



BSI NEWSLETTER



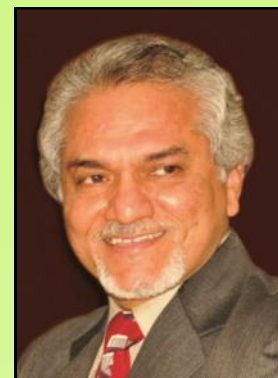
The monthly electronic newsletter of Botanical Survey of India

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October 2014

From the Director's Desk

During the month fifteen field tours were conducted by the Scientists, Botanists Scientific staff and Research students of the various regional centres and units of Botanical Survey of India. The ethno-botanical and medicinal information collected from the various tribes of Odisha, Gujarat and West Bengal are documented in easily retrievable database, which I am sure would form the source for the Traditional knowledge related researches in future.

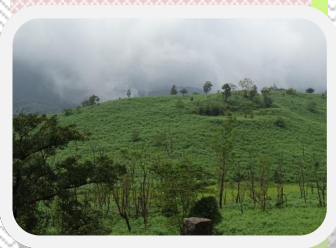


In this month, Officers and Staff of BSI took oath on two occasions, one during *Swatcch Bharat Abhiyan / Clean India Mission* and the other during vigilance awareness week. As you all aware the *Swatcch Bharat Abhiyan* was officially launched on 2nd October 2014 by the Hon'ble Prime Minister of India with the objective to accomplish the vision of a 'Clean India' by 2nd October 2019, the 150th birthday of Father of the Nation, Mahatma Gandhi. On this occasion in all BSI offices oath was taken by the Scientists, Botanists, Administrative staff, PDFs and Research scholars and all participated actively in cleaning the office premises and its surroundings.

On 27th October, in connection with the vigilance awareness week, the Head of the office of all the regional centres and units spoke about the importance of the theme, "*Combating Corruption-Technology as an Enabler*" and the pledge was administered by them in Hindi and English. The Vigilance Awareness Week was observed from 27th October to 1st November 2014 and posters depicting the Vigilance Awareness Week and its theme were displayed in and around BSI office buildings to create responsiveness among the officials, staff and the general public who visited the BSI offices and gardens. Happy browsing!

Dr. Paramjit Singh

Director, Botanical Survey of India, Kolkata



Botanical Survey of India
Established in 1890

HEAD QUARTERS, KOLKATA

A field tour was conducted by Dr. A.B.D. Selvam, Scientist 'C' in connection with 'Pharmacognostic studies on medicinal Aconites of India' to Tawang district of Arunachal Pradesh. Dr. Selvam collected an Aconite plant species with yellow coloured flowers near to Geshila lake and another species with violet/bluish coloured flowers near to Lunda Grazing Ground (62 km from Jung) in rocky mountainous clips. They were later identified as *Aconitum assamicum* and *A. hookeri* respectively.



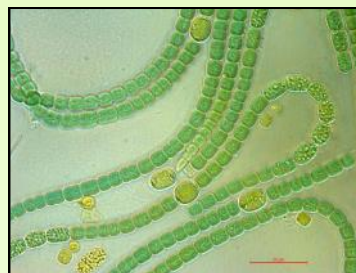
***Aconitum assamicum* – an endemic species from Tawang district of Arunachal Pradesh**

In connection with the wild mushrooms of Sikkim, specimens collected earlier months were identified as *Tricholomopsis rutilans*, *Agaricus xanthodermus*, *Harrya chromapes*, *Lactarius quietus* and *Russula atropurpurea* by Dr. Kanad Das, Scientist 'D'. Similarly, for the ongoing project, wood rotting fungi of Rajmahal hills, nine specimens collected in the previous tour were identified as *Oxyporous cervinogilvus*, *Trichaptum byssogenus*, *Funalia floccosa*, *Inonotus rickii*, *Fuscoporia frerea*, *Hymenochaete rheicolor*, *Radulodon subvinosus*, *Phellinus senex* and *Trametes menziesii* by Sri M.E. Hembrom, Botanist. Dr. Kanad Das also carried out SEM studies of basidiospores of 18 species of wild mushrooms.



