FROM INDIAN STATES

NEW VARIETY

Paraleucobryum enerve (Thed.) Loeske *var.* **secundum**, Natl. Acad. Sci. Lett. 2.2020 https://doi.org/10.1007/s40009-019-00853-7 (Dicranaceae)

The new variety has been discovered and described based on the collection made from Govind Wild Life Sanctuary, between Badang and Daldhar Uttarkashi district of Uttarakhand, India at 3705m altitude. The holotype is deposited in CSIR-National Botanical Research Institute, Lucknow (LWG). The variety is named after its strongly falcato-secund leaves character.

NEW DISTRIBUTIONAL RECORDS

Didymodon revolutus (Cardot) R.S.Williams (Pottiaceae)

This species, earlier known from Yemen, Southern and Western and Central USA, Mexico, Guatemala and Ecuador has been reported first time from India based on the collection made from Anamudi Shola National Park Nagarjunasagar, Idukki district of Kerala, India at 1950m altitude. The specimen is deposited in Herbarium of Zamorin's Guruvayurappan College, Calicut, Kerala (ZGC). This has been published by L. T. Ellis & al. (contributed from India by -A B. Mufeed and C. N. Manju) in Journal of Bryology,2020. DOI: 10.1080/03736687.2019.1706311

Dinckleria singularis (Schiffn.) M. A. M. Renner, Schäf.-Verw. & Heinrichs, (Marchantiophyta: Plagiochilaceae)

This species, earlier known from Argentina, Brazil, Venezuela and Bolivia (South American Region) has been reported first time from India based on the collection made from Zupuk to Damingla forests, West Siang district of Arunachal Pradesh, India at 3500m altitude. The specimen is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL). This has been published by Siddhartha Singh Deo and Devendra Kumar Singh in J. Jpn. Bot. 95(5): 306.2020

Orthomnion javense (Fleischer) Koponen, (Mniaceae)

This species, earlier known from China, Indonesia, Japan, Laos, Papua New Guinea, Philippines and Vietnam has been reported first time from India based on the collection made from Nandi hills,to Chikkaballapur district, of Karnataka, India at 1400m altitude. The specimen is deposited in Herbarium of Zamorin's Guruvayurappan College, Calicut, Kerala (ZGC). This has been published by Ichha Omar, M.C. Nair,A.K. Asthana & Geeta Asthana in Phytotaxa 432 (3): 284.2020

Riccia boliviensis Jovet-Ast. (Ricciaceae)

This species, earlier known from Argentina, Brazil, Venezuela and Bolivia (South American Region) has been reported first time from India based on the collection made from Rajeev Gandhi Reserve Forest, Nagarjunasagar, Srisailam,Prakasam district of Andhra Pradesh, India at 692m altitude. The specimen is deposited in CSIR- National Botanical Research Institute, Lucknow (LWG). This has been published by A. K. Asthana and Priyanshu Srivastava in Natl. Acad. Sci. Lett. 2020, https://doi.org/10.1007/s40009-020-00957-5.

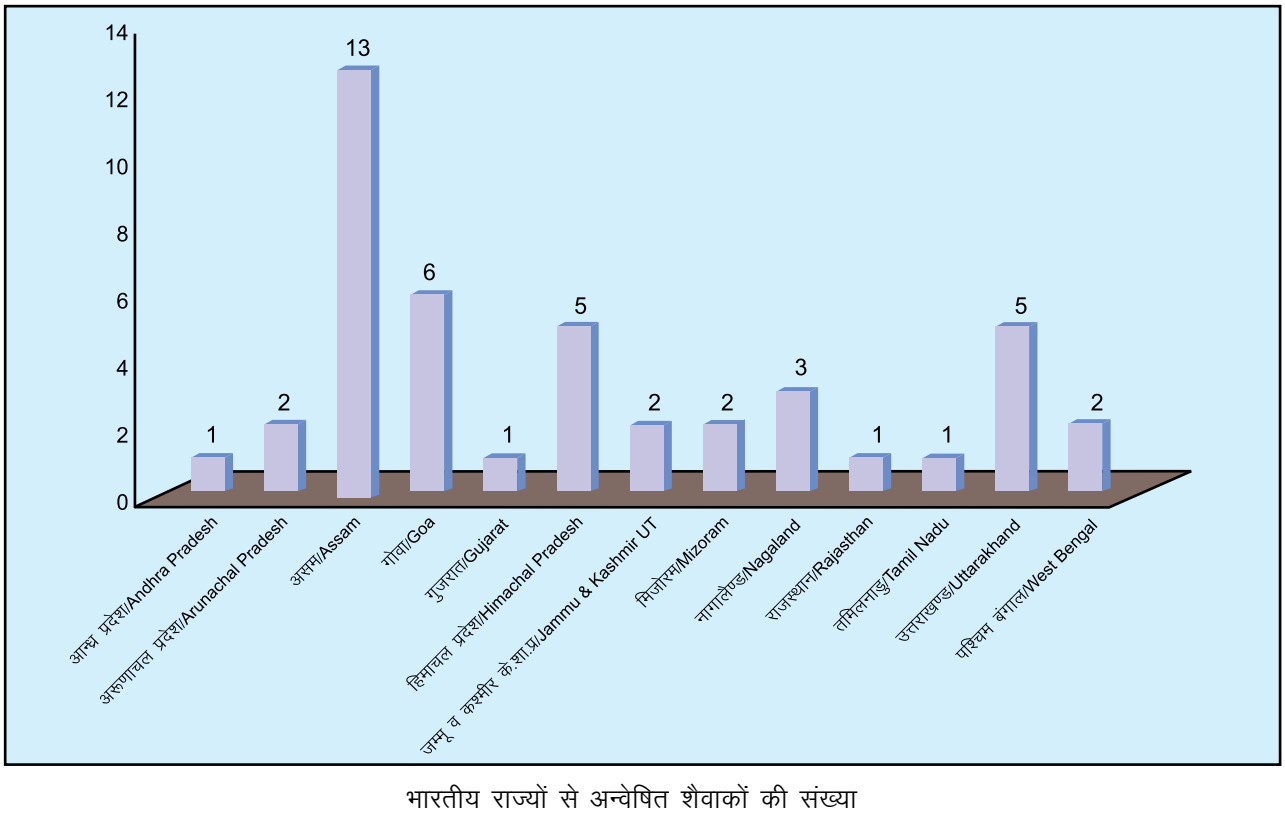
शैवाक/LICHENS

Courtesy : G. Swarnlata

शैवाक/LICHENS

शैवाक, कवक एवं सामान्यतः हरे शैवालों अथवा सायनोजीवाणु जैसे प्रकाश संश्लेषी सहयोगी के साथ सहजीवी संबंध बनाते हैं। शैवाक वैसे तो व्यापक रूप में पाये जाते हैं फिर भी इनकी कई जातियाँ पर्यावरणीय विक्षोभों के प्रति संवेदनशील होती हैं, जिसके फलस्वरूप इनका उपयोग वायु प्रदूषण प्रभाव के आंकलन में किया जा सकता है।
भारतीय वनस्पतिजात में लगभग 5.41 प्रतिशत हिस्सा शैवाकों का है।
हमारी अब तक की जानकारी के अनुसार भारतीय शैवाक की लगभग 2961 जातियां हैं।
इस प्रकार अनेकानेक जातियों का अन्वेषण एवं वर्णन अभी भी शेष है।
इस क्रमवार सूचना में वर्ष 2020 के दौरान भारत से 10 नयी जातियाँ, जिनमें (राजस्थान और नागालैंड में प्रत्येक से 01 जाति, असम और उत्तराखंड राज्य में प्रत्येक से 3, जम्मू एवं कश्मीर राज्य से 02 जातियों) को विज्ञान के लिये नवीन जातियों के तौर पर अन्वेषित किया गया है, इसके अतिरिक्त 34 जातियों को प्रथम बार भारत से नवीन वितरणपरक अभिलेखों के रूप में अन्वेषित एवं वर्णित किया गया है।

Lichens are symbiotic association of a fungus with a photosynthetic partner usually a green alga or cyanobacterium. Lichens are widespread, however many species are sensitive to environmental disturbances and may be useful in assessing the effect of air pollution. Lichens have also been used in making dyes and perfumes as well as in traditional medicines.
The lichens account for about 5.41 per cent of the total Indian Flora.
In the present state of our knowledge India has
About 2961 species of lichens. Many more are yet to beldentified and described.
The collated information presented here for year 2020 includes
10 new species (1 species each from Rajasthan and Nagaland, 3 species each from Uttarakhand and Assam and 02 species from Jammu & Kashmir UT) described as new to science from India and 34 species described as new distributional records for India.



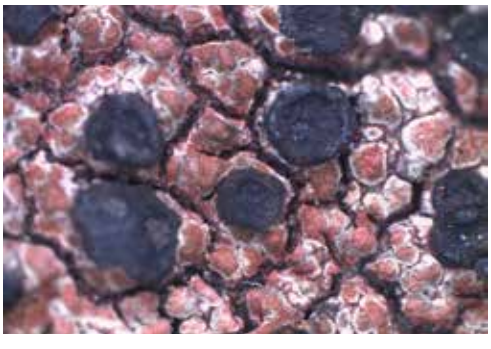
भारतीय राज्यों से अन्वेषित शैवाकों की संख्या
NUMBER OF LICHENS DISCOVERED FROM INDIAN STATES

NEW SPECIES

Caloplaca rajasthanica S.Y. Kondr., Upreti & G. P. Sinha, Acta Bot. Hung. 62: 340. 2020 (Teloschistaceae)

This new species has been discovered and described based on the collections made from Honeymoon Point, W. L. Forest, Mt Abu, Rajasthan, India, at 1142±10 m altitude. The holotype is deposited in the Herbarium, Botanical Survey of India, Central Regional Centre, Allahabad (BSA). The species is named after Rajasthan state of India, from where Type collection was made.

Cratiria rubrum R. Ngangom, Nayaka & R. Gogoi, Plant Science Today 7: 585. 2020 (Caliciaceae).



This new species has been discovered and described based on the collections made from Komorakata Reserve Forest, Hojai, Nagaon district, Assam, at 68 m altitude. The holotype is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). The species is named after its brick red pigmentation of the thallus.

Diorygma isidiatum Swarnal., Archieve for Lichenology 26: 2. 2021 (Graphidaceae).

This new species has been discovered and described based on the collections made from an islet in the Kameng river, Bhalukpong, Sonitpur district, Assam, India, at 146 m altitude. The holotype is deposited in the Herbarium, Botanical Survey of India, Central Regional Centre, Allahabad (BSA) and isotype in Central National Herbarium, Botanical Survey of India, Howrah (CAL). The specific epithet refers to the presence of isidia.

Huriella upretiana S.Y. Kondr., G. K. Mishra, Nayaka & A. Thell, Acta Bot, Hung. 62: 351. 2020 (Teloschistaceae).

This new species has been discovered and described based on the collections made from Natta top, Jammu district, Jammu & Kashmir, India, at 2440 m altitude. The holotype is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). The species is named after the renowned Indian Lichenologist Dr. Dalip Kumar Upreti.

Ioplaca rinodinoides S.Y. Kondr., K. K. Ingle, D. K. Upreti & S. Nayaka, Acta Bot. Hung. 62: 77. 2020 (Teloschistaceae).

This new species has been discovered and described based on the collections made from Vaisema to Dzukou valley, growing on rocks, together with *Diploschistes* sp. and *Upretia* sp., Kohima district, Nagaland, at 2397 m altitude. The holotype is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). The species is named after its similarity with the genus *Rinodina*.

Letrouitia assamana S. Y. Kondr., G. K. Mishra & D. K. Upreti, Acta Bot. Hung. 62: 79. 2020 (Letrouitiaceae).

This new species has been discovered and described based on the collections made from Ethnic village 16 km from New Haflong, Dima Hasao district, Assam, India, at 530 m altitude. The holotype and isotype are deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). The species is named after its type locality, the state Assam.

Myriospora himalayensis G.K. Mishra, Nayaka & D.K. Upreti, Taiwania 66: 91. 2021 (Acarosporaceae).

This new species has been discovered and described based on the collections made from Pahalgam, Anantnag district, Jammu & Kashmir, India, at 2240 m altitude. The holotype is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). The species is named after name of locality from where specimen was collected.

Rinodina indica Vishal Kumar, R. Ngangom & Nayaka, Taiwania 66: 193. 2021 (Physciaceae).

This new species has been discovered and described based on the collections made from bark of *Mangifera indica,* from 30 km after Varanasi towards Bhadohi, Lakhansenpur, Bhadohi district, Uttar Pradesh, India, at 105 m altitude. The holotype is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). The specific epithet refers to the country India from where the new species has been described.

Rusavskia indochinensis S. Y. Kondr., G. K. Mishra, S. Nayaka & D. K. Upreti, Acta Bot. Hung. 62: 94. 2020 (Teloschistaceae).

This new species has been discovered and described based on the collections made from 7 km before Malari, way to Niti, Chamoli district, Uttarakhand, India, at 2462 m altitude. The holotype is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). The species is named after southern part of Asian continent from where this taxon so far known.

Squamulea uttarkashiana S. Y. Kondr., D.K. Upreti, Nayaka & A. Thell, Acta Bot. Hung. 62: 376. 2020 (Teloschistaceae).

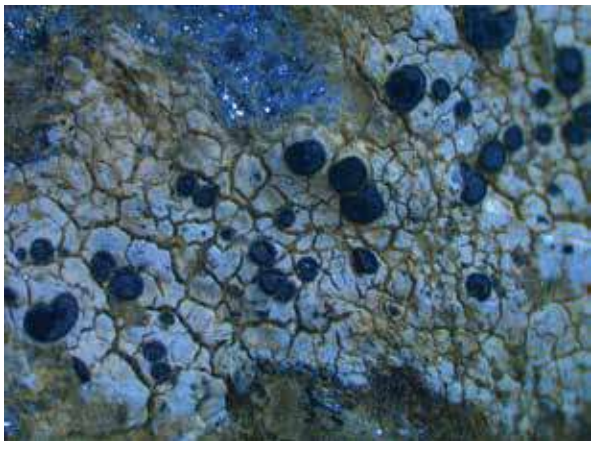
This new species has been discovered and described based on the collections made from 5 km from Obradevi Temple, en route to Devkyara, Govind Wildlife Sanctuary, Uttarkashi district, Uttarakhand, India, at 2768 m altitude. The holotype and isotype are deposited in Herbarium, National Botanical Research Institute, Lucknow (LWG). The species is named after its type locality i.e. Uttarkashi of Uttarakhand.

NEW DISTRIBUTIONAL RECORDS

Amandinea efflorescens (Müll. Arg.) Marbach (Caliciaceae)

This species earlier known from the tropics has been reported for the first time from India based on collections made from Samshergani block, Namitita, Jagtai, Murshidabad district, West Bengal, at 18 m altitude. The specimen is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). It has been published by R. Ngangom, S. Nayaka, R. Gogoi, K. K. Ingle, P. K. Behera & F. Yasmin in Plant Science Today 7: 585. 2020.

Amandinea incrustans (J. Steiner) Marbach (Caliciaceae)



This species earlier known from South Africa has been reported for the first time from India based on collections made from Kundali, Shimla, Himachal Pradesh, at 2743 m altitude. The specimen is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). It has been published by R. Ngangom, S. Nayaka, R. Gogoi, K.K. Ingle, P.K. Behera & F. Yasmin in Plant Science Today 7: 586. 2020.

Bacidia pycnidiata Czarnota & Coppins (Ramalinaceae)

This species earlier known from Europe has been reported for the first time from India based on collections made from Ouguri hills, Tezpur, Assam. The specimen is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). It has been published by R. Gogoi, S. Joseph, M.P. Choudhury, S. Nayaka & F. Yasmin in Mycotaxon 135: 658. 2020.

Baculifera orosa Marbach (Caliciaceae)

This species earlier known from Central America and Mexico has been reported for the first time from India based on collections made from Khudei village, Tuensang district, Nagaland. The specimen is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). It has been published by R. Ngangom, S. Nayaka, R. Gogoi, K.K. Ingle, P. K. Behera & F. Yasmin in Plant Science Today 7: 586. 2020.

Chapsa cinchonarum (Fée) Frisch (Graphidaceae)

This species earlier known from tropical Africa and the Neotropics has been reported for the first time from India based on collections made from Cotigao Wildlife Sanctuary, Goa. The specimen is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). It has been published by P. Gupta, P. Randive, S. Nayaka, R. Daimari, S. Joseph & M.K. Janarthanam in Mycotaxon 135: 346. 2020.

Chapsa farinosa Lücking & Sipman (Graphidaceae)

This species earlier known from Costa Rica has been reported for the first time from India based on collections made from Quinamol, Ta Rivana, Goa. The specimen is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). It has been published by P. Gupta, P. Randive, S. Nayaka, R. Daimari, S. Joseph & M.K. Janarthanam in Mycotaxon 135: 346. 2020.

Dibaeis absoluta (Tuck.) Kalb & Gierl (Icmadophilaceae)

This species earlier known from tropical and subtropical Asia, Australia, North and South America has been reported for the first time from India based on collections made from en route to Zote village, Champhai district, Mizoram, at 1375 m altitude. The specimen is deposited in the Herbarium, Botany Department, Calcutta University, Kolkata (CUH). It has been published by S. Yadav in Tropical Plant Research 7: 689. 2020.

Diorygma sticticum Sutjar., Kalb & Lücking (Graphidaceae)

This species earlier known from Thailand has been reported for the first time from India based on collections made from Cotigao Wildlife Sanctuary, Goa. The specimen is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). It has been published by Pooja Gupta, Pallavi Randive, Sanjeeva Nayaka, Rebecca Daimari, Siljo Joseph & Malapati K. Janarthanam in Mycotaxon 135: 347. 2020.

Fissurina albocinerea (Vain.) Staiger (Graphidaceae)

This species earlier known from the Philippines has been reported for the first time from India based on collections made from Cotigao Wildlife Sanctuary, Goa. The specimen is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). It has been published by P. Gupta, P. Randive, S. Nayaka, R. Daimari, S. Joseph & M. K. Janarthanam in Mycotaxon 135: 347. 2020.

Graphis bungartzii A.B. Peña, Lücking, Herrera-Camp. & R. Miranda (Graphidaceae)

This species earlier known from Mexico has been reported for the first time from India based on collections made from Miranda, Panigaon, Sonitpur district, Assam, at 75 m altitude. The specimen is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). It has been published by P. Gupta, P. Randive, S. Nayaka, R. Daimari, S. Joseph & M. K. Janarthanam in Mycotaxon 135: 348. 2020.

Graphis discarpa A.W. Archer (Graphidaceae)

This species earlier known from Papua New Guinea has been reported for the first time from India based on collections made from IISER Kolkata Campus, Mohunpur, West Medinipur district, West Bengal. The specimen is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). It has been published by P. Gupta, P. Randive, S. Nayaka, R. Daimari, S. Joseph & M. K. Janarthanam in Mycotaxon 135: 348. 2020.

Graphis nigririmis (Nyl.) Müll. Arg. (Graphidaceae)

This species earlier known from Australia has been reported for the first time from India based on collections made from Kolli hills, Namakkal district, Tamil Nadu, at 800 m altitude. The specimen is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). It has been published by P. Gupta, P. Randive, S. Nayaka, R. Daimari, S. Joseph & M. K. Janarthanam in Mycotaxon 135: 350. 2020.

Hafellia dissa (Stirt.) H. Mayrhofer & Sheard (Caliciaceae)

This species earlier known from Tasmania, Australia, Brazil, South Africa and the Philippines has been reported for the first time from India based on collections made from Sankri village, Govind Wildlife Sanctuary, Uttarkashi district, Uttarakhand, at 1916.5±11.7 m altitude. The specimen is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). It has been published by R. Ngangom, S. Nayaka, R. Gogoi, K. K. Ingle, P. K. Behera & F. Yasmin in Plant Science Today 7: 588. 2020.

Hafellia reagens Pusswald (Caliciaceae)

This species earlier known from Australia has been reported for the first time from India based on collections made from Lumding, Hojai district, Assam, at 100 m altitude. The specimen is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). It has been published by R. Ngangom, S. Nayaka, R. Gogoi, K.K. Ingle, P. K. Behera & F. Yasmin in Plant Science Today 7: 588. 2020.

Malmidea nigromarginata (Malme) Lücking & Breuss (Malmidiaceae)

This species earlier known from Nicaragua and Puerto Rico has been reported for the first time from India based on collections made from Nagaon district, Assam, India. The specimen is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). It has been published by R. Gogoi, S. Joseph, M.P. Choudhury, S. Nayaka and F. Yasmin in Mycotaxon 135: 660. 2020.

Ocellularia alba (Fée) Müll. Arg. (Graphidaceae)

This species earlier known from Australia, Brazil and Philippines has been reported for the first time from India based on collections made from Cotigao Wildlife Sanctuary, Goa, India. The specimen is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). It has been published by P. Gupta, P. Randive, S. Nayaka, R. Daimari, S. Joseph & M.K. Janarthanam in Mycotaxon 135: 350. 2020.

Phaeographis pseudostromatica Seavey & J. Seavey (Graphidaceae)

This species earlier known from Florida has been reported for the first time from India based on collections made from Arimora, Sonitpur district, Assam, India. The specimen is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). It has been published by P. Gupta, P. Randive, S. Nayaka, R. Daimari, S. Joseph & M.K. Janarthanam in Mycotaxon 135: 351. 2020.

Porina malmei P.M. McCarthy, Biblioth (Pertusariaceae).

This species earlier known from Australia and Brazil has been reported for the first time from India based on collections made from Tezpur, Assam, India. The specimen is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). It has been published by R. Gogoi, S. Joseph, M.P. Choudhury, S. Nayaka and F. Yasmin in Mycotaxon 135: 660. 2020.

Porina nuculastrum (Müll. Arg.) R.C. Harris (Pertusariaceae).

This species earlier known from Madagascar, Southeast Asia and the Neotropics has been reported for the first time from India based on collections made from Nagaon district, Assam, India. The specimen is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). It has been published by R. Gogoi, S. Joseph, M.P. Choudhury, S. Nayaka and F. Yasmin in Mycotaxon 135: 660. 2020.

Pyrenula dissimulans (Müll. Arg.) R.C. Harris (Pyrenulaceae)

This species earlier known from Florida has been reported for the first time from India based on collections made from Murlen National Park, Mizoram, India, at 1745 m altitude. The specimen is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). It has been published by N.M. Thangjam, Awadhesh Kumar, K. S. Kumar, A.C. S. and D.K. Upreti in Asian Journal of Conservation Biology 9: 99. 2020.

Pyrenula laetior Müll. Arg. (Pyrenulaceae)

This species earlier known from the Neotropics has been reported for the first time from India based on collections made from Nagaon district, Assam, India. The specimen is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). It has been published by R. Gogoi, S. Joseph, M.P. Choudhury, S. Nayaka and F. Yasmin in Mycotaxon 135: 661. 2020.

Pyrenula subglabrata (Nyl.) Müll. Arg. (Pyrenulaceae)

This species earlier known from Singapore has been reported for the first time from India based on collections made from Arunachal Pradesh and Tamil Nadu, India, at 1747-2575 m altitude. The specimens are deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). It has been published by N. Rajaprabhu, P. Ponmurugan & G.K. Mishra in Journal of Threatened Taxa 13: 17608. 2021.

Pyrenula wrightii (Müll. Arg.) R.C. Harris (Pyrenulaceae)

This species earlier known from Cuba has been reported for the first time from India based on collections made from Nagaon district, Assam, India. The specimen is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). It has been published by R. Gogoi, S. Joseph, M.P. Choudhury, S. Nayaka and F. Yasmin in Mycotaxon 135: 661. 2020.

Rinodina archaea (Ach.) Arnold (Physciaceae)

This species earlier known from British Columbia, Southern California, Arizona, Europe, Siberia and Scandinavia has been reported for the first time from India based on collections made from just above Pulga rest house, Parvati river valley, Kullu district, Himachal Pradesh, India, at 2250 m altitude. The specimens are deposited in the Herbarium of National Botanical Research Institute, Lucknow (LWG) and Herbarium of Botany Department, University of Lucknow, Uttar Pradesh (LWU). It has been published by Vishal Kumar, Roshinikumar Ngangom, S. Nayaka and K.K. Ingle in Taiwania 66: 196. 2021.

Rinodina dolichospora Malme (Physciaceae)

This species earlier known from Australia, Brazil, South-western Europe, Russia and USA has been reported for the first time from India based on collections made from Deopani, Roing, Arunachal Pradesh, India, at 700 m altitude, Ootacamund, Botanic Garden, Nilgiri Hills, Tamil Nadu, at 2133 m altitude and Emrald road near Muthorai, Nilgiri hills, Tamil Nadu, India. The specimens are deposited in the Herbarium of National Botanical Research Institute, Lucknow (LWG) and Herbarium of Botany Department, University of Lucknow, Uttar Pradesh (LWU). It has been published by Vishal Kumar, R. Ngangom, S. Nayaka and K. K. Ingle in Taiwania 66: 196. 2021.

Rinodina mniaroeiza (Nyl.) Arnold (Physciaceae)

This species earlier known from Norway, Sweden, Greenland, Finland, North America and Nepal has been reported for the first time from India based on collections made from Chhatree, Lahul Valley, Lahul Spiti district, Himachal Pradesh, India, at 3200 m altitude. The specimen is deposited in the Herbarium of National Botanical Research Institute, Lucknow (LWG). It has been published by Vishal Kumar, R. Ngangom, S. Nayaka and K. K. Ingle in Taiwania 66: 197. 2021.

Rinodina obnascens (Nyl.) H. Olivier (Physciaceae)

This species earlier known from North America, California, France, Spain, Switzerland, Bulgaria and Sweden has been reported for the first time from India based on collections made from Almora district, Uttarakhand, India. The specimens are deposited in the Herbarium of National Botanical Research Institute, Lucknow (LWG) and Herbarium of Botany Department, University of Lucknow, Uttar Pradesh (LWU). It has been published by Vishal Kumar, R. Ngangom, S. Nayaka and K.K. Ingle in Taiwania 66: 197. 2021.

Rinodina oleae Bagl. (Physciaceae)

This species earlier known from Western North America, Sierra Nevada, Europe, China, Japan, Russia and South Korea has been reported for the first time from India based on collections made from near Kutch cement factory, Lakhpat taluka, Kutch district, Gujarat, at 74 m altitude. The specimen is deposited in the Herbarium of National Botanical Research Institute, Lucknow (LWG). It has been published by Vishal Kumar, R. Ngangom, Sanjeeva Nayaka and Komal K. Ingle in Taiwania 66: 197. 2021.

Rinodina plana H. Magn. (Physciaceae)

This species earlier known from Spain, Mediterranean region and Central Europe has been reported for the first time from India based on collections made from above Pulga rest house, Parvati river valley, Kullu district, Himachal Pradesh, India, at 2850 m altitude. The specimens are deposited in the Herbarium of National Botanical Research Institute, Lucknow (LWG) and Herbarium of Botany Department, University of Lucknow, Uttar Pradesh (LWU). It has been published by Vishal Kumar, R. Ngangom, S. Nayaka and K. K. Ingle in Taiwania 66: 198. 2021.

Rinodina pyrina (Ach.) Arnold (Physciaceae)

This species earlier known from Australasia, British Isles, Norway, Sweden, Finland, North America, northern Africa, central, southern Europe, Taiwan, Japan, South Korea and China has been reported for the first time from India based on collections made from above Pulga rest house, Parvati river valley, Kullu district, Himachal Pradesh, India, at 2850 m altitude. The specimens are deposited in the Herbarium of National Botanical Research Institute, Lucknow (LWG) and Herbarium of Botany Department, University of Lucknow, Uttar Pradesh (LWU). It has been published by Vishal Kumar, R. Ngangom, S. Nayaka and K. K. Ingle in Taiwania 66: 198. 2021.

Rinodina trevisanii (Hepp) Körb. (Physciaceae)

This species earlier known from Scandinavia, Siberia, Caucasus, Turkey, Minor and western North America, Russia, Western Mongolia, Kazakhstan and China has been reported for the first time from India based on collections made from way to Mokokchung near, Tuensang district, Nagaland, India, at 2084 m altitude. The specimen is deposited in the Herbarium of National Botanical Research Institute, Lucknow (LWG). It has been published by Vishal Kumar, R. Ngangom, S. Nayaka and K. K. Ingle in Taiwania 66: 198. 2021.

Sarcographa verrucosa (Vain.) Zahlbr. (Graphidaceae)

This species earlier known from Australia, Indonesia and the Philippines has been reported for the first time from India based on collections made from Choibari, Sonitpur district, Assam, India. The specimen is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). It has been published by P. Gupta, P. Randive, S. Nayaka, R. Daimari, S. Joseph & M.K. Janarthanam in Mycotaxon 135: 351. 2020.

Thelotrema crassisporum Mangold (Graphidaceae)

This species earlier known from Australia has been reported for the first time from India based on collections made from Cotigao Wildlife Sanctuary, Goa, India. The specimen is deposited in the Herbarium, National Botanical Research Institute, Lucknow (LWG). It has been published by P. Gupta, P. Randive, S. Nayaka, R. Daimari, S. Joseph & M.K. Janarthanam in Mycotaxon 135: 353. 2020.

Xanthopermelia tuberculiformis Kurok. (Parmeliaceae)

This species earlier known from Japan and Korea has been reported for the first time from India based on collections made from Koundinya Wildlife Sancturary, Chittoor district, Andhra Pradesh, India, at 592 m altitude. The specimen is deposited in the Herbarium, Yogi Vemana University, Vemanapuram (YVUH). It has been published by G. Pandava, S. Mohabe, A. Devi B. and A. M. Reddy in Tropical Plant Research 7: 431. 2020.

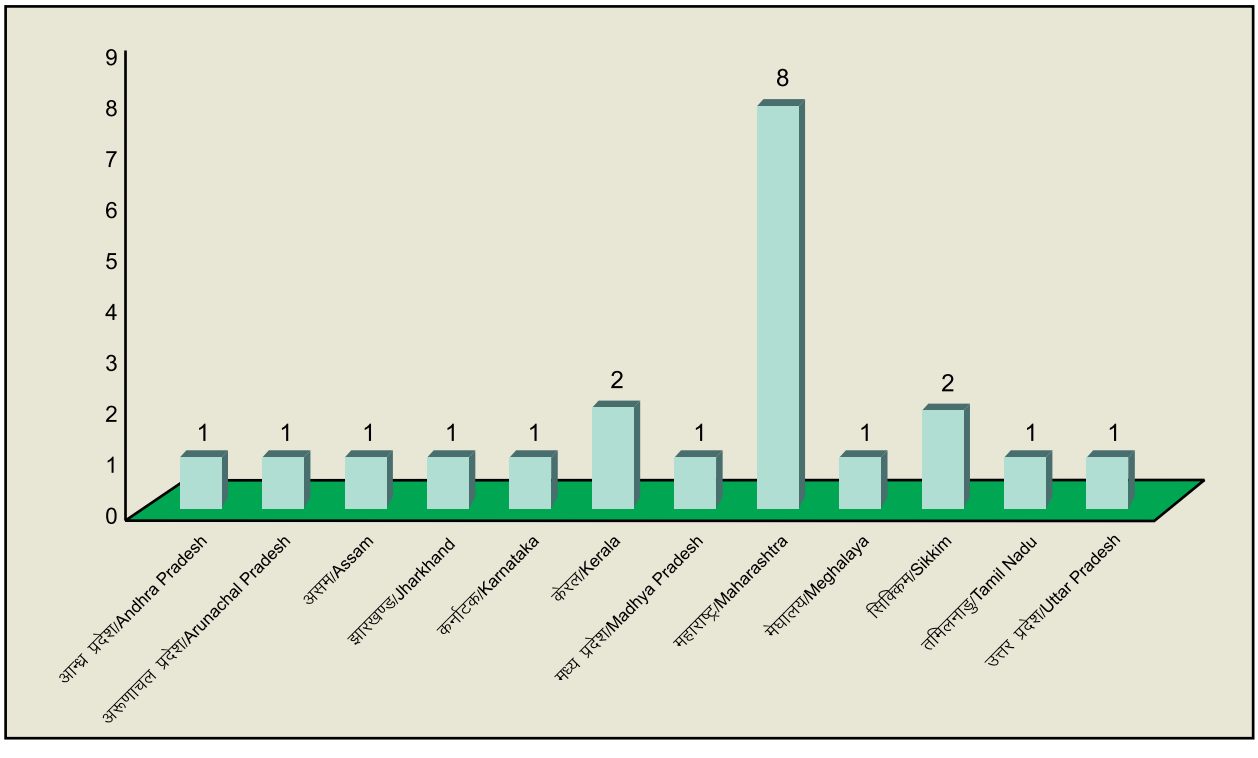
शैवाल/ALGAE

Courtesy : Sudheer K. Yadav

शैवाल/ALGAE

शैवाल एककोशीय से बहुकोशीय संरचना वाले सरल, प्ररूपी तौर स्वपोषी जीव का विशाल एवं विविधतापूर्ण समूह है। विश्व स्तर पर शैवालों का अत्यधिक दोहन होने के साथ ही भारत में भी शैवालों के बारे में जानकारी में लगातार में गुणात्मक वृद्धि हो रही है। भारतीय वनस्पतिजात में लगभग 16.40 प्रतिशत हिस्सा शैवालों का है। हमारी अब तक की जानकारी अनुसार भारतीय शैवालों की लगभग 8979 जातियाँ हैं। इस प्रकार अनेकानेक जातियों का अन्वेषण एवं वर्णन अभी भी शेष है। इस क्रमवार सूचना में वर्ष 2020 के दौरान भारत से 18 नयी जातियों एवं 1 प्रभेद को विज्ञान के लिये नई जातियों के रूप में अन्वेषित किया गया है। राज्यवार विश्लेषण में (आंध्र प्रदेश, अरूणाचल प्रदेश, असम, झारखंड, कर्नाटक, मध्य प्रदेश, मेघालय, तमिलनाडु एवं उत्तर प्रदेश राज्यों में प्रत्येक राज्य से 1 जाति, केरल एवं सिक्किम में प्रत्येक से 2 जाति, महाराष्ट्र से 8 जातियों) का अन्वेषण हुआ है इसमें भारतीय वनस्पतिजात के लिये 02 नए वितरणपरक अभिलेख भी सम्मिलित किये गये हैं।

Algae are large and diverse group of simple, typically autotrophic organisms from unicellular to multicellular forms. Though algae are becoming more and more open to exploitation worldwide, Knowledge on algae in India increasing tremendously in recent times. The Indian algae account for about 16.40 per cent of the total species of the India. In the present state of our knowledge India has about 8979 species of algae. Many more are yet to be Identified and described. The collated information presented here for year 2020 includes 18 new species and 1 variety as new to science from India. State-wise analyses shows (1 species each from Andhra Pradesh, Arunachal Pradesh, Assam, Jharkhand, Karnataka, Madhya Pradesh, Meghalaya, Tamil Nadu and Uttar Pradesh, 2 each from Kerala and Sikkim, 8 from Maharashtra) has been discovered and described. This includes 02 species first time described as new distributional records for India during year 2020.