***Harrya chromapes* – collected from Sikkim Himalaya forms new record for India**

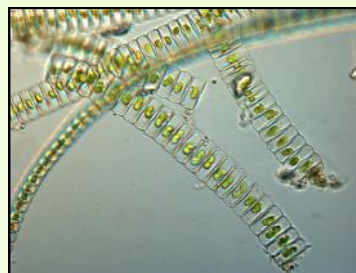
Dr. Sudipta Kumar Das, AJCBPDF, identified total 29 species from the specimens collected in the previous tour in connection with his work on 'Taxonomic diversity and ecology of cyanobacteria and algae in the alpine regions of Eastern Himalayas'. Of which, 7 species under 5 genera belong to Chlorophyta, whilst 22 species under 8 genera belong to Bacillariophyta.



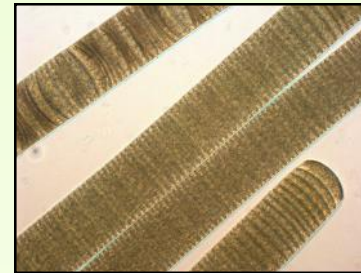
***Anabaena iyengarii* (Cyanobacteria)**



***Cymbella tumida* (Diatom)**



***Diadesmis confervacea* (Diatom)**



***Oscillatoria limosa* (Cyanobacteria)**

Public service rendered

Scientists reviewed the manuscripts received from journals like Mycotaxon, Phytotaxa and Phytotaxonomy and submitted comments and suggestions to the respective journal editors.

AJC BOSE INDIAN BOTANICAL GARDEN, HOWRAH

Dr. S.S. Hameed, Scientist 'C' and his team conducted tour to Northeast India in connection with the project "Indigenous palms of India" and collected 15 species of palms for *ex-situ* conservation in the garden. New seedlings of *Mesua ferrea*, *Swietenia mahagoni*, *S. macrophylla*, *Butea monosperma*, *Lagerstroemia thorelli*, *Cycas rumphii*, *Diospyros discolor*, *Terminalia catappa*, *Peltophorum pterocarpum*, *Shorea robusta*, *Dipterocarpus alatus*, *Licuala grandis*, *Hyphaene thebaica*, *Bentinckia nicobarica* were raised in the nursery.



Dr. S.S. Hameed collecting palms (*Pinanga gracilis*) from Ganga Lake, Arunachal Pradesh



Plant Saplings in Nursery of the AJCBIBG, Howrah

The Great Banyan Tree, an iconic identity of the Garden produced 7 new prop roots. Total 15 aerial roots were either encaged or old supports were replaced/repaired.

Public service rendered

Scientists of Zoological Society, Kolkata were appraised on 13.10.2014 about the Garden & BSI activities. The visited scientists made observations of butterflies and birds found in AJC Bose Indian Botanic Garden.



Dr. A. Pramanik during interaction with Zoological Society scientists

Students/visitors

36 Forest Range Officer Trainees from Central Academy of Forests, Coimbatore and school/college students from West Bengal visited the garden in this month.



School students in the *Roystonea* avenue in AJCBIBG

CENTRAL NATIONAL HERBARIUM, HOWRAH

In connection with the ongoing projects, Flora of Buxa Wildlife Sanctuary, Flora of Jaldapara Wildlife Sanctuary, Flora of Vikramshila Gangetic Dolphin Wildlife Sanctuary and Flora of Gautam Buddha Wildlife Sanctuary the specimens collected in the previous months are being identified.

Public service rendered

Dr. P. Lakshminarasimhan, Scientist 'D' & HoO sent comments on the modified list of threatened plant species of Arunachal Pradesh received from the Arunachal Pradesh State Biodiversity Board for consideration of issuance of Notification under section 38 of Biological Diversity Act, 2002 to the Director, BSI for onward transmission to Dr. Sujata Arora, Director, Ministry of Environment, Forest & Climate Change, New Delhi.