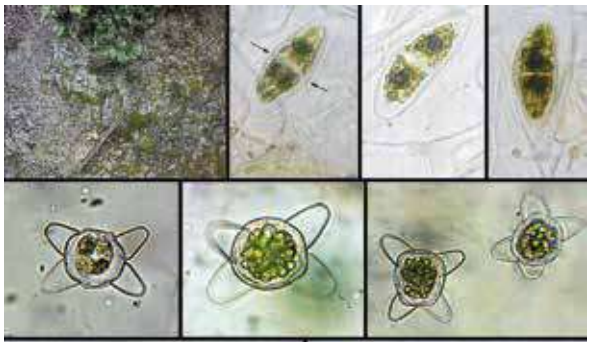


भारतीय राज्यों से अन्वेषित शैवालों की संख्या

NUMBER OF ALGAE DISCOVERED FROM INDIAN STATES

NEW SPECIES

Actinotaenium himalayanum Chettri, Das & Sudipta K. Das, Natl. Acad. Sci. Lett., doi.org/10.1007/s40009-020-00925-z, 2020.

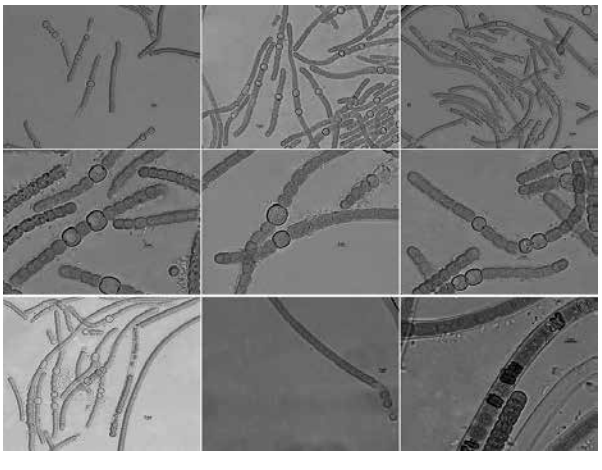


This new species has been discovered and described based on the collection made from a concrete wall from Nandok, East Sikkim, Sikkim, India. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL). The specific epithet is based on the name of the locality, the Himalayas.

Diploneis mawsmaii C. Bhattt & B. Karthick,, Phytotaxa 443 (1): 70. 2020.

This new species has been discovered and described based on the collection made from Mawsmai cave, Cherrapunji, Meghalaya, India. The holotype is deposited in (AHMA Individual in Slide No 2027–01 from material #2027) and Isotype (CAL/ALG. 58), are deposited in CAL. The specific epithet refers to the type locality, Mawsmai cave.

Fortiea necridiiformans Aniket Saraf, Himanshu G. Dawda1, Archana Suradkar, Vaibhav Agre, Prashant Singh, Int. J. Syst. Evol. Microbiol. P.10, DOI 10.1099/ ijsem.0.004337, 2020.



This new species has been discovered and described based on the collection made from Pachmarhi, Madhya Pradesh, India. The holotype, designated here is a portion of a culture of it, preserved in metabolically inactive form and is deposited in Global Collection of Cyanobacteria, Varanasi, India. The specific epithet *necridiiformans* denotes 'ne. cri. di. i. formans. N.L. neut. n. necridium a necridium; L. pres. part. formans forming; N.L. part. adj. necridiiformans necridia-forming'.

Gomphonema adhikarii C. Radhakrishnan, S. K. Das et B. Karthick, Fottea, 20 (2): 130. 2020

This new species has been discovered and described based on the collection made from a small road side pool from the alpine region of Arunachal Pradesh, Eastern Himalaya, India. The holotype is deposited at the Diatom Collection, Agharkar Research Institute Herbarium (AHMA), Pune, India. The specific epithet refers to the name of the Indian algologist Prof. Siba Prasad Adhikary, for his phycological contributions in north–eastern India.

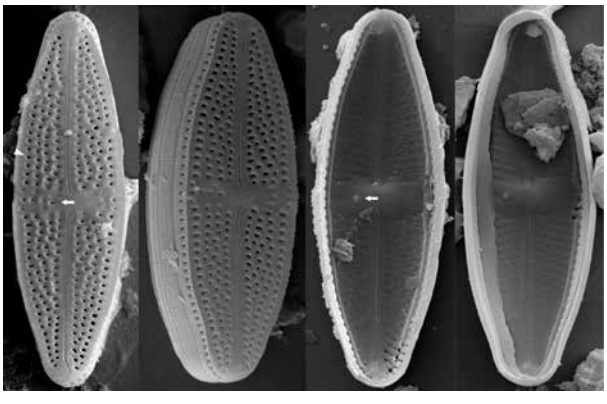
Gomphonema kallarense Samadhan Pardhi, Anbukkarasu Vigneshwaran, J. Patrick Kociolek, Anton Glushchenko, Maxim Kulikovskiy, Balasubramanian Karthick, Phytotaxa 468 (2):177. 2020.

This new species has been discovered and described based on the collection made from a stream at Kallar, Kerala, India. The holotype is deposited at the Diatom Collection, Agharkar Research Institute Herbarium (AHMA), Pune, India. The specific epithet refers to the place 'Kallar' where species was discovered.

Gomphonema kezlyae Samadhan Pardhi, Anbukkarasu Vigneshwaran, J. Patrick Kociolek, Anton Glushchenko, Maxim Kulikovskiy, Balasubramanian Karthick Phytotaxa Phytotaxa 468 (2): 180, 2020.

This new species has been discovered and described based on the collection made from Pampa River Sabarimala-Triveni, Kerala, India. The holotype is deposited at the Diatom Collection, Agharkar Research Institute Herbarium (AHMA), Pune, India. The specific epithet refers to the name of Dr. Elena Kezlya, Institute of Plant Physiology Russian Academy of Sciences.

Luticola asiatica V. Lokhande, Lowe, Kociolek & B. Karthick, European J. Phycol., P. 10, DOI:10.1080/09670262.2020.1783460. 2020.



This new species has been discovered and described based on the collection made from composite moss collections from Yana limestone cave complex, Uttara Kannada, Karnataka, India, at an altitude of 328 m. The holotype is deposited at Diatom Collection of Agharkar Research Institute Herbarium (AHMA), Pune, India. The specific epithet refers to the continent name Asia from where it discovered.

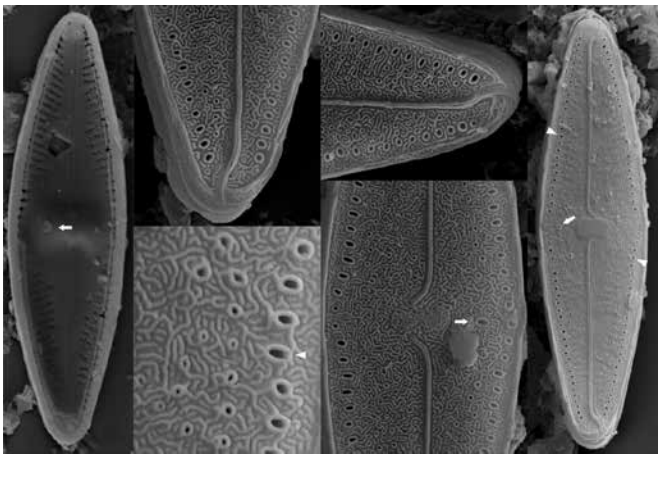
Luticola areolata V. Lokhande, Lowe, Kociolek & B. Karthick, European J. Phycol., P. 6, DOI:10.1080/09670262.2020.1783460. 2020.

This new species has been discovered and described based on the collection made from a small waterfall located beside the Amboli to Sawantwadi road, Maharashtra, India, at 661 m altitude. The holotype is deposited at Diatom Collection of Agharkar Research Institute Herbarium (AHMA), Pune, India. The specific epithet refers to the areolate nature of the striae.

Luticola gigantea V. Lokhande, Lowe, Kociolek & B. Karthick, European J. Phycol., P. 8, DOI:10.1080/09670262.2020.1783460. 2020.

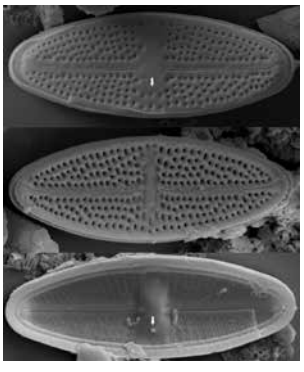
This new species has been discovered and described based on the collection made from a small waterfall located beside the Amboli to Sawantwadi road,), Maharashtra, India, at 618 m altitude. The holotype is deposited at Diatom Collection of Agharkar Research Institute Herbarium (AHMA), Pune, India. The specific epithet refers to its large size.

Luticola glushchenkoia V.Lokhande, Lowe, Kociolek & B.Karthick, European J. Phycol., P. 4, DOI:10.1080/09670262.2020.1783460. 2020.



This new species has been discovered and described based on the collection made from a small waterfall in the Amboli to Sawantwadi road, Maharashtra, India, at 661m altitude. The holotype is deposited at Diatom Collection of Agharkar Research Institute Herbarium (AHMA), Pune, India. The specific epithet refers to Dr Anton Glushchenko, Institute of Plant Physiology, Russian Academy of Sciences, Moscow, who has made important contributions on freshwater diatoms from SE Asia.

Luticola indica V. Lokhande, Lowe, Kociolek & B. Karthick, European J. Phycol., P. 9, DOI:10.1080/09670262.2020 .1783460. 2020.

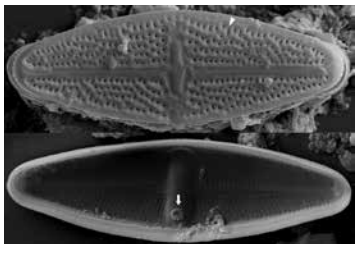


This new species has been discovered and described based on the collection made from a small waterfall located in the Amboli to Sawantwadi road, Maharashtra, India, at 582 m altitude. The holotype is deposited at Diatom Collection of Agharkar Research Institute Herbarium (AHMA), Pune, India. The specific epithet refers to India from where it collected.

Luticola levkovii V. Lokhande, Lowe, Kociolek & B. Karthick, European J. Phycol., P. 5, DOI:10.1080/09670262.202 0.1783460. 2020.

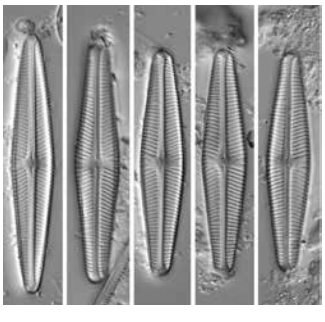
This new species has been discovered and described based on the collection made from a small waterfall in the Amboli to Sawantwadi road, Maharashtra, India, at 661 m altitude. The holotype is deposited at Diatom Collection of Agharkar Research Institute Herbarium (AHMA), Pune, India. The specific epithet given in the name of Prof. Dr Zlatko Levkov for his great contributions to diatom research, especially the genus *Luticola.*

Luticola stoermeri V. Lokhande, Lowe, Kociolek & B.Karthick, European J. Phycol., P. 10, DOI:10.1080/09670262. 2020.1783460. 2020.



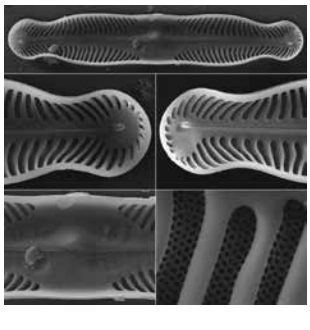
This new species has been discovered and described based on the collection made from a small waterfall in the Mahabaleshwar to Mumbai road, Maharashtra, India, at 1197m altitude. The holotype is deposited at Diatom Collection of Agharkar Research Institute Herbarium (AHMA), Pune, India. The specific epithet named after Dr E.F. Stoermer for his great contribution in algal taxonomy.

Navicula watveae C. Radhakrishnan, Kociolek & B. Karthick, Phytotaxa 433 (1): 21. 2020.



This new species has been discovered and described based on the collection made from a roadside waterfall, in the Kaas plateau road, Satara, Maharashtra, India, at 989 m altitude. The holotype is deposited at the Diatom Collection, Agharkar Research Institute Herbarium (AHMA), Pune, India. The specific epithet is given in honour of Dr. Aparna Watve, Biome, Pune, India.

Pinnularia sikkimensis S. K. Das, C. Radhakrishnan, M. Kulikovskiy, J. Glushchenko, P. Kociolek & B. Karthick, Phytotaxa 447 (3): 165/ 2020.



This new species has been discovered and described based on the collection made from South Sikkim district of Sikkim, India, at 686 m altitude. The holotype is deposited at the Diatom Collection, Agharkar Research Institute Herbarium (AHMA), Pune, India and Isotype (CAL/ALG. 59) in Central National Herbarium, Botanical Survey of India, Howrah, India (CAL). The species name refers to state Sikkim, from where it is discovered.

Sirodotia assamica Necchi, Rossignolo, Yasmin, West and Ganesan, Phytotaxa 437 (3): 125. 2020.

This new species has been discovered and described based on the collection made from Chapanalla, Nagaon district, Assam, India. The holotype and Paratypes were deposited in the Herbarium SJRP (São Paulo State University, Campus of São José do Rio Preto, SP, Brazil), The specific epithet refers to state Assam, from where it is discovered.

Tabularia koynensis A. Vigneshwaran, D.M. Williams & B. Karthick, Phytotaxa 453 (3): 188-190, 192. 2020.

This new species has been discovered and described based on the collection made from the Koyna River basin, Western Ghats, Maharashtra, India. The holotype is deposited at Agharkar Research Institute Herbarium, Agharkar Research Institute, Pune, India. The specific epithet refers to the name of river Koyna from where it is collected.

Westiellopsis akinetica Deeksha Mishra, Archana Suradkar, Aniket Saraf, Prashant Singh, FEMS Microbiol. Lett. 367(5): 8. 2020.

This new species has been discovered and described based on the collection made from Sarojini Naidu Post-Graduate (SNPG) Hostel, Banaras Hindu University, Varanasi, India. The holotype which is the portion of a culture (Acc. No. GCC 20191) is preserved in metabolically inactive form in the Global Collection of Cyanobacteria (GCC), Varanasi, India. The specific epithet *akinetica* refers to its motionless nature.

NEW VARIETY

Ecballocystopsis dichotoma Hu & Bi **var. anandii** Das, Gupta & Adhikary, Nordic J. Bot., P. 4, e02609, doi: 10.1111/njb.02609. 2020.

This new algal variety has been discovered and described based on the collection made from moist granite rock, in Lower Ghaghri fall, Latehar, Jharkhand, India. The Holotype is deposited in Central National Herbarium Botanical Survey of India, Howrah (CAL), India. The variety is named in honour of the eminent algal taxonomist of India, Late Prof. N. Anand.

NEW DISTRIBUTIONAL RECORDS

Grateloupia orientalis Showe M. Lin & H.Y. Liang

This species erstwhile known from Taiwan has been reported for the first time from India based on the collection made from the coast of Visakhapatnam, Andhra Pradesh, India. The specimen is deposited in the Algal Laboratory, FRHPHM Division, ICAR Central Institute of Fisheries Education, Mumbai. This study is published by P. Chellamanimegalal, A. Pavan-Kumar, A. K. Balange, A. Dwivedi and G. Desmukh in Curr. Sci. 119 (5): 849. 2020.

Grateloupia catenata Yendo

This species erstwhile known from China, Japan and Korea has been reported for the first time from India based on the collection made from the coast of Tiruchendur coast, Tamil Nadu, India. The specimen is deposited in the Algal Laboratory, FRHPHM Division, ICAR Central Institute of Fisheries Education, Mumbai. This study is published by P. Chellamanimegalal, A. Pavan-Kumar, A. K. Balange, A. Dwivedi and G. Desmukh in Curr. Sci. 119 (5): 849. 2020.

कवक/FUNGI

Courtesy : Sanjay Kumar

कवक/FUNGI

दुनिया भर में व्याप्त कवक कार्बनिक पदार्थों के विघटन में महत्वपूर्ण भूमिका निभाते हैं तथा पोषण चक्र के लिए अरिहार्य हैं। लंबे समय से इनका उपयोग एक खाद्य स्रोत के रूप में तथा विभिन्न खाद्य सामग्रियों को किण्वित करने में होता रहा है, अब ये प्रतिजैविक के रूप में भी महत्वपूर्ण स्रोत बन गये हैं।

भारतीय वनस्पतिजात में लगभग 28.33 प्रतिशत हिस्सा कवकों का है।

हमारी अब तक की जानकारी अनुसार भारतीय कवकों की लगभग 15504 जातियाँ हैं।

इस प्रकार अनेकानेक जातियों का अन्वेषण एवं वर्णन अभी भी शेष है।

इस क्रमवार सूचना में वर्ष 2020 के दौरान भारत से 03 नए वंश एवं 41 नयी जातियों और 1 प्रभेद को विज्ञान के लिये नई जातियों के रूप में अन्वेषित एवं वर्णित किया गया है।

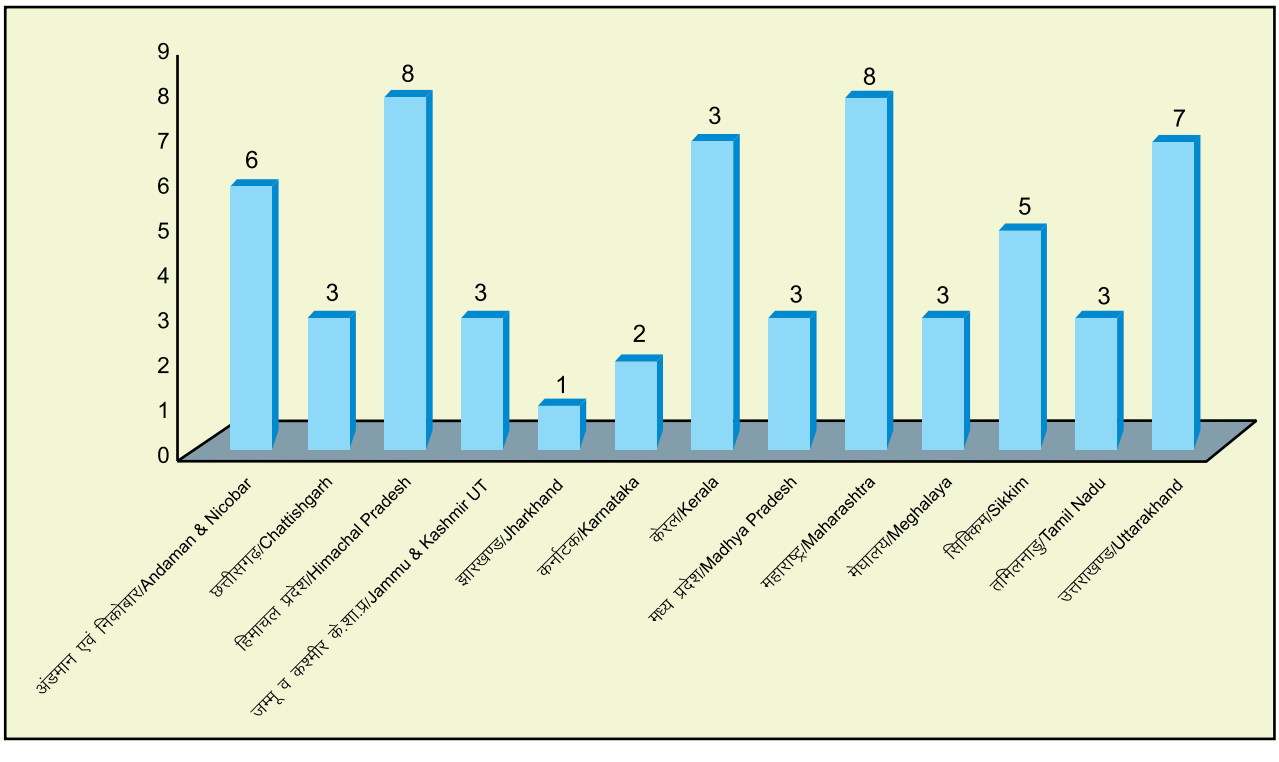
राज्यवार विश्लेषण में (अंडमान एवं निकोबार से 06 जातियां, छत्तीसगढ़, जम्मू एवं कश्मीर, मध्य प्रदेश और तमिलनाडु राज्यों में प्रत्येक से 03 जाति, हिमाचल प्रदेश एवं महाराष्ट्र में प्रत्येक से 08 जातियां, झारखंड एवं मेघालय में प्रत्येक से 01 जाति, कर्नाटक से 2 जातियां केरल और उत्तराखंड में प्रत्येक से 07 जातियां एवं सिक्किम राज्य से 5 जातियों को) को अन्वेषित किया गया है। इसमें 2020 के दौरान कुल 12 जातियों के नवीन वितरणपरक अभिलेखों को भारत से प्रथम बार अन्वेषित एवं वर्णित किया गया है।

Fungi distributed worldwide, perform an essential role in nature by decomposing organic matter and are indispensable in nutrient cycling. They have long been used as source of food and in fermentation of various food products and now they are an important source of antibiotics.

The Indian fungi account for about 28.33 per cent of the total plant species of the India.

In the present state of our knowledge India has About 15504 species of fungi. Many more are yet to be Identified and described. The collated information presented here for year 2020 includes 03 new genera 41 new species and 1 new variety from India.

State wise analysis shows that (6 species from Andaman & Nicobar Islands, 3 each from Chattisgarh, Jammu & Kashmir UT, Madhya Pradesh and Tamil Nadu, 8 each from Himachal Pradesh and Maharashtra, 1 each from Jharkhand and Meghalaya, 2 from Karnataka, 7 each from Kerala and Uttarakhand and 5 from Sikkim) has been discovered and described. This includes 12 new distributional records discovered and described first time for India during year 2020.



भारतीय राज्यों से अन्वेषित कवकों की संख्या

NUMBER OF FUNGI DISCOVERED FROM INDIAN STATES

NEW GENERA

Bhagirathimyces S.M. Singh & S.K. Singh, Fungal Diversity 100: 95. 2020 (Phaeosphaeriaceae).

This new genus has been discovered and described based on the collection isolated from the Cryconites, collected from Hamtah Glacier, Lahaul and Spiti District, Himachal Pradesh, India. The holotype is deposited in Ajrekar Mycological Herbarium (AMH), Pune; ex-type culture (NFCCI 4580) is deposited in National Fungal Culture Collection (NFCCI), Pune. The generic epithet refers to the Holy River "Bhagirathi" (a turbulent Himalayan River) originating from Indian Himalayas.

Lonavalomyces Dubey, J. New Biol. Rep. 9(3): 317. 2020.

This new genus has been discovered and described based on the collection isolated from the fallen bamboo stems collected from Lonavala, Pune district, Maharashtra, India. The holotype is deposited in Botanical Survey of India, Western Regional Centre, Pune (BSI). The generic epithet refers to place of collection, Lonavala.

Srinivasanomyces S. Rana & S.K. Singh, Fungal Diversity 100: 156. 2020 (Vibrisseaceae).

This new genus has been discovered and described based on the collection made from the dead bark of *Prunus cerasoides*, collected from Simbal, Kangra district, Himachal Pradesh, India. The holotype is deposited in Ajrekar Mycological Herbarium (AMH), Pune; ex-type culture (NFCCI 4505) is deposited in National Fungal Culture Collection (NFCCI), Pune. The generic epithet is in honour of M.C. Srinivasan, a well-known mycologist of India, for his immense contribution in mycology.

NEW SPECIES

Astrosphaeriella uniseptata M. Niranjan & V.V. Sarma, KAVAKA 54: 40. 2020 (Astrosphaeriellaceae).

This new species has been discovered and described based on the collection made from the twig of *Miliusa tectona*, collected from Panihutti, North Andaman, Andaman and Nicobar Islands, India. The holotype is deposited in Department of Biotechnology, University of Pondicherry (PUFNI). The specific epithet uni-septata refers to the presence of single septate ascospores.

Asterina gordoniae A. Sabeena, H. Biju, S.S. Dhanusha & S. Shiburaj, Phytotaxa. 441(2): 215. 2020 (Asterinaceae).

This new species has been discovered and described based on the collection made from the infected leaves of *Gordonia obtusa* (Theaceae), collected from Ponmudi, Thiruvananthapuram, Kerala, India. The holotype and isotype specimens are deposited in Regional herbarium of Jawaharlal Nehru Tropical Botanic Garden & Research Institute, Thiruvananthapuram, Kerala (TBGT). The specific epithet is in reference to the host genus.

Bhagirathimyces himalayensis S.M. Singh & S.K. Singh, Fungal Diversity 100: 95. 2020 (Phaeosphaeriaceae).

This new species has been discovered and described based on the collection isolated from the Cryconites, collected from from Hamtah Glacier, Lahaul and Spiti district, Himachal Pradesh, India. The holotype is deposited in Ajrekar Mycological Herbarium (AMH), Pune; ex-type culture (NFCCI 4580) is deposited in National Fungal Culture Collection (NFCCI), Pune. The specific epithet refers to "himalayensis" refers to the Himalaya, the region of origin of the sample.

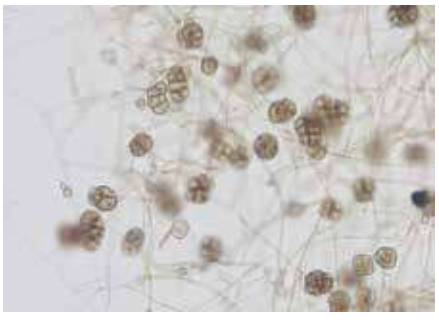
Capnodium rubiacearum J Surywanshi, S Bhardwaj & AN Rai, BIOINFOLET-A Quarterly Journal of Life Sciences 17(1b):115. 2020.

This new species has been discovered and described based on the collection made from the infected leaves of *Randia rubiacearum*, collected from Balaghat forest division of Madhya Pradesh, India. The holotype is deposited in Ajrekar Mycological Herbarium (AMH), Pune. The specific epithet refers to family name (Rubiaceae) of the host plant.

Clinoconidium lauracearum A. Singh, M.C. Nautiyal, A.K. Gautam, P.N. Singh & S.K. Singh, Phytotaxa 450 (1): 78. 2020 (Cryptobasidiaceae).

This new species has been discovered and described based on the collection made from the living fruits of *Cinnamomum tamala* (Lauraceae), collected from Paunthi, Rudraprayag district, Uttarakhand, India. The holotype is deposited in Ajrekar Mycological Herbarium (AMH), Pune; ex-type culture (NFCCI 4483) is deposited in National Fungal Culture Collection (NFCCI), Pune. The specific epithet refers to the family name (Lauraceae) of the host

Conlarium indicum R. Dubey & S. Manikpuri, CREAM 11(1): 115. 2021 (Conlariaceae).



This new species has been discovered and described based on the collection made from decaying Bamboo from Sawantwadi, Sindhudurg district, Maharashtra, India. The holotype is deposited in Botanical Survey of India, Western Regional Centre, Pune (BSI) and ex-type living culture is deposited in National Fungal Culture Collection of India (NFCCI 4841), Agarkar Research Institute, Pune. The specific epithet '*indicum*' refers to the name of the country (India).

Cytospora fusispora M. Niranjan & V.V. Sarma, Fungal Diversity 100: 167. 2020 (Cytosporaceae).

This new species has been discovered and described based on the collection made from an unidentified decaying twig, collected from Gun point, Mount Harriet, South Andaman, Andaman and Nicobar Islands, India. The holotype is deposited in Ajrekar Mycological Herbarium (AMH), and ex-type living culture is deposited in National Fungal Culture Collection of India (NFCCI 4372), Agarkar Research Institute, Pune. The specific epithet refers to fusiform shape of the ascospores.

Ernakulamia tanakae Rajeshkumar & K.D. Hyde, Fungal Diversity 100: 111. 2020 (Tetraplosphaeriaceae).

This new species has been discovered and described based on the collection made from the decaying spathe of *Cocos nucifera* (Arecacceae), collected from Kasaragod, Kerala, India, at 50 m altitude. The holotype is deposited in Ajrekar Mycological Herbarium (AMH), Pune; ex-type culture (NFCCI 4615) is deposited in National Fungal Culture Collection (NFCCI), Pune. The specific epithet is in honour of Prof. Kazuki Tanaka, for his contribution to *Tetraplospheriaceae*.

Gyrothrix kigeliae S. Bhardwaj, R. S. Thakur & A.N. Rai, KAVAKA 53: 82. 2019.

This new species has been discovered and described based on the collection made from dried dead leaves of *Kigelia africana* (Lam.) Benth. from Botanical Garden, Dr. H. S. Gour Central University Sagar, Madhya Pradesh, India. The holotype is deposited in Ajrekar Mycological Herbarium, Agharkar research institute Pune, India (AMH) and Isotype in Mycological Herbarium, Department of Botany Dr. Hari Singh Gour Central University Sagar, M. P. (RSM). The specific epithet is given after its host plant *Kigelia*.

Gomphidius pseudoglutinosus K. Das, Hembrom, A. Parihar & Vizzini, Cryptogamie Mycol. 41(4): 78. 2020 (Gomphidiaceae)

This new species has been discovered and described based on the collection made from Dombang valley, North district of Sikkim, India at 2920 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL). The species is named after its close affinity with *G. glutinosus*.

Hymenochaete boddingii Hembrom, A. Parihar, K. Das & A. Ghosh, Cryptogamie Mycol. 41(4): 83. 2020 (Hymenochaetaceae)

This new species has been discovered and described based on the collection made from Rajmahal hills, Borio-block, from Sahibaganj-Borio road to Gowaibhita and surroundings, on the buried root and fallen litters of *Madhuca longifolia* (J. Koenig ex L.) J. F. Macbr. tree in *Shorea robusta* Gaertn. dominated forest, Sahibganj district of Jharkhand, India at 152 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL). The species is named in honour of Reverend Paul Olaf Bodding, a Norwegian missionary, linguist, folklorist and ethnobotanist for his pioneer work on the macrofungi of Rajmahal Hills.

Lactarius brunneoaurantiacus K. Das & I. Bera, Nordic J. Bot. e02940. 2020 (Russulaceae).

This new species has been discovered and described based on the collection made from Tugla valley, East district, Sikkim, India, at 3846 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL). The specific epithet refers to brownish orange colouration of the pileus of the basidiomata.

Lactarius indoscrobiculatus K. Das & I. Bera, Nordic J. Bot. e02940. 2020 (Russulaceae).

This new species has been discovered and described based on the collection made from Kyongnosla, East district, Sikkim, India, at 3411 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL). The specific epithet is referring to the lookalike of *Lactarius scrobiculatus* occurring in India.

Lanspora cylindrospora Devadatha, V.V. Sarma & E.B.G. Jones, Fungal Diversity 100: 189. 2020 (Halosphaeriaceae).

This new species has been discovered and described based on the collection made from intertidal wood of *Suaeda monoica* Lam. (Amaranthaceae), collected from Muthupet mangroves, Tiruvarur, Tamil Nadu, India. The holotype specimen is deposited in Ajrekar Mycological Herbarium (AMH), Pune; ex-type culture (NFCCI 4391) is deposited in National Fungal Culture Collection (NFCCI), Pune. The specific epithet is in reference to cylindrical shape of the ascospores.

Leucoagaricus callainitinctus K. P. D. Latha, K. N. A. Raj & Manim., Phytotaxa 442(2): 113. 2020 (Agaricaceae).

This new species has been discovered and described based on the collection made from Mayilanji Valavu, Malappuram district, Kerala state, India. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL). The specific epithet is given from two Latin words, *callainus* (turquoise) and *tinctus* (dyed); refers to the characteristic turquoise discolouration of the basidiocarps.