Dr. Lakshminarasimhan collated a list of type specimens in various herbaria after proper editing which was uploaded on ENVIS Centre website. Dr. Lakshminarasimhan also gathered information on National tree and National Flower of India and the same was uploaded on the ENVIS Centre website.

Sent scanned images of seven authentic sheets belonging to *Alocasia navicularis*, *A. indica*, *A. macrorrhiza*, *Raphidophora grandis* and *Amorphophallus commutatus* (Araceae) to Sri Himanchal Thapa (student), Tribhuvan University, Nepal. Also sent the scanned type images of *Habenaria prazeri* and *H. shweliensis* to Dr Hubert Kurzweil, Senior Researcher, National Parks Board, Singapore Botanic Gardens, Singapore.

Sent scanned / digital images of *Lantana* specimens deposited in the herbaria of 10 Regional Centres of BSI after collating to Prof. C.R. Babu, Emeritus Scientist, School of Environmental Studies, Centre for Environmental Management of Degraded Ecosystems (CEMDE), University of Delhi, Delhi.

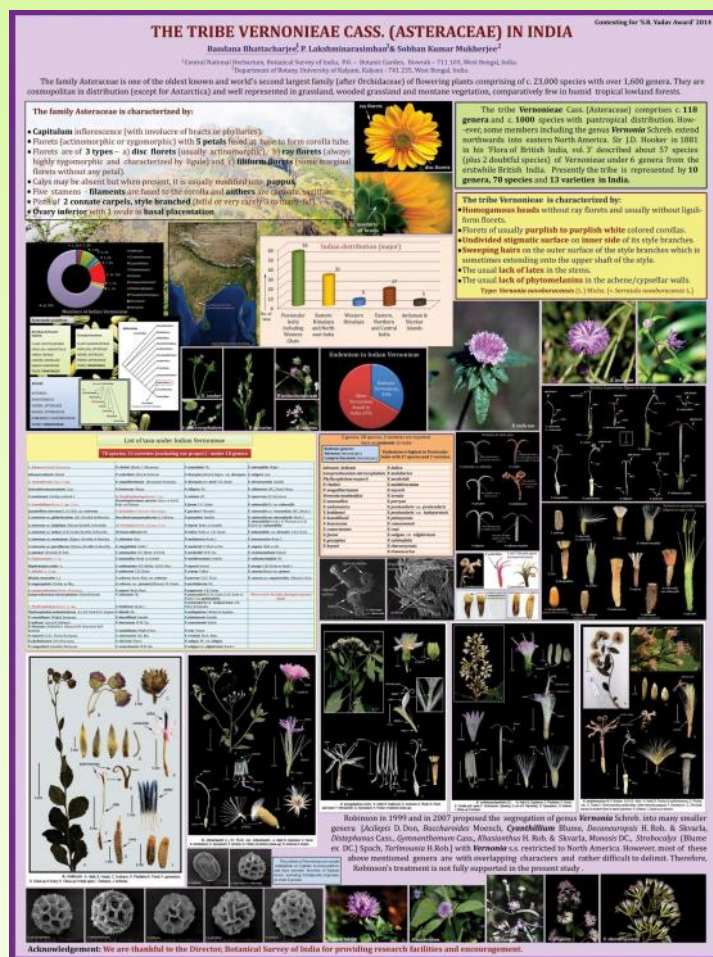
Literatures requested were scanned and sent after scanning them (in pdf format) to various researchers across India. Apart from this 11 specimens were identified and authentication certificates were provided to the researchers of various organisations.

Scientists reviewed the manuscripts received from different journals like *Phytotaxonomy* and *Journal of Bombay Natural History Society* and sent the comments.

Meeting /conference attended

Dr. P. Lakshminarasimhan and Dr. V. Sampath Kumar, Scientist 'C' attended the meeting at BSI, Hqrs., Kolkata on

30.10.2014 for discussion on Management Information System (MIS) of Reporting Mechanism of Research Activities of BSI for which software module is being prepared by NIC. Ms. Bandana Bhattachajee, SRF presented a poster, entitled "The tribe Vernoneae Cass. (Asteraceae) in India" in '24th Annual Conference of Indian Association for Angiosperm Taxonomy (IAAT) and International Conference on Trends in Plant Systematics (ICTIPS)' organized by Bharathidasan University, Tiruchirappalli from 31.10.2014 to 02.11.2014 and received 'S.R. Yadav Award 2014' for the best poster presentation in that category.