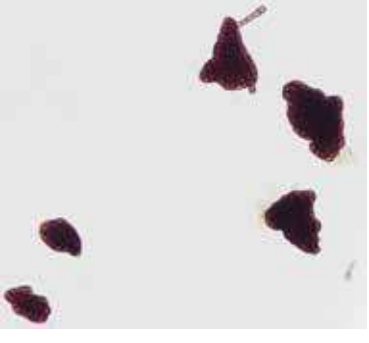
Lonavalomyces indicus Dubey, J. New Biol. Rep. 9(3): 318. 2020.

This new species has been discovered and described based on the collection made from fallen Bamboo stem, collected from Lonavala, Maharashtra, India. The holotype is deposited in Botanical Survey of India, Western Regional Centre, Pune (BSI). The specific epithet refers to its country of origin, India.

Maheshwaramyces cryptocaryae Jacob Thomas & Nisha Mathew, KAVAKA 55: 119. 2020 (Lembosiaceae).

This new species has been discovered and described based on the collection made from leaves of *Cryptocarya wightiana* Thw. (Lauraceae), from Goodrical Reserve, Ranny Forest Division, Moozhiyar-Illumpampa region, Kerala, India. The holotype is deposited in regional herbarium, Mar Thoma College Herbarium Thiruvalla (MTCHT). The specific epithet is given after the name of host plant genus *Cryptocarya*.

Mycoenterolobium borivaliense Rashmi Dubey & Amit D. Pandey, J. New Biol. Rep. 9(3): 313. 2020.



This new species has been discovered and described based on the collection made from decaying bark, from Kanheri Caves, Tulsi range, Sanjay Gandhi National Park, Mumbai, Maharashtra, India. The holotype is deposited in Botanical Survey of India, Western Regional Centre, Pune (BSI). The specific epithet in reference to the place of collection Borivali National Park (previous name of Sanjay Gandhi National Park).

Neodevriesia manglicola Devadatha, V.V. Sarma & E.B.G. Jones, Fungal Diversity 104: 16. 2020 (Neodevriesiaceae).

This new species has been discovered and described based on the collection made from decaying wood of *Rhizophora mucronata* (Rhizophoraceae), collected from Parangipettai mangroves, Tamil Nadu, India. The holotype specimen is deposited in Ajrekar Mycological Herbarium (AMH), Pune; ex-type culture (NFCCI 4382) is deposited in National Fungal Culture Collection (NFCCI), Pune. The specific epithet is in reference to the mangrove habitat from where the the fungus was collected.

Pithomyces hyalosporae M. Niranjan & V.V. Sarma, KAVAKA 54: 40. 2020 (Astrosphaeriellaceae).

This new species has been discovered and described based on the collection made from unidentified twig, collected from Chidiya Tapu, Port Blair, South Andaman, India. The specimen is deposited at Department of Biotechnology, University of Pondicherry (PUFNI). The specific epithet refers to the presence of hyaline ascospores.

Pseudocercospora hamiltoniani Raghv. Singh, Sanjeet & Sanjay, Phytotaxa 458 (4): 283. 2020.

This new species has been discovered and described based on the collection made from living leaves of *Euonymus hamiltonianus* Wall, Kosi-Katarmal, Almora district of Uttarakhand, India. The holotype is deposited in the Ajrekar Mycological Herbarium Agharkar Research Institute, Pune (AMH), and isotypes are in Mycological Herbarium of the Department of Botany of Banaras Hindu University, Varanasi, U.P., India (MH-BHU). The species epithet is derived from the name of the host species.

Pseudocercospora jashpurensis A. Dubey & A. Rai, BIOINFOLET-A Quarterly Journal of Life Sciences17(1b):101. 2020.

This new species has been discovered and described based on the collection made from *Wendlandia exerta* DC. (Rubiaceae), collected from forests of Jashpur, Chattisgarh, India. The holotype is deposited in Botanical Survey of India, Western Regional Centre, Pune (BSI). The specific epithet refers to the place of collection Jashpur.

Pseudotetraploa rajmachiensis Rajeshkumar, K.D. Hyde & S. Lad, Fungal Diversity 100: 116. 2020 (Tetraplosphaeriaceae).

This new species has been discovered and described based on the collection made from the decaying bamboo culms, *Dendrocalamus stocksii* (Poaceae), collected from Rajmachi, Maval, Maharashtra, India. The holotype specimen is deposited in Ajrekar Mycological Herbarium (AMH), Pune; ex-type culture (NFCCI 4618) is deposited in National Fungal Culture Collection (NFCCI), Pune. The specific epithet refers to type locality Rajmachi, Maharashtra, India.

Ramaria thindii K. Das, Hembrom, A. Parihar & A. Ghosh, Cryptogamie Mycol. 41(4): 88. 2020 (Gomphaceae)

This new species has been discovered and described based on the collection made from Memeinchu, East district of Sikkim, India at 3539 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL). The species is named in honour Prof. K. S. Thind for his invaluable contribution to diversity and taxonomy of Indian Ramaria.

Resupinatus odoratus C.K. Pradeep, C. Bijeesh & A.M. Kumar, Phytotaxa 464(2): 170. 2020 (Pleurotaceae).

This new species has been discovered and described based on the collection made from JNTBGRI campus, Palode, Thiruvananthapuram district, Kerala state. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL). The specific epithet *'odoratus'* (Latin) refers to the spicy fragrant odour of the basidiomycota.

Rhizopogon cashmerianus M.D. Talie & A.H. Wani, KAVAKA 55: 130. 2020 (Rhizopogonaceae).

This new species has been discovered and described based on the collection made from Kupwara forest, Jammu & Kashmir UT. The holotype is deposited in Mycological Section of KASH Herbarium, Centre of Plant Taxonomy, Division of Botany, University of Kashmir Hazratbal, Srinagar, Jammu & Kashmir (KASH). The specific epithet refers to the UT Kashmir from where the specimen was collected for the first time.

Roridomyces phyllostachydis Karun., Mortimer, Axford, Phytotaxa 459(2): 161. 2020 (Mycenaceae).

This new species has been discovered and described based on the collection made from Mawlynnong, East Khasi Hills district, Meghalaya, India, at 560 m altitude. The holotype is deposited in Mae Fah Luang University (MFLU 19-2825). The specific epithet refers to the host plant *Phyllostachys* from where the fungus was collected.

Russula ashihoi K. Das, A. Ghosh, Buyck & Hembrom, Nordic J. Bot. e02962. 2020 (Russulaceae).

This new species has been discovered and described based on the collection made from Gnathang, East district, Sikkim, India. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah, (CAL). The specific epithet is given in name of Dr. Ashiho A. Mao, Director, Botanical Survey of India.

Russula baniyakundensis A. Ghosh, K. Das & D. Chakr., Phytotaxa 483(3): 249. 2020 (Russulaceae)

This new species has been discovered and described based on the collection made from Baniyakund, Rudraprayag district, Uttarakhand, India, at 2636 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah, (CAL). The specific epithet refers to type locality of the species, "Baniyakund" in Uttarakhand (India).

Russula indonigra A. Ghosh, K. Das, Buyck & Hembrom, Nordic Journal of Botany e02962. 2020 (Russulaceae).

This new species has been discovered and described based on the collection made from Jakhdhar, Rudraprayag district, Uttarakhand, India, at 1565 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL). The specific epithet refers to black basidiomycota growing in India.

Russula lakhanpalii A. Ghosh, K. Das & R.P. Bhatt, Nova Hedwigia 111(1-2): 118. 2020 (Russulaceae)

This new species has been discovered and described based on the collection made from Teka, Pauri Garhwal, Uttarakhand, India, at 1946 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL). The species is named to honour Prof. T.N. Lakhanpal for his contribution to Indian macrofungi.

Russula indocatillus A. Ghosh, K. Das & R.P. Bhatt, Nova Hedwigia 111(1-2): 124. 2020 (Russulaceae).

This new species has been discovered and described based on the collection made from Chopta-Baniyakund, Rudraprayag district, Uttarakhand, India, at 2634 m altitude. The holotype is deposited in Central National Herbarium, Botanical Survey of India, Howrah (CAL). The specific epithet refers to its occurrence in India and morphological resemblance to *R. catillus*.

Scytalidium melanoxylicola N. Awasthi, A. Dubey, S. Bhardwaj & A.N. Rai, KAVAKA 55: 108. 2020.

This new species has been discovered and described based on the collection made from leaves of *Diospyros melanoxylon* Roxb. (Ebenaceae), at Garhpahra forest, South Sagar Forest Division, DHSGU, Sagar, Madhya Pradesh, India. The holotype is deposited in Ajrekar Mycological Herbarium, Agharkar Research Institute, Pune (AMH 9682) and isotype in Herbarium of Dr. Hari Singh Gaur University (MH-DHSGU 8). The specific epithet refers to the name of the host species.

Spiropes glochidionis A. Dubey & A.N. Rai, KAVAKA 54: 97. 2020.

This new species has been discovered and described based on the collection made from the leaves of *Glochidion zeylanicum* (Gaertn.) A. Juss. (Phyllanthaceae), collected from Upperghat forest, Jashpur, Chhattisgarh, India. The holotype specimen is deposited in Ajrekar Mycological Herbarium (AMH), Pune; isotype is kept in Mycological Herbarium of Botany, Dr. H.S. Gour University, Sagar, M.P., India. The specific epithet refers to the host genus name.

Srinivasanomyces kangrensis S. Rana & S.K. Singh, Fungal Diversity 100: 159. 2020 (Vibrisseaceae).

This new species has been discovered and described based on the collection made from the dead bark of *Prunus cerasoides,* collected from Simbal, Kangra district, Himachal Pradesh, India. The holotype specimen is deposited in Ajrekar Mycological Herbarium (AMH), Pune; ex-type culture (NFCCI 4505) is deposited in National Fungal Culture Collection (NFCCI), Pune. The specific epithet refers to the place of collection, Kangra.

Tetraploa dwibahubeeja Rajeshkumar, K.D. Hyde & S. Lad, Fungal Diversity 100: 118. 2020 (Tetraplosphaeriaceae).

This new species has been discovered and described based on the collection made from the decaying spathes of *Cocos nucifera (Arecacceae)*, collected from Thane, Maharashtra, India. The holotype specimen is deposited in Ajrekar Mycological Herbarium (AMH), Pune; ex-type culture (NFCCI 4621) is deposited in National Fungal Culture Collection (NFCCI), Pune. The specific epithet *'Dwibahubeeja'* in Sanskrit means two-armed seed/ conidium.

Tetraploa pseudoaristata Rajeshkumar, K.D. Hyde & G. Anand, Fungal Diversity 100: 119. 2020 (Tetraplosphaeriaceae).

This new species has been discovered and described based on the collection made from the decaying spathes of *Cocos nucifera* (Arecacceae), collected from Thane, Maharashtra, India. The holotype specimen is deposited in Ajrekar Mycological Herbarium (AMH), Pune; ex-type culture (NFCCI 4624) is deposited in National Fungal Culture Collection (NFCCI), Pune. The specific epithet "*pseudoaristata*" refers to 'similar to *Tetraploa aristata*' in having quadriaristate morphology of conidia.

Tetraploa thrayabahubeeja Rajeshkumar, K.D. Hyde, G. Anand, Fungal Diversity 100: 120. 2020 (Tetraplosphaeriaceae).

This new species has been discovered and described based on the collection made from the decaying spathes of *Cocos nucifera* (Arecacceae), collected from Thane Maharashtra, India. The holotype specimen is deposited in Ajrekar Mycological Herbarium (AMH), Pune; ex-type culture (NFCCI 4627) is deposited in National Fungal Culture Collection (NFCCI), Pune. The species is named after the distinctive 3-branched conidial body, thrayabahubeeja in Sanskrit means 3-armed seed/conidium.

Thaxteriellopsis obliqus M. Niranjan & V.V. Sarma, Fungal Diversity 104: 43. 2020.

This new species has been discovered and described based on the collection made from the *Nauclea gageana*, collected from Chidiyatapu Reserve Forest, South Andaman, Andaman and Nicobar Islands, India. The holotype specimen is deposited in Ajrekar Mycological Herbarium (AMH), Pune; ex-type culture (NFCCI 4429) is deposited in National Fungal Culture Collection (NFCCI), Pune. The specific epithet is in reference to an oblique septum in the ascospores.

Verruconis mangrovei Devadatha V.V. Sarma & E.B.G. Jones, Fungal Diversity 100: 145. 2020 (Sympoventuriaceae).

This new species has been discovered and described based on the collection made from decaying wood of *Excoecaria agallocha* (Amaranthaceae), collected from Muthupet mangroves, Tiruvarur, Tamil Nadu, India. The holotype specimen is deposited in Ajrekar Mycological Herbarium (AMH), Pune. The specific epithet refers to the mangrove habitat from where fungus was collected.

Zygosporium chinensis A.D. Khalkho, S. Bhardwaj, A. Dubey, S. Jain & A.N. Rai, KAVAKA 54: 80. 2020.

This new species has been discovered and described based on the collection made from the living and dried but attached leaves of *Litchi chinensis* (Sapindaceae), collected from Ambikapur, Chhattisgarh, India. The holotype specimen is deposited in Ajrekar Mycological Herbarium (AMH); and isotype in RA Herbarium (RAH), Botany Department, Dr. Hari Singh Gour Vishwavidyalaya, Sagar, Madhya Pradesh. India. The specific epithet refers to the epithet of the host plant.

NEW VARIETY

Asteridiella micheliifolia Hosag., Archana. & Agarwal **var. macrospora** Jacob Thomas & Hina Mohamed, KAVAKA 54: 55. 2020.

This new variety has been discovered and described based on the collection made from the infected leaves of *Michelia champaka* (Magnoliaceae), collected from Elappara, Vagamon Hills, Kerala, India. The holotype and isotype specimens are deposited in regional herbarium of Mar Thoma College Herbarium, Tiruvalla, Kerala (MTCHT). The new variety is named after the larger size of ascospores.

NEW DISTRIBUTIONAL RECORDS

Agaricus chiangmaiensis Karun., Guinb. & K.D. Hyde

The species has been reported for the first time from India based on collection made from Kakanahosudi, NR Pura, Chikkamagaluru, Karnataka, India. The specimen is deposited at Department of Botany, Kuvempu University, Shankaraghatta, Karnataka (KUBOT). It has been published by R. Kantharaja, K.J. Nandan Patel and M. Krishnappa in KAVAKA 55: 66. 2020.

Agaricus flocculosipes R.L. Zhao, Desjardin, J. Guinberteau & K.D. Hyde

The species has been reported for the first time from India based on collection made from Chibballi, NR Pura, Chikkamagaluru, Karnataka, India. The specimen is deposited at Department of Botany, Kuvempu University, Shankaraghatta, Karnataka (KUBOT). It has been published by R. Kantharaja, K.J. Nandan Patel and M. Krishnappa in KAVAKA 55: 66. 2020.

Astrosphaeriella stellata (Pat.) Sacc.

The fungal species has been reported for the first time from India based on collection made from unidentified Bamboo culms, collected from Nimbudera, Middle Andaman, Andaman and Nicobar Islands. India. The specimen is deposited at Department of Biotechnology, University of Pondicherry (PUFNI), India. This has been published by M. Niranjan and V.V. Sarma in KAVAKA 54: 38-42. 2020.

Astrosphaeriella tornata (Berk. & M.A. Curtis) D. Hawksw. & Boise

The fungal species has been reported for the first time from India based on collection made from *Calamus andamanicus* rachis, collected from Mohanpur, Diglipur, North Andaman, Andaman and Nicobar Islands. India. The specimen is deposited at Department of Biotechnology, University of Pondicherry (PUFNI), India. This has been published by M. Niranjan and V.V. Sarma in KAVAKA 54: 38-42. 2020.

Marasmius fulvoferrugineus Gilliam

The fungal species has been reported for the first time from India based on collection made from dead and decomposed dicotyledonous leaves from Kathua, Jasrota Wildlife Sanctuary, Jammu & Kashmir. The specimen is deposited at Punjabi University Herbarium, Patiala, Punjab (PUN). It has been published by Munruchi Kaur and Aakriti Gupta in KAVAKA 53: 92. 2019.

Marasmius pallescens Murrill

The species, earlier known from various localities of Lesser Antilles including Martinique and Northern Thailand, has been reported for the first time from India based on collection made from decomposed wooden logs from Mansar along road side, Jammu & Kashmir. The specimen is deposited at Punjabi University Herbarium, Patiala, Punjab (PUN). It has been published by Munruchi Kaur and Aakriti Gupta in KAVAKA 53: 93. 2019.

Marasmius pseudobambusinus Desjardin

The species, earlier known from North America, has been reported for the first time from India based on collection made from gymnosperm needles and dicotyledonous leaves, Jibhi Forest, Kullu, Himachal Pradesh, at 2468 m altitude. The specimen is deposited at Punjabi University Herbarium, Patiala, Punjab (PUN). It has been published by Munruchi Kaur and Aakriti Gupta in KAVAKA 53: 94. 2019.

Membranomyces spurius (Bourdot) Jülich

The species, earlier known from Austria, Germany, Russia, Italy, France, Belgium, United Kingdom, Turkey, Sweden, Denmark, Norway, Switzerland, Finland, and the Caucasus, has been reported for the first time from India based on collection made from stump of *Quercus leucotrichophora,* Rajgarh, Sirmaur, Himachal Pradesh. The specimen is deposited at Punjabi University Herbarium, Patiala, Punjab (PUN). It has been published by Ramandeep Kaur, Maninder Kaur, Ellu Ram, Ritu, Avneet Pal Singh and G. S. Dhingra in KAVAKA 53: 68. 2019.

Russula innocua (Singer) Singer

The fungal species has been reported for the first time from India based on collection made from JNTBGRI Campus, Thiruvananthapuram district, Kerala, India. The specimen is deposited at Jawaharlal Nehru Tropical Botanic Garden and Research Institute Herbarium, Thiruvananthapuram (TBGT). It has been published by S. Ratheesh, K.V. Brinda and C.K. Pradeep in KAVAKA 53: 80. 2019.

Quadracaea mediterranea Lunghini, Pinzari & Zucconi

This species has been reported for the first time from India based on collection made from decaying leaf litter of *Quercus floribunda* from the Ramgarh forest, Nainital, Uttarakhand, India. It has been published by MK Dubey, RS Upadhyay, Z Shah, D Arya and RC Gupta in. Mycotaxon135(4): 797-801. 2020.

Sistotrema resinicystidium Hallenb.

The species, earlier known from Germany, Belgium, Denmark, Sweden, Italy, Norway, Finland, Spain, and Caucasus, has been reported for the first time from India based on collection made from stick of *Shorea robusta* from Rajban, Paonta Sahib, Sirmaur, Himachal Pradesh. The specimen is deposited at Punjabi University Herbarium, Patiala, Punjab (PUN). It has been published by Ramandeep Kaur, Maninder Kaur, Ellu Ram, Ritu, Avneet Pal Singh and G. S. Dhingra in KAVAKA 53: 70. 2019.

Skvortzovia georgica (Parmasto) G. Gruhn & Hallenb.

The fungal species, earlier known from Russia, Sweden, Norway and USA, has been reported for the first time from India based on collection made from *Cedrus deodara* log from Gushaini, Banjar, Kullu, Himachal Pradesh. The specimen is deposited at Punjabi University Herbarium, Patiala, Punjab (PUN). It has been published by Ellu Ram, Ramandeep Kaur, Avneet Pal Singh and Gurpaul Singh Dhingra in KAVAKA 53: 104. 2019.

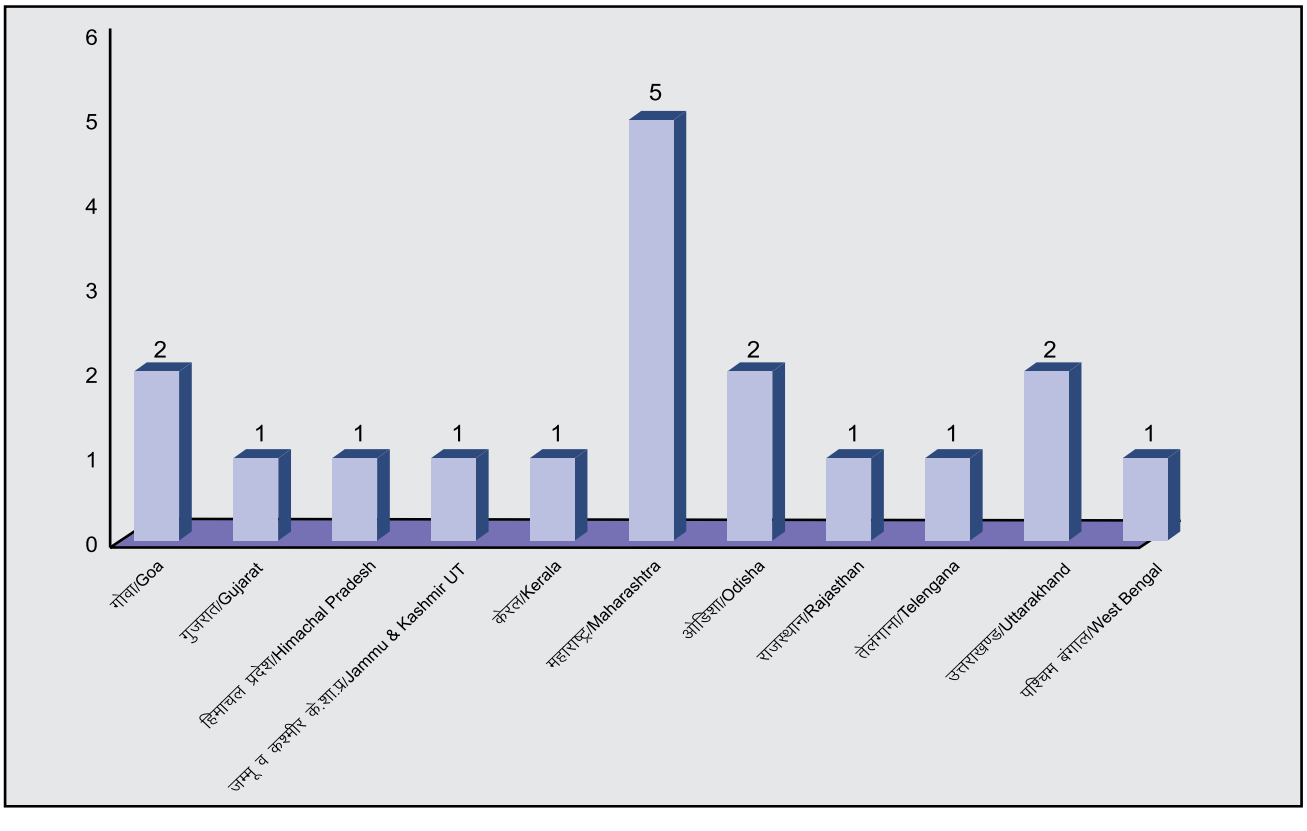
जीवाणु/MICROBES

Courtesy : Arek Socha

जीवाणु/MICROBES

सूक्ष्मजीवीय पारिस्थितिक विज्ञानियों ने जीवाणुओं एवं आर्किया की आण्विक आधार पर गणना हेतु 16एस आरआरएनए जीन अनुक्रमण की विधि को अपनाया है। हाल में किये गये शोध के अनुसार कुल 1,411,234 जीवाणुओं एवं 53,546 आर्किया जातियों के विस्तृत जीन अनुक्रमों की पहचान कर ली गई है, जिसमें भारत से लगभग 1257 जातियों को पृथक किया जा चुका है। भारतीय पर्यावरण में जीवाणुओं तथा आर्किया की विविधता एवं जैव विविधता के संवर्धन और रखरखाव में उनकी भूमिका को समझना बहुत आवश्यक है। हमारी अब तक की जानकारी के अनुसार भारतीय वनस्पतिजात में लगभग 2.29 प्रतिशत हिस्सा जीवाणुओं का है। इस क्रमवार सूचना में वर्ष 2020 के दौरान भारत से 02 नये वंश तथा 16 नयी जातियों को विज्ञान के लिये अन्वेषित एवं वर्णित किया गया है। राज्य वार विश्लेषण में (गोवा, ओडिशा एवं उत्तराखंड में प्रत्येक से 02 जाति, गुजरात, हिमाचल प्रदेश, जम्मू एवं कश्मीर के.शा.प्र., कर्नाटक, राजस्थान, तेलंगाना एवं पश्चिम बंगाल राज्यों में प्रत्येक से 01 जाति एवं महाराष्ट्र से 5 जातियां) अन्वेषित की गई हैं।

Microbial ecologist now adopted 16S rRNA gene sequencing for developing molecular census database of bacteria and archaea. In recent studies total 1,411,234 bacterial and 53,546 archaeal full-length sequences has been observed worldwide from which 1257 species have been isolated from India. It is necessary to understand the diversity of bacteria and archaea present in a great variety of Indian environments, and understand their role in biodiversity maintenance. In the present state of our knowledge, Indian microbes Represents about 2.29 per cent of the total plant species of India. The collated information presented here for year 2020 includes 02 new genera, and 16 new species of microbes (2 species each from Goa, Odisha and Uttarakhand, 1 each from Gujarat, Himachal Pradesh, Jammu & Kashmir UT, Karnataka, Rajasthan, Telangana, and West Bengal, and 5 species from Maharashtra) discovered and described as new to science from India.



भारतीय राज्यों से अन्वेषित जीवाणुओं की संख्या

NUMBER OF MICROBES DISCOVERED FROM INDIAN STATES

NEW GENUS

Halocatena Ashish Verma, Yash Pal, Pravin Kumar, Srinivasan Krishnamurthi, Int. J. Syst. Evol. Microbiol. 70(6): 3693. 2020 (Halobacteriaceae)

A novel archaeal becteria genus designated strain as SPP-AMP-1T was isolated from saltpan soil, Goa, using the serial dilution method on a halophilic archaeal medium supplemented with ampicillin. The type species of this genus is *Halocatena pleomorpha* with the type strain is SPP-AMP-1T (=JCM 31368T=KCTC 4276T=MTCC 12579T).

Methylolobus Monali C Rahalkar, Kumal Khatri, Jyoti Mohite, Pranitha S Pandit, Rahul A Bahulikar, Antonie Van Leeuwenhoek 113(7): 959. 2020.

A novel genus of gammaproteobacterial methanotroph; strain FWC3 was isolated from a tropical freshwater wetland sample collected near a beach in West Coast Maharashtra, India. Based on the polyphasic characterisation and comparison to the other type strains of *Methylococcaceae*, the strain proposed to a new species *Methylolobus aquaticus* with type strain FWC3 (= JCM 33786T, = KCTC 72733T, = MCC 4198T).

NEW SPECIES

Bacillus rugosus Dhruba Bhattacharya, Sergio de los Santos Villalobos, Valeria Valenzuela Ruiz, Joseph Selvin, Joydeep Mukherjee, Antonie Van Leeuwenhoek 113(11): 1675. 2020

A novel Gram-positive and endospore-forming bacterium assigned as strain SPB7T collected from the Palk Strait, in the Bay of Bengal near the Mandapam coast, India. The type strain of the new bacterium is SPB7T(= NRRL B-65559T, = CICC 24827T, = MCC4185T). The species is named after its wrinkled appearance of the colonies.

Chryseobacterium candidae B. Indu, G. Kumar, N. Smita, A. Shabbir, Ch Sasikala., Ch. V. Ramana, Int. J. Syst. Evol. Microbiol. 70(1): 93. 2020.

A rod shaped, non-motile, gram-stain-negative, aerobic bacterium (strain JC507T) was isolated from a yeast. The type strain of the novel bacterium is JC507T (=KCTC 52928T=MCC 4072T=NBRC 113872T) and named after its host yeast name *Candida tropicalis* (JY101).

Gimesia chilikensis Dhanesh Kumar, Kumar Gaurav, PK Sreya, A. Shabbir, Jagadeeshwari Uppada, Ch. Sasikala.,Ch.V. Ramana, Int. J. Syst. Evol. Microbiol. 70(6): 3647. 2020.

This noval Gram-stain-negative, aerobic, non-motile, salt- and alkali-tolerant, pear to oval shaped, rosette-forming, white coloured, bacterium, designated as strain JC646T, was isolated from a sediment sample collected from Chilika lagoon, India. The type strain of the novel bacterium is JC646T (=KCTC 72175T=NBRC 113881T) and is named after its type locality, Chilika Lake, Odisha.

Halocatena pleomorpha Ashish Verma, Yash Pal, Pravin Kumar, Srinivasan Krishnamurthi, Int. J. Syst. Evol. Microbiol. 70(6): 3694. 2020 (Halobacteriaceae)

A novel archaeal strain designated as SPP-AMP-1T was isolated from saltpan soil, using the serial dilution method on a halophilic archaeal medium supplemented with ampicillin. The type species of this genera is *Halocatena pleomorpha* with the type strain is SPP-AMP-1T (=JCM 31368T=KCTC 4276T=MTCC 12579T).

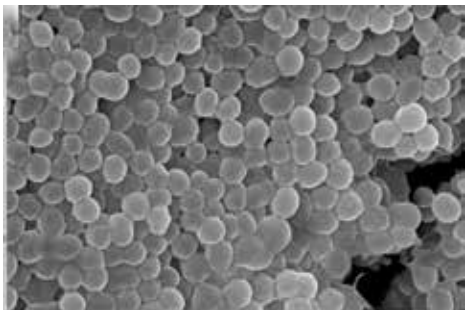
Klebsiella indica Sukriti Gujarati, Diptaraj Chaudhari, Ashwini Hagir, Mitesh Khairnar, Yogesh Shouche, Praveen Rahi, Int. J. Syst. Evol. Microbiol. 70(5): 3278. 2020 (Enterobacteriaceae)

A novel rod-shaped, Gram-negative, encapsulated and non-motile bacterial strain, designated TOUT106T, isolated from the surface of a tomato collected from a local vegetable market in Pune, India. The type strain is TOUT106T (=MCC 2901T=KACC 21384T=JCM 33718T). The bacterial strain is named after India, i.e., the country of its origin.

Lentzea indica Pulak Kumar Maiti, Sukhendu Mandal, Antonie Van Leeuwenhoek 113(10): 1411. 2020

A novel actinobacterium, strain PSKA42T was isolated from a soil sample at Kashmir Himalaya, India. The type strain of the new bacterium is PSKA42T (JCM 33729T,MTCC 12936T, MCC 4127T) and named after India, i.e., the county of origin.

Methylolobus aquaticus Monali C Rahalkar, Kumal Khatri, Jyoti Mohite, Pranitha S Pandit, Rahul A Bahulikar, Antonie Van Leeuwenhoek113(7): 959. 2020 (Methylococcaceae)



A novel gammaproteobacterial methanotroph designated as strain FWC3 was isolated from a tropical freshwater wetland sample collected near a beach in Western India. The type strain *Methylolobus aquaticus* is FWC3 (= JCM 33786T, = KCTC 72733T, = MCC 4198T) and the specific epithet is refers to its type habitate i.e., freshwater.

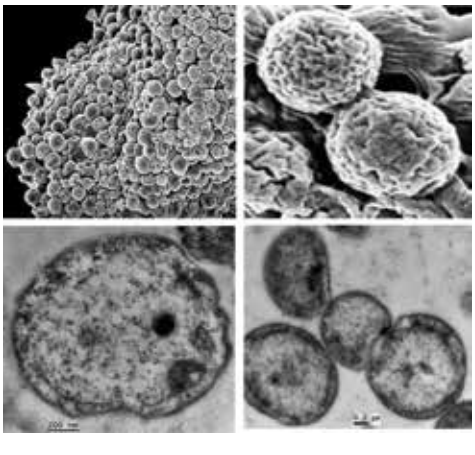
Natrialba swarupiae Swapnil Kajale , Neelima Deshpande, Snigdha Pali, Yogesh Shouche, Avinash Sharma, Int. J. Syst. Evol. Microbiol. 70(3): 1876. 2020

A haloarchaeal, non-motile, Gram-negative strain (ESP3B_9T) was isolated from the salt pan of Sambhar salt lake, Rajasthan, India. The type strain of *Natrialba swarupiae* is ESP3B_9T (MCC 3419T=JCM 33002T=KCTC 4279T=CGMCC 1.16737T) and named in honour of Dr. Renu Swarup, Secretary, Department of Biotechnology, Govt. of India for her support of microbial diversity research in India.

Nitrincola tapanii Amaraja Joshi, Sonia Thite, Dhiraj Dhotre, Manju Moorthy, Neetha Joseph, V. Venkata Ramana and Yogesh Shouche, Int. J. Syst. Evol. Microbiol. 70(2): 1106. 2020

A novel Gram-stain-negative bacterial strain designated as MEB193T was isolated from a sediment sample collected from Lonar Lake, India. The type strain of *Nitrincola tapanii* is MEB193T (=MCC 2863T=JCM 31570 T=KCTC 52390 T). The bacterium is named in honour of Dr. Tapan Chakrabarti, Former Head, MTCC, CSIR-IM Tech, India for his significant contribution in field of microbial taxonomy and systematics.

Paludisphaera soli Rishabh Kaushik, Meesha Sharma, Kumar Gaurav, U Jagadeeshwari, A Shabbir, Ch Sasikala, Ch V Ramana, Maharaj K Pandit, Antonie Van Leeuwenhoek 113(11): 1663. 2020



A novel light pink and strictly aerobic strain of Planctomycetes, designated JC670T, was isolated from a soil sample from Gangotri region in Uttarakhand, India. The type strain of *Paludisphaera soli* is JC670T (= KCTC 72850 T-= NBRC 114339 T) and the the specific epithet refers its origin from soil. The GenBank accession number for 16S rRNA genesequence of strain JC670T is LR794334 under the accession number JAALJI000000000.