Vigilance Awareness Week

Vigilance Awareness Week was observed with the theme "Combating Corruption-Technology as an Enabler" from 27th October to 1st November 2014. In this connection a pledge was administered by the HoO, CNH in Hindi and English to all the officers, scientific, administrative staff and research scholars of Central National Herbarium, Cryptogamic, Plant Chemistry, Pharmacognosy units of Hqrs and Central Library of BSI located in CNH building. Posters depicting the Vigilance Awareness Week and its theme were displayed in and around

CNH building to create responsiveness among the official staff and the general public, who visited the CNH and AJC Bose Indian Botanical Garden.

Lecture organised

A talk on "*Taxonomic studies on the genus Arisaema Mart. (Araceae) in India*" by Prof. Santhosh Nampy, Department of Botany, Calicut University, Kerala was organised at CNH conference room during the visit of Prof. Nampy to CNH for herbarium consultation. The talk on *Arisaema* was attended by the Scientists, Botanists, Scientific staff. AJCBPDF and Research scholars on 31.10.2015.



During Vigilance Awareness Week Pledge was administered by the HoO, CNH to the officials

Scanning Electron Microscopy

Scientists, scientific staff and research scholars of BSI micrographed 61 samples by utilising SEM installed at CNH. The samples include spores of fungi, thalli and spores of liverworts and hornworts, styles of Asteraceae, nuts of Cyperaceae and pollens of Lauraceae.

Publication

Bhattacharjee, A. and Chowdhery, H.J. 2014. Lectotypification of the name *Chrysobaphus roxburghii* (Orchidaceae). *Taxon* 63 (5): 1114–1116.



One of the posters depicting the Vigilance Awareness Week and its theme were displayed in and around CNH building for public awareness

CENTRAL BOTANICAL LABORATORY, HOWRAH

A field tour conducted to Balasore district under the project 'Flora and Ethnobotany of Balasore District, Odisha' by Dr. K.A. Sujana Scientist 'C', Sri R. Saravanan, Bot. Asst., Sri Amit Diwakar Pandey, Sr. Pres. Asst. from the last week of October to mid-November 2014. Dr. Sujana identified 88 plant species of lianas collected from Kuldhiha WLS, Balasore district, Odisha.

Total 46 plant species of Deogarh district, Odisha were identified by Dr. Harish Singh, Scientist 'C' and HoO, Sri P.K. Baske, Botanist and Dr. Dhole Pankaj Arvind, Bot. Asst.; 15 plant species of Jajpur district, Odisha were identified by Sri P.K. Baske under the project 'Ethnobotanical Study of Odisha (Phase-II)'. Officials of CBK documented the following ethnobotanical data in a prescribed format: 50 from Deogarh district by Dr. Harish Singh; 98 from Ganjam district by Nagaraju Siddabathula and 50 from West Dinajpur district, West Bengal by Sri P.K. Baske. In connection with the project, 'Ethnobotanical study of Lodha (A primitive tribal Group) of

West Bengal and neutraceutical analysis of selected plant species' Ms. Sagari Chaudhury, JRF visited forest areas of Paschim Medinipur for collection of ethno-botanical information and plant specimens .



Suregada multiflora – fruit paste used in skin infection

A Lodha Medicine man – in Paschim Medinipur



During this one-week tour Ms. Chaudhury collected 57 nos. of ethno-botanically interested species from Keshiary, Narayangardh and Sankrail Blocks of Paschim Medinipur district. Further about 75 ethno-botanical uses were recorded. Of the 75 uses, 46 are of medicinal, 13 are of food value, 3 are used in snake, scorpion and dog bites, 1 in pesticide, 1 in rope making, 2 with timber value, 2 with ethno-veterinary use, 2 are land races of paddy and the rest are used for miscellaneous purposes.

Public service rendered

Informations requested were provided to 12 Students and 2 Teachers from the Department of Botany, University of Science and Technology, Meghalaya.

Publications

Joseph J, Ragi, P.R., Sujana, K.A. and Anil Kumar, N. 2014. Anti-fungal activity of selected plant extracts on *Peridiospora morii* causing brown rust in Mulberry. *Internatl. J. Bioassays* 1(9): 587–591.

INDUSTRIAL SECTION INDIAN MUSEUM, KOLKATA

For enrichment of Botanical Gallery with plant materials as well as photographs of selected species, a field tour was undertaken in tribal localities of Giridh and adjacent district of Ranchi in Jharkhand state in the month of September 2014 and collected 44 plant species. Of the 44 species, 12 were processed for incorporation as exhibits of the Botanical Gallery. Similarly, follow up actions was undertaken on materials collected from Shillong tour in earlier months, 8 plant materials were identified and displayed with the appropriate labels.



***Tephrosia purpurea* (Fabaceae), Leaf decoction used in dyspepsia by Oraon tribe in Jharkhand**

As a part of preparing a digital database of BSIS, 396 dicot and 202 monocot herbarium specimens and 250 specimens collected by I. H. Burkill (an eminent economic botanist) were listed along with their relevant field notes. 13 unidentified members of the family Poaceae (grass family) were also authenticated.

In connection with the 'Revision of the family Gesneriaceae in Northeast India', Ms. Sudeshna Datta, Bot. Asst. made detailed study on 4 species viz., *Didymocarpus primulifolius*,

Chirita anachoreta, *Didymocarpus curvicapsa* and *D. andersonii* and prepared an illustration of *Rhynchoglossum obliquum*.



***Celastrus paniculatus* (Celastraceae), fruits and seeds yield oil, applied on scabies by Oraon tribe in Jharkhand**



***Datura metel* (Solanaceae), seed extracts used to cure typhoid fever, diarrhea and dysentery by Santhal tribe in Jharkhand**

Under the project, 'Interpretation of the family Compositae in *Icones Roxburghianae*' is in progress, in which description of 8 species were completed viz., *Artemisia indica*, *A. vulgaris*, *Conyza lacera*, *Echinops echinatus*, *Elephantopus scaber*, *Gnaphalium orixense* and *Sonchus oleraceus*.



***Martynia annua* (Myrtyniaceae), dried fruits applied on eczema and for skin diseases by Santhal tribe in Jharkhand**

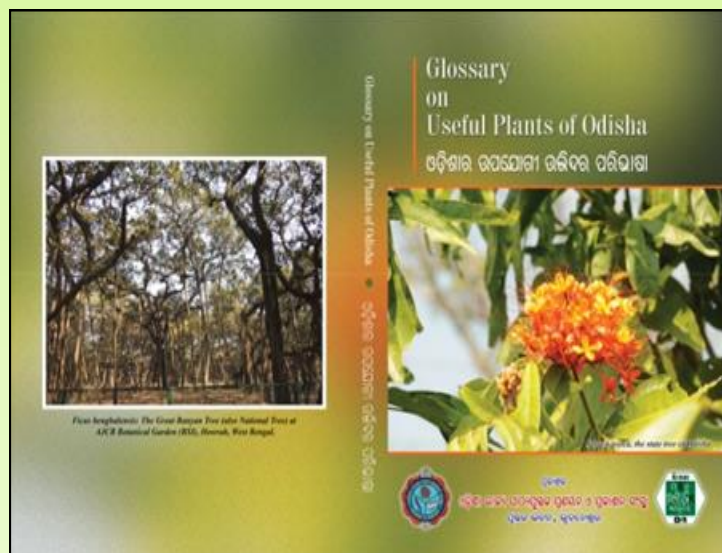
Visitor

Mr. Jim Broughton, Head of International Engagement, The Natural History Museum, Cromwell Road, London, visited Botanical gallery on 18th September 2014.