Paracoccus aeridis Anusha Rai, N Smita, G Suresh, A Shabbir, G Deepshikha, Ch Sasikala and Ch.V Ramana, Int. J. Syst. Evol. Microbiol. 70(3): 1720. 2020

A noval Gram-stain-negative, non-motile, coccoid-shaped, catalase and oxidase-positive, non-denitrifying, neutrophilic bacterium designated as strain JC501T was isolated from an epiphytic rhizosphere of an orchid, *Aerides maculosa*, growing in the Western Ghats of India. The type strain of *Paracoccus aeridis* is JC501T (=LMG 30532T=NBRC 113644T) and named after the Orchid genus *Aerides* from where it has collected.

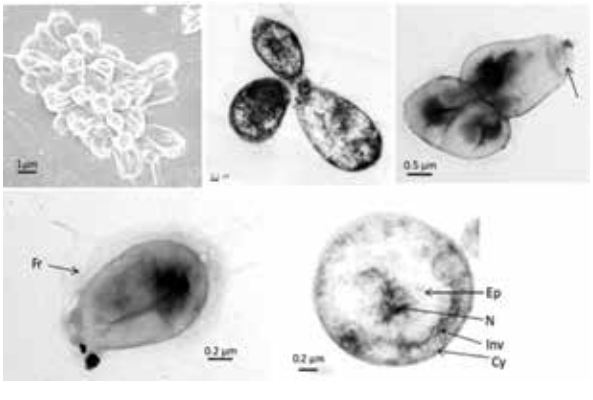
Pseudomonas lalkuanensis Vipool Thorat, Kiran Kirdat, Bhavesh Tiwarekar, Elaine DaCosta, Prasenjit Debbarma, Yogesh Shouche, Shivaji Sathe, Reeta Goel, Tushar Lodha and Amit Yadav, Int. J. Syst. Evol. Microbiol. 70(12): 6468. 2020

A novel e-waste-degrading, Gram-stain-negative, rod-shaped, aerobic, oxidase-positive and catalase-positive strain, PE08T, was isolated from contaminated soil collected from a paper mill yard in Lalkuan, Uttarakhand, India. The type strain of the novel bacterium is PE08T (=MCC 3792=KCTC 72454=CCUG 73691) and named after its type locality in Lalkuan, Uttarakhand.

Rhodobacter sediminicola G Suresh, Dhanesh Kumar, A Krishnaiah, Ch Sasikala, Ch V Ramana, Int. J. Syst. Evol. Microbiol. 70(2):1294. 2020

A noval yellowish brown, catalase and oxidase-positive, rod-to-oval shaped, gram-stain-negative and motile phototrophic bacterium, designated as strain JA983T, was isolated from a freshwater pond in Gujarat, India. The type strain of *Rhodobacter sediminicola* is JA983T (=KCTC 15782T=NBRC 113843T) and the 16SrRNA gene sequence of JA983T is LR596790 under the accession number VDEK000000000.

Roseimaritima sediminicola Dhanesh Kumar, Kumar Gaurav, U Jagadeeshwari, G Deepshikha, Ch Sasikala, Ch V, Ramana Int. J. Syst. Evol. Microbiol. 70(4):2616. 2020



A noval light pink, gram-stain negative, spherical to pear shaped, strain JC651^T isolated from a sediment sample collected from Chilika lagoon, Odisha, India. The type strain of *Roseimaritima sediminicola* is JC651T (=KCTC 72178T=NBRC 113926T). The GenBank accession number for the 16S rRNA gene sequence of *Roseimaritima sediminicola* JC651^T is LR133893 and under the accession number WIAD000000000.

Salinicoccus cyprini Chandni Talwar, Amit Kumar Singh, Stanzin Choksket, Suresh Korpole, Rup Lal, Ram Krishan Negi, Int. J. Syst. Evol. Microbiol. 70(7): 4111. 2020

A novel orange to pink coloured bacterial strain designated as CT19^T was isolated from the gastrointestinal tract of mirror carp, *Cyprinus carpio* var. *specularis* collected from the Gobind Sagar reservoir at village Lathiani, Una, Himachal Pradesh, India. The type strain *Salinicoccus cyprini* is CT19T (=KCTC 43022T =CCM 8886T=MCC 3834T).

Suhomyces drosophilae Reshma Jadhav, Snigdha Tiwari, Rameshwar Avchar, Marizeth Groenewald, Abhishek Baghela, Int. J. Syst. Evol. Microbiol. 70(9): 4908. 2020

A novel yeast species is isolated from the gut of a fungus feeding beetle, feeds on stinkhorn mushroom belonging to the family Phallaceae. Based on the phenotypic, biochemical characterization and sequence analysis the yeast is proposed to a new species of the genus under Suhomyces as *Suhomyces drosophilae* with DGY3T as the holotype and CBS 16329T and MCC 1871T as ex-type strains.

वनस्पति अन्वेषण में प्रयुक्त पादपालयों के संक्षिप्त नामों की व्याख्या/Acronym of Herbaria used in Plant Discoveries

AILS	पादपालय, वनस्पति विज्ञान विभाग, अभिलाषी जीव विज्ञान संस्थान, मंडी, हिमाचल प्रदेश	Department of Botany, Abhilashi Institute of Life Sciences, Mandi, Himachal Pradesh
AMH	अगरकर मायकोलॉजिकल हरबेरियम, पुणे महाराष्ट्र	Agharkar Mycological Herbarium, Pune, Maharashtra
ARUN*	पादपालय, भारतीय वनस्पति सर्वेक्षण, अरुणाचल प्रदेश क्षेत्रीय केंद्र, ईटानगर, अरुणाचल प्रदेश	Herbarium, Botanical Survey of India, Arunachal Pradesh Regional Centre, Itanagar, Arunachal Pradesh
AL	पादपालय, एल्गेयर विश्वविद्यालय, एल्गेरिया	Herbarium, University of Algiers, Algeria
ASSAM*	भारतीय वनस्पति सर्वेक्षण, पूर्वी क्षेत्रीय केंद्र शिलांग, मेघालय	Botanical Survey of India, Eastern Regional Centre, Shillong, Meghalaya
AUMH	पादपालय, अभिलाषी विश्वविद्यालय, मंडी, हिमाचल प्रदेश	Herbarium, Abhilashi University, Mandi, Himachal Pradesh
AUH	पादपालय, वनस्पति विज्ञान विभाग, आंध्रा विश्वविद्यालय, विशाखापट्टनम, आंध्र प्रदेश	Department of Botany, Andhra University, Visakhapatnam, Andhra Pradesh
AURO	शक्ति नर्सरी एवं पादपालय, औरोवेल्ली	Shakti Nursery and Herbarium, Auroville
BAMU	पादपालय, डॉ. बाबासाहेब अंबेडकर मराठवाड़ा विश्वविद्यालय, औरंगाबाद, महाराष्ट्र	Dr. Babasaheb Ambedkar Marathwada University herbarium, Aurangabad, Maharashtra
BLAT	ब्लाटर पादपालय, वनस्पति विज्ञान विभाग, सेंट जेवियर कॉलेज, मुम्बई, महाराष्ट्र	Blatter Herbarium, Botany Department, St. Xavier's College, Mumbai, Maharashtra
BM	पादपालय, ब्रिटिश संग्रहालय, लंदन, यू.के.	British Museum and Herbarium, London,UK
BF	पादपालय, वर्षा वन अनुसंधान संस्थान, जोरहाट, असम	Herbarium, Rain Forest Research Institute, Jorhat, Assam
BRIT	पादपालय, टेक्सास वनस्पति अनुसंधान संस्थान, टेक्सास	Herbarium, Botanical Research Institute of Texas
BSA*	पादपालय, भारतीय वनस्पति सर्वेक्षण, मध्य क्षेत्रीय केंद्र, इलाहाबाद	Herbarium of Botanical Survey of India, Central Regional Centre, Allahabad
BSD*	पादपालय, भारतीय वनस्पति सर्वेक्षण, उत्तरी क्षेत्रीय केंद्र, देहरादून, उत्तराखंड	Herbarium of Botanical Survey of India, Northern Regional Centre, Dehradun, Uttarakhand
BSHC*	पादपालय, भारतीय वनस्पति सर्वेक्षण, सिक्किम हिमालयन क्षेत्रीय केंद्र, गंगतोक, सिक्किम	Herbarium of Botanical Survey of India, Sikkim Himalayan Regional Centre, Gangtok
BSI*	भारतीय वनस्पति सर्वेक्षण, पश्चिमी क्षेत्रीय केंद्र, पुणे (बीएसआई)	Herbarium of Botanical Survey of India, Western Regional Centre, Pune
BSID*	पादपालय, भारतीय वनस्पति सर्वेक्षण, दक्कन क्षेत्रीय केंद्र, हैदराबाद, तेलंगाना	Herbarium of Botanical Survey of India, Deccan Regional Centre, Hyderabad, Telangana
BSJO*	पादपालय, भारतीय वनस्पति सर्वेक्षण, शुष्क क्षेत्रीय केंद्र, जोधपुर, राजस्थान	Herbarium, Botanical Survey of India, Arid Zone Regional Center, Jodhpur, Rajasthan
BUH	पादपालय वनस्पति विज्ञान विभाग, भरतियार विश्वविद्यालय, कोयम्बटूर, तमिलनाडु	Herbarium Department of Botany, Bharathiar University, Coimbatore, Tamil Nadu
BURD	पादपालय, वनस्पति विज्ञान विभाग, वर्द्धमान विश्वविद्यालय, वर्द्धमान पश्चिम बंगाल	Herbarium, Department of Botany, Burdwan University, Burdwan WB
CAL*	केन्द्रीय राष्ट्रीय पादपालय, भारतीय वनस्पति सर्वेक्षण, हावड़ा, पश्चिम बंगाल	Central National Herbarium, Botanical Survey of India, Howrah, West Bengal
CALI	कालीकट विश्वविद्यालय, मल्लापुरम, केरल	Herbarium, Department of Botany, Calicut University, Malappuram, Kerala
CANA	अनुसंधान एवं संग्रहण अनुभाग, कनेडियन म्यूजियम ऑफ नेचर, ओटावा, ओन्टारियो, कनाडा	Research and Collections Division, Canadian Museum of Nature, Ottawa, Ontario, Canada

CATH	चार्ल्स ए. टेलर पादपालय, साउथ डाकोटा स्टेट विश्वविद्यालय, संयुक्त राज्य अमेरिका	Charles A. Taylor Herbarium, South Dakota State University, USA
CMPR	पादपालय, सेन्टर फॉर मेडिसिनल प्लांट रिसर्च, केरल	Centre for Medicinal Plant Research, Kerala
CMS	पादपालय, क्रिश्चियन मिशनरी सोसायटी कॉलेज, कोट्टायम, केरल	Christian Missionary Society College, Kottayam, Kerala
COGCEHR	पादपालय, सेन्टर फॉर आर्किड जीन कन्जरवेशन फॉर इस्टर्न हिमालयन रिजन, हेंगबुग, मणिपुर	Herbarium of Centre for Orchid Gene Conservation for Eastern Himalayan Region, Hengbung, Manipur
COLO	पादपालय, कोलेराडो विश्वविद्यालय, संयुक्त राज्य अमेरिका	Herbarium of University of Colorado, USA
CUH	पादपालय वनस्पति विज्ञान विभाग, कलकत्ता विश्वविद्यालय, कोलकाता पश्चिम बंगाल	Herbarium, Botany Department, Calcutta University, Kolkata, West Bengal
DD*	पादपालय, वन अनुसंधान संस्थान, देहरादून, उत्तराखंड	Forest Research Institute(FRI) Dehradun, Uttarakhand
DUH	पादपालय, वनस्पति विज्ञान विभाग, दिल्ली विश्वविद्यालय, दिल्ली।	Herbarium, Dept. of Botany, Delhi University
E	पादपालय, रॉयल वनस्पति उद्यान, इडनबर्ग, स्कॉटलैंड	Herbarium of Royal botanical Garden, Edinburgh, Scotland
ERRCH	पादपालय, पर्यावरण संसाधन अनुसंधान संस्थान, तिरूवनंतपुरम, केरल	Herbarium, Environment Resource Research Centre, Thiruvanathapuram, Kerala
FRLH	पादपालय, फाउन्डेशन ऑफ रिविटालाइजेशन ऑफ लोकल हेल्थ ट्रडिशन, बंगलुरु, कर्नाटक	Herbarium of Foundation of Revitalisation of Local Health Tradition, Bengaluru, Karnataka
G	पादपालय,कन्जरवेटोरे एट जार्डिन बोटेनिक डे ला वेल्ली डे जेनेवे, जेनेवा	Herbarium Conservatoire et Jardin botaniques de la Ville de Genève
GENT	पादपालय वनस्पति विज्ञान विभाग, गेंट विश्वविद्यालय, बेल्जियम	Department of Biology, Gent University, Gent, Belgium
GUBH	पादपालय, गोवाहाटी विश्वविद्यालय, गोवाहाटी, असम	Herbarium, Gauhati University, Guwahati, Assam
GUH	पादपालय, वनस्पति विज्ञान विभाग, हे.न.ब.गढ़वाल विश्वविद्यालय, श्रीनगर गढ़वाल उत्तराखंड	Herbarium, H.N.B. Garhwal University, Srinagar Garhwal, Uttarkhand
H	वनस्पति संग्रहालय, फन्निश म्यूजियम ऑफ नेचुरल हिस्ट्री, फिनलैंड	Finnish Museum of Natural History, Botanical Museum, Finland
HBJU	पादपालय, वनस्पति विज्ञान विभाग, जम्मू विश्वविद्यालय, जम्मू	Department of Botany, University of Jammu, Jammu
HCIO*	पादपालय, भारतीय कृषि अनुसंधान संस्थान, क्रिप्टोगैमी इंडियाई ओरियंटालिस, नई दिल्ली	Herbarium of Indian Agriculture Research Institute, Cryptogamae Indiae Orientalis, New Delhi
HIFP	पादपालय, फ्रैंच संस्थान पांडेचेरी	Herbarium. French Institute of Pondicherry, Pondicherry
HUH	पादपालय, हावर्ड विश्वविद्यालय, कैम्ब्रिज यू.एस.ए	Harvard University Herbaria, Cambridge, USA
IBSD	पादपालय, जैवसंसाधन एवं सतत विकास संस्थान, इंफाल, मणिपुर	Institute of Bioresources and Sustainable Development, Takyelpat, Imphal, Manipur
IBUG	पादपालय, द ग्वाडालाजारा विश्वविद्यालय, मैक्सिको	Herbarium, The University of Guadalajara, Maxico
IPUH	पादपालय, गुरू गोविन्द सिंह इंद्रप्रस्थ विश्वविद्यालयए द्वारका, दिल्ली	Herbarium, Guru Govind Singh, Indraprastha University, Dwaraka Delhi
JCH	जनेत कोश पादपालय, वोल्लोगोन्ग विश्वविद्यालय, आस्ट्रेलिया	Janet Cosh Herbarium, University of Wollongong, Australia
JCB	पादपालय, भारतीय विज्ञान संस्थान, बैंगलुरू	Herbarium, Indian Institute of Sciences, Bangaluru, Karnataka
JE	पादपालय, हाउस्सकनेक्ट, जेना	Herbarium Haussknecht, Jena