Publication

"Glossary on Useful Plants of Odisha", by Dr. A. K. Sahoo, Scientist 'C', was published by Govt. of Odisha (Department of Higher Education) in October 2014. It is a reference book for

graduation and post-graduation level students with Botany as a subject in higher studies. The glossary is a compilation of 960 nos. of plant species (35% of total species reported from this state) available as wild or cultivated and are used as edible, medicinal, oil-yielding, dye-yielding, tan-yielding, resin-yielding, gum-yielding, fiber-yielding, timber-yielding, fodder, fuel, veterinary medicine and socio-economic aspects of common man living in villages with rural folklore in 30 different districts of Odisha, a coastal state of Eastern India. The glossary also contains a list of ca 7000 Vernacular names (in Odia, Bengali, Hindi, Telugu, English along with major tribal communities viz., Kondh, Gond, Santal, Kolha, Munda, Saora, Paroja, Oraon etc.).



ANDAMAN AND NICOBAR REGIONAL CENTRE, PORTBLAIR

Dr. M.Y. Kamble, Scientist 'C' conducted one tour to Trinket Island, Nancowry and vouched 149 Field Numbers. Dr. Kamble also determined the specimens of 38 Field Numbers from the Landfall Island.

Dr. C. Murugan, Scientist 'D' & HoO identified 100 plant specimens into 25 species from the earlier collections from Rani Jhansi Marine National Park.

Dr. T.A.M. Jagadeesh Ram, Scientist 'C' studied chemistry of 96 Lichen specimens collected earlier from Nicobar Islands by TLC and he has labeled 373 field numbers.

Dr. Lalji Singh, Scientist 'C' in connection with the Germination Studies on forest trees of Anadamn and Nicobar Islands, seeds of ten species were sown at Dhanikari Experimental Garden-cum-Arboretum .

- *Cerbera manghas* – 18 nos.
- *Codiocarpus andamanicus* – 200 nos.

- *Cycas zeylanica* - 19 nos.
- *Diospyros elliptica* – 100 nos.
- *Mangifera andamanica* - 20 nos.
- *Phyllanthus columnaris* – 50 nos.
- *Syzygium andamanicum* – 200 nos.
- *Terminalai arjuna* – 50 nos.
- *Terminalia catappa* – 25 nos.
- *Calamus palustris* – 35 nos.

In connection with the Phenological Survey of Dhankari Experimental Garden-cum- Arboretum, phenology of 12 tree species were noted down from the Garden-cum-Arboretum by Dr. Lalji Singh.

During this month 530 herbarium sheets belonging to 26 families were scanned in connection with the development of virtual herbarium.

Visitors

Seven dignitaries from various research institutions visited the Dhanikari Experimental Garden-cum-Arboretum, Nayashar during this month.

Public service rendered

Dr. C. Murugan, Scientist 'D' & HoO acted as a jury member for the Elocution competition organized by the Department of Environment and Forests, Port Blair on 08.10.2014 at Conference Hall, Van Sadan, Port Blair.

Function/Lecture attended

Dr. C. Murugan participated in the valedictory function of wildlife week celebration at the Megapode Resort, Port Blair on 09.10.2014, organized by the Department of Environment and Forests, Port Blair.

Sri Gautam Anuj Ekka, Pres. Asst. attended lecture on "The Genetic heritage of South Asia: Tracking its history, conserving its future" by Dr. Uma Ramakrishnan. The lecture was organised by the Andaman & Nicobar Island's Environmental Team (ANET) - Centre for island Ecology at Megapode Nest, Conference Hall on 10.10.2014.

ARUNACHAL PRADESH REGIONAL CENTRE, ITANAGAR

Dr. R. Gogoi, Scientist 'D' and Sri. B.B.T. Tham, Botanist undertaken a field exploration tour for about 20 days from 3rd week of October to Pakke Tiger Reserve & Wild Life Sanctuary, Western Arunachal Pradesh. Dr. K. Rawat, Scientist 'C' conducted one local field trip and collected ferns by utilising 65 field numbers.

Dr. R. Gogoi identified specimens belonging to 23 field numbers, which were collected in previous field tour. Dr. Gogoi also prepared 3 coloured illustrations of *Impatiens arguta*, *I. tripetala* and *I. marinae*.

Public Service rendered

Dr. M. Bhaumik, Scientist 'D' reviewed a scientific manuscript and sent the comments.

Meetings attended

Dr. M.K. Kandwal, Scientist 'C' participated Hindi *Abhimukhi* Programme for Hindi Officers from 13.10.14 to 17.10.14, conducted by *Rajbhasha Vibhag*, Ministry of Home Affairs, New Delhi.

Dr. V.K. Rawat, Scientist 'C' attended *Rajabhasha* meeting held at Ayurved Regional Research Institute, Itanagar. Dr. M. Bhaumik, Scientist 'D' attended meeting of the 21st State Board for Wildlife on 27.10.2014 at PCCF office, which was held under the chairmanship of Hon'ble Chief Minister of Arunachal Pradesh.

Student/visitor

Ms. Poushali Das, JRF, University of Calcutta visited the ARUN herbarium on 20.10.2014.



A view of Pakke Tiger Reserve & Wild Life Sanctuary on the bank of river Kameng



Musa argentii – a recently described wild banana species by Gogoi and Borah

ARID ZONE REGIONAL CENTRE, JODHPUR

Sri Vinod Maina, Scientist 'C' & HoO conducted one Ethnobotanical exploration tour to Dang Dist., Gujarat for about 15 days from the end of October to mid-November and collected information along with the specimens of 191 field numbers.



Ethnobotanical interaction with tribal people of Dang, Gujarat



Collecting and observing the ethnomedicinal use of *Zingiber sp.* at Dang, Gujarat

The following plants collected from Dang district, Gujarat were introduced to botanic garden at AZRC office campus as a part of *ex-situ* conservation.

- Aerides multiflora* (orchid)
- Costus speciosus* (medicinal)
- Curcuma amada* (medicinal)
- Millettia peguensis* (ornamental)
- Sterculia urens* (ornamental)
- Terminalia bellirica* (medicinal)
- Zingiber spp.* (medicinal)

In connection with the project, 'Phenological data of introduced species in Desert Botanical Garden' data of 15 species were recorded during this month.



Acacia senegal in flowering stage



Senna auriculata in full bloom

BOTANIC GARDEN OF INDIAN REPUBLIC, NOIDA

Total 32 species were introduced in the garden, which were received from Acharya Jagadish Chandra Bose Indian Botanic Garden, BSI, Howrah.

Bambusa ventricosa (Poaceae) – Buddha Belly Bamboo (3 nos.)

Brownea coccinea (Fabaceae) – Brownea, Scarlet Flame Bean, Mountain Rose (3 nos.)

Butea monosperma (Fabaceae) – Palash (2 nos.)

Campsis grandiflora (Bignoniaceae) – Trumpet Vine Creeper (2 nos.)

Caryota urens (Arecaceae) – Fishtail Palm Toddy palm, Wine Palm, Jaggery Palm (3 nos. + 20 seeds)

Chrysophyllum cainito (Sapotaceae) – Rassogola, Cainito, Star Apple, Golden Leaf Tree (3 nos.)

Cinnamomum cassia (Lauraceae) – Cinnamomum (2 nos.)