JUH	पादपालय, वनस्पति विज्ञान विभाग, जम्मू विश्वविद्यालय, जम्मू एवं कश्मीर	Herbarium, Dept. of Botany, Jammu University, Jammu & Kashmir
K	रॉयल वानस्पतिक उद्यान, क्यू, यू.के.	Herbarium of Royal Botanic Garden, Kew, U.k.
KASH	पादपालय, वनस्पति विज्ञान विभाग, कश्मीर विश्वविद्यालय, जम्मू एवं कश्मीर	Herbarium, Botany Department, Kashmir University, Jammu & Kashmir
KATH	नेशनल हरबेरियम एंड प्लांट लैबोरेटोरिज, काठमांडू, नेपाल	National Herbarium & Plant Laboratories, Kathmandu
KFRI	केरल वन अनुसंधान संस्थान, पीची (केएफआरआई),	Herbarium of Kerala Forest Research Institute, Peechi
KUBH	पादपालय, केरल विश्वविद्यालय, तिरूवनंतपुरम, केरल	Herbarium, University of Kerala, Thiruvanathapuram, Kerala
LWG*	पादपालय, राष्ट्रीय वनस्पति अनुसंधान संस्थान, लखनऊ	Herbarium of National Botanical Research Institute, Lucknow
LWU	लखनऊ विश्वविद्यालय, लखनऊ, उत्तर प्रदेश	Herbarium of Botany Dept., University of Lucknow, Uttar Pradesh
MBGS	पादपालय, मालाबार वानस्पतिक उद्यान, कोझीकोड़े, केरल	Herbarium, Malabar Botanical Garden, Kozhikode, Kerala
MEL	नेशनल हरबेरियम ऑफ विक्टोरिया, रॉयल वनस्पति उद्यान, मेलबर्न, आस्ट्रेलिया	National Herbarium of Victoria, Royal Botanic Gardens Melbourne, Australia
MH*	भारतीय वनस्पति सर्वेक्षण, दक्षिणी क्षेत्रीय केंद्र, कोयम्बटूर, तमिलनाडु	Botanical Survey of India, Southern Regional Centre, Coimbatore, Tamil Nadu
MICH	पादपालय, मिचिगन विश्वविद्यालय, संयुक्त राज्य अमेरिका	Herbarium, Michigan University, USA
MO	मिस्सोरी वानस्पतिक उद्यान, सेंट. लुईस, मिस्सोरी, यू.एस.ए	Missouri Botanical Garden Herbarium, St. Louis, Missouri, USA
MSSRF	पादपालय, एम एस स्वामीनाथन रिसर्च फाउन्डेशन, पुथूरवयल	Herbarium, M. S. Swaminathan Research Foundation, Puthurvayal
MTCHT	पादपालय, वनस्पति विज्ञान विभाग, मार थोमा कॉलेज, तिरूवाला, केरल	Herbarium, Department of Botany, Mar Thoma College, Thiruvalla
MUBL	पादपालय, वनस्पति विज्ञान विभाग, मद्रास विश्वविद्यालय, चेन्नई	Herbarium, Dept. of Botany, Madras University, Chennai
NBU	पादपालय, नार्थ बंगाल विश्वविद्यालय, सिलिगुड़ी पश्चिम बंगाल	Herbarium, Department of Botany, North Bengal University, Siliguri West Bengal
NFCCI	नेशलन फंगल कल्चर कलेक्शन ऑफ इंडिया, अगरकर अनुसंधान संस्थान, पुणे	National Fungal Culture Collection of India, Agharkar Research Institute, Pune
NGPGR	नैरोजी गोदरेज पादप अनुसंधान केंद्र, सिरवाल, सतारा, महाराष्ट्र	Naoroji Godrej Centre for Plant Research, Shirwal, Satara, Maharashtra
NWU	नार्थ–वेस्ट विश्वविद्यालय, पोस्चेफस्ट्रोम, दक्षिणी अफ्रिका	North-West University, Potchefstroom, South Africa
PAN	पादपालय, वनस्पति विज्ञान विभाग, चंडीगढ़ विश्वविद्यालय, चंडीगढ़, पंजाब	Department of Botany, Panjab University, Chandigarh, Punjab
PBL*	पादपालय, भारतीय वनस्पति सर्वेक्षण, अंडमान एवं निकोबार क्षेत्रीय केंद्र, पोर्टब्लेयर	Herbarium, Botanical Survey of India, Andaman & Nicobar Regional Centre, Portblair
PC	पादपालय,नेशलन म्यूजियम ऑफ नेचुरल हिस्ट्री, फ्रांस	Herbarium of National Museum of Natural History, France
PH	प्राकृतिक विज्ञान अकादमी, फिलाडेल्फिया, संयुक्त राज्य अमेरिका	Academy of Natural Sciences, Philadelphia, USA
PUN	पादपालय, पंजाबी विश्वविद्यालय, पटियाला पंजाब	Punjabi University Herbarium, Patiala, Punjab
RFRI*	पादपालय, वर्षा वन अनुसंधान संस्थान, जोरहाट, असम	Herbarium of Rain Forest Research Institute, Jorhat, Assam
RHT	रापिनाट पादपालय एवं सेन्टर फॉर मोलीक्यूलर सिस्टेमैटिक्स, तिरूचिरापल्ली (आरएचटी)	Rapinat Herbarium and Centre for Molecular Systematics, Tiruchirappalli

RRLH	जानकी अम्मल पादपालय, भारतीय इंटिग्रेटिव मेडिसिन संस्थान, जम्मू तवी, जम्मू एवं कश्मीर	Janaki Ammal Herbarium, Indian Institute of Integrative Medicine, Jammu-Tawai, Jammu & Kashmir
S	स्वीडन म्यूजियम ऑफ नेचुरल हिस्ट्री, स्वीडन	Swedish Museum of Natural History, Sweden
SCCN	पादपालय, स्कॉट क्रिश्चियन कॉलेज, नागरकोइल	Herbarium of Scott Christian College, Nagercoil, Kerala
SESH	पादपालय, स्कूल ऑफ इन्वायरमेंटल साइंसेज, महात्मा गांधी विश्वविद्यालय, कोट्टायम केरल	Herbarium, School of Environmental Sciences, Mahatma Gandhi University, Kottayam,Kerala
SKU	पादपालय श्री कृष्णा कॉलेज, गुरूवयुर, केरल	Herbarium of Srikrishna Collegem Guruvayur, Kerala
SNMH	श्री नारायण कॉलेज पादपालय, कोल्लम, केरल	Sree Narayana College Herbarium, Kollam, Kerala
SUK	शिवाजी विश्वविद्यालय, कोल्हापुर, महाराष्ट्र	Shivaji University, Kolhapur, Maharashtra
T	जॉन टी. वॉटरहाउस पादपालय, न्यू साउथ वेल्स विश्वविद्यालय, सिडनी, आस्ट्रेलिया	John T. Waterhouse Herbarium, University of New South Wales, Sydney, Australia
TAIF	पादपालय, ताईवान वन अनुसंधान संस्थान, ताईवान	Herbarium of Taiwan Forestry Research Institute, Taiwan
TBGT	ट्रॉपिकल वानस्पतिक उद्यान एवं अनुसंधान संस्थान, तिरूवनंतपुरम, केरल	Jawaharlal Nehru Tropical Botanic Garden and Research Institute Herbarium, Thiruvananthapuram
THIM	राष्ट्रीय पादपालय, राष्ट्रीय जैवविविधता केंद्र, भूटान	National Herbarium, National Biodiversity Centre, Bhutan
TUH	पादपालय, तेजपुर विश्वविद्यालय, नपाम, सोनितपुर, असम	Tezpur University, Napaam, Sonitpur, Assam
UASB	पादपालय, कृषि विज्ञान विश्वविद्यालय, बैंगलुरु कर्नाटक	Herbarium, University of Agricultural Sciences, Bengaluru, Karnataka
VKPO	पादपालय, वनस्पति विज्ञान विभाग,वाघिरे कॉलेज, सास्वद, ताल पुरंदर, महाराष्ट्र	Herbarium of Department of Botany, Waghire College, Saswad, Tal-Purandar, Maharashtra
W	पादपालय, वियाना म्यूजियम ऑफ नेचुरल हिस्ट्री, आस्ट्रिया	Herbarium of Vienna Museum of Natural History, Austria
Z	पादपालय, जूरिच विश्वविद्यालय, स्वीजरलैंड	Herbarium of University of Zurich, Switzerland
ZGC	पादपालय, जेमोरिन गुरूवायूनप्पन कॉलेज, केरल	Herbarium, Zamorin's Guruvayurappan College, Kerala

* These are designated as National Repositories vide order no.26-15/2007-CSC, dated 28 Aug 2008 by Ministry of Environment, Forest and Climate Change, Govt. of India.

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APPENDIX-I

F. No.26-15/2007-CSC
Government of India
Ministry of Environment and Forests

Paryavaran Bhawan,
CGO Complex, Lodhi Road,
New Delhi – 110 003.

Dated the 12th September, 2012

ORDER

Subject :- Designation of repositories under the Biological Diversity Act, 2002

In exercise of the powers conferred by sub-section(1) of Section 39 of the Biological Diversity Act, 2002, read with sections 6 and 12 of Notification S.O. 1911(E), dated 8th November, 2006, and in continuation of this Ministry's Order dated 28th August, 2008, the Ministry of Environment & Forests, Government of India, hereby designates the National Bureau of Agriculturally Important Insects as the repository under the Act for agriculturally important insects, mites and spiders.

2. In accordance with sub-section (2) of Section 39 of the Act, the designated repository shall also keep in safe custody the representative samples, as voucher specimens of the biological material accessed in accordance with the provisions of Section 19 of the Act, alongwith relevant information related to the material, such as DNA fingerprints, if so required by the National Biodiversity Authority (NBA).

3. The designated repository shall also keep in safe custody the type specimen deposited by any person who discovers a new taxon, in accordance with sub-section (3) of Section 39 of the Act.

4. This order issues with the approval of the competent authority.

(Hem Pande)
Joint Secretary to the Government of India

To

1. The Director, National Bureau of Agriculturally Important Insects (NBAII), P.O. No. 2491, H.A. Farm Post, Bellary Road, Bangalore-560 024
2. Directors of institutions designated as repositories vide order dated 28.8.12:

   i. The Director, Botanical Survey of India, CGO Complex, 3rd MSO Building, Block F, DL Block, Sector 1, Salt Lake City, Kolkata – 700 064.
   ii. The Director, Zoological Survey of India (ZSI), Prani Vigyan Bhawan, M- Block, New Alipore, Kolkata - 700 053.
   iii. The Director, National Bureau of Plant Genetic Resources, Pusa Campus, New Delhi-110 012.
   iv. The Director, National Botanical Research Institute, Rana Pratap Marg, P. B. No. 436, Lucknow – 226 001, U.P.

v. The Director General, Indian Council of Forestry Research & Education, P. O. New Forests, Dehradun – 248 006, Uttarakhand.
vi. The Director, National Bureau of Animal Genetic Resources, Makrampur Campus, G.T. Road Bye Pass, Near Basant Vihar, P.O. Box 129, Karnal (Haryana)-132001.
vii. The Director, National Bureau of Fish Genetic Resources, Canal Ring Road, P.O. Dilkusha, Telibagh, Lucknow- 226 002, Uttar Pradesh.
viii. The Director, National Institute of Oceanography, Dona Paula – 403 004, Goa.
ix. The Director, Wildlife Institute of India, P.B. No. 18, Chandrabani, Dehradun –248 001, Uttarakhand.
x. The Director, National Bureau of Agriculturally Important Micro-ogranisms, Kusmaur (Post Bag Kaithauli), Post Box. No. 6, Mau Nath Bhanjan, Uttar Pradesh- 275 101.
xi. The Director, Institute of Microbial Technology, Sector 39-A, Chandigarh – 160 036.
xii. The Director, National Institute of Virology, 20-A, Dr. Ambedkar Road, P.B.No.11, Pune- 411 001.
xiii. The Director, Indian Agricultural Research Institute, Pusa Road, New Delhi-110012.

Copy to:

i. The Chairman, National Biodiversity Authority, Chennai
ii. The Secretary, National Biodiversity Authority, Chennai

APPENDIX-I

No. 26-15/2007-CSC
Government of India
Ministry of Environment and Forests

Paryavaran Bhawan
CGO Complex, Lodhi Road,
New Delhi-110 003
Dated the 28th August, 2008

ORDER

Subject : Designation of repositories under the Biological Diversity Act, 2002

In exercise of the powers conferred by sub-section(1) of section 39 of the Biological Diversity Act, 2002, read with sections 6 and 12 of Notification S.O. 1911(E), dated 8th November, 2006. The Ministry of Environment and Forests, Govt. of India, hereby designates the following institutions to act as repositories under the Act for different categories of biological resources :

S.No.	Name of Institution	Category of Biological Resource
1.	Botanical Survey of India, Kolkata	Flora (Angiosperms, Gymnosperms, Pteridophytes, Bryophytes, Lichens, Macro fungi, Macroalgae)
2.	National Bureau of Plant Genetic Resources, New Delhi	Plant genetic resources
3.	National Botanical Research Institute, Lucknow	Flora (Angiosperms, Gymnosperms, Pteridophytes, Bryophytes, Lichens, Macrofungi, Macroalgae)
4.	Indian Council of Forestry Research and Education, Dehradun (Forest Research Institute, Dehradun; Institute of Forest Genetics and Tree Breeding, Coimbatore; and Tropical Forest Research Institute, Jabalpur)	Flora (Angiosperms, Gymnosperms, Pteridophytes, Bryophytes, Lichens, Macrofungi, Macroalgae). For TFRI only Fauna (termites, butterflies, moths)
5.	Zoological Survey of India, Kolkata	Fauna
6.	National Bureau of Animal Genetic Resources, Karnal, Haryana.	Genetic resources of domestic animals
7.	National Bureau of Fish Genetic Resources, Lucknow, U.P.	Fish genetic resources
8.	National Institute of Oceanography, Goa	Marine flora and fauna
9.	Wildlife Institute of India, Dehradun	Faunal resources in Protected Areas
10.	National Bureau of Agriculturally Important Microorganisms, Mau Nath Bhanjan, U.P.	Agriculturally important microorganisms
11.	Institute of Microbial Technology, Chandigarh	Microorganisms
12.	National Institute of Virology, Pune	Viruses
13.	Indian Agricultural Research Institute, New Delhi	Microbes/Fungi

2. In accordance with sub-section (2) of Section 39 of the Act, the designated repositories shall also keep in safe custody the representative samples, as voucher specimens of the biological material accessed in accordance with the provisions of Section 19 of the Act, alongwith relevant information related to the material, such as DNA fingerprints, if so required by the National Biodiversity Authority (NBA).
3. The designated repositories at serial No. 1, 3, 4, 5, 10, 11, 12 and 13 shall also keep in safe custody the type specimen deposited by any person who discovers a new taxon, in accordance with sub-section (3) of Section 39 of the Act.
4. The order issues with the approval of this competent authority.

Sd/-
(A.K. Goyal)
Joint Secretary to the Government of India

To

1. Director, Botanical Survey of India, CGO Complex, 3rd MSO Building, Block F, DF Block, Sector 1, Salt Lake City, Kolkata-700 064.
2. Director, Zoological Survey of India (ZSI), Prani Vigyan Bhawan, M-Block, New Alipore, Kolkata-700 053
3. Director, National Bureau of Plant Genetic Resources, Pusa Campus, New Delhi-110 012.
4. Director National Botanical Research Institute, Rana Pratap Marg, P.B. No. 436, Lucknow-226 001. U.P.
5. Director General, Indian Council of Forestry Research & Education, P.O. New Forests, Dehradun-248 006, Uttarakhand.
6. Director, National Bureau of Animal Genetic Resources, Makrampur Campus, G.T. Road Bye Pass, Near Basant Vihar, P.O. Box 129, Karnal (Haryana)-132001.
7. Director, National Bureau of Fish Genetic Resources, Canal Ring Road, P.O. Dilkusha, Telibagh, Lucknow-226 002, Uttar Pradesh
8. Director, National Institute of Oceanography, Dona Paula-403 004. Goa
9. Director, Wildlife Institute of India, P.B. No. 18, Chandrabani, Dehradun-248 001, Uttarakhand.
10. Director, National Bureau of Agriculturally Important Microorganisms, Kusmaur (Post Bag Kaithauli), Post Box No. 6, Mau Nath Bhanjan, Uttar Pradesh-275 101.
11. Director, Institute of Microbial Technology, Sector 39-A, Chandigarh-160 036.
12. Director, National Institute of Virology, 20-A, Dr. Ambedkar Road, P.B. No. 11, Pune-411001.
13. Director, Indian Agricultural Research Institute, Pusa Road, New Delhi.

Copy to the Chairman, National Biodiversity Authority, 475, 9th South Cross Street, Kapaleeswarar Nagar, Nelankarai, Chennai-600 004.

United Nations Decade on Biodiversity

- NORTHERN REGIONAL CENTRE, DEHRADUN, UTTRAKHAND
- ARID ZONE REGIONAL CENTRE, JODHPUR, RAJASTHAN
- WESTERN REGIONAL CENTRE, PUNE, MAHARASHTRA
- SOUTHERN REGIONAL CENTRE, COIMBATORE, TAMIL NADU
- DECCAN REGIONAL CENTRE, HYDERABAD, ANDHRA PRADESH
- CENTRAL NATIONAL HERBARIUM, HOWRAH, WEST BENGAL
- CENTRAL REGIONAL CENTRE, ALLAHABAD, UTTAR PRADESH
- EASTERN REGIONAL CENTRE, SHILLONG, MEGHALAYA
- ARUNACHAL PRADESH REGIONAL CENTRE, ITANAGAR, ARUNACHAL PRADESH
- SIKKIM HIMALAYAN REGIONAL CENTRE, GANGTOK, SIKKIM
- ANDAMAN & NICOBAR REGIONAL CENTRE, PORT BLAIR, ANDAMAN & NICOBAR ISLANDS
- HIGH ALTITUDE WESTERN HIMALAYAN REGIONAL CENTRE, SOLAN, HIMACHAL PRADESH
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