Couroupita guianensis (Lecythidaceae) – Cannon Ball, Shivlingi (3 nos.)
Dracaena braunii (Asparagaceae) – Lucky Bamboo (2 nos.)
Gustavia augusta (Lecythidaceae) – Gustavia (2 nos.)
Heritiera littoralis (Malvaceae) – Sundari, Looking-glass Mangrove Long-handled silver leaf tree (2 nos.)
Hyphaene thebaica (Arecaceae) – Branched Palm (2 nos.)
Licula grandis (Arecaceae) – Fan Palm, Ruffled Fan Palm or Palas Palm (5 nos.)
Mesua ferrea (Calophyllaceae) – Gajapushpam, Nag Champa, Nagakesar (2 nos.)
Myristica fragrans (Myristicaceae) – Nutmegh, Jaiphal (2 nos.)
Nelumbo nucifera (Nelumbonaceae) – Kamal, Lotus, sacred lotus, bean of India (2 nos.)
Nyctanthes arbor-tristis (Oleaceae) – Harsingar, Paarijat (1 no.)
Pandanus pygmaeus (Pandanaceae) – Dwarf Kewrah (2 nos.)
Passiflora caerulea (Passifloraceae) – Blue Passion flower (3 nos.)
Phoenix rupicola (Arecaceae) – Phoenix, Cliff Date Palm (100 seeds)
Phyllodium longipes (Fabaceae) – Choti plant (3 nos.)
Pimenta dioica (Myrtaceae) – Allspice, Peppercorn, Jamaica pepper, Myrtle pepper (1 no.)
Pterospermum acerifolium (Malvaceae) – Bayur, Kanak Cham-pa, Muchakunda or Karnikara tree, Dinner Plate Tree (2 nos.)
Pterygota alata (Sterculiaceae) – Mad Tree, Buddha Narikel (3 nos.)
Plumeria pudica (Apocynaceae) – Golden Arrow or Gilded Spoon (2 nos.)
Saraca asoca (Fabaceae) – Ashok (3 nos.)
Shorea robusta (Dipterocarpaceae) – Saal, Sakhua (2 nos.)
Swietenia mahagoni (Meliaceae) – Mahogany (3 nos.)
Syzygium malaccene (Myrtaceae) – Jamrule, Malay rose apple, or Jambu merah (1 no.)
Terminalia arjuna (Combretaceae) – Arjun, Arjuna (2 nos.)
Terminalia chebula (Combretaceae) – Haritaki, Harad, Harar (1 no.)
Thunbergia erecta (Acanthaceae) – Bush Clock Vine and King's -mantle (1 no.)

Cutting of the following plant species were made for multiplication:

Rosa chinensis (Mixed) – 200 nos.

Euphorbia milii – 104 nos.

Graptopetalum paraguayense (Jade Plant/ Mother-of-pearl-plant and Ghost plant) – 200 nos.

Hildegardia populifolia – 87 nos.

Nerium oleander – 23 nos.

Gyrocarpus americanus – 50 nos.

Tribulus terrestris (Medicinal Plant): 5 nos.

Thevetia peruviana (Ornamental and Medicinal Plant): 22 nos.

Besides, seeds of about 50 winter annuals were sown in plots, which include *Alcea setosa* (Hollihock), *Lobularia maritime* (Alyssum); *Antirrhinum majus*; *Brassica juncea* (ornamental Mustard 'Red Giant'), *Calendula officinalis* (Calendula), *Centaurea cyanus* (Corn Flower), *Cosmos bipinnatus* (Cosmos), *Cotula turbinata* (Babuna), *Mesembryanthemum criniflorum* (Ice flower), *Dianthus barbatus* (Dianthus), *Dimorphotheca pluvialis* (Dimorphotheca), *Eschscholzia californica* (California poppy), *Papaver somniferum* (Poppy), *Petunia superbissima* (Petunia), *Phlox paniculata* (Phlox), *Tagetes erecta* (Marigold), *Tropaeolum majus* (Nasturtium) and *Verbena canadensis* (Verbena).

Total 63 individuals of following 19 species were provided to the Acharya Jagadish Chandra Bose Indian Botanic Garden, BSI, Howrah: *Abelia chinensis* (Abelia); *Alternanthera versicolor* (Lady Anthera (Green & Red)); *Chlorophytum brivilianum* (White Musli); *Clerodendrum inerme* (Inerme); *Dracaena reflexa* (Song of India); *Epipremnum aureum* (Money plant : Green); *Euphorbia cotinifolia* (Euphorbia : Red); *Ficus panda* (White Panda); *Ophiopogon japonicus* (Mondo/Monkey grass, Fountain plant, "snake's beard"); *Pittosporum eriocarpum* (Agni, Endangered Plant); *Portulacaria afra* (Zade Plant); *Putranjiva roxburghii* (Garvkar); *Ruellia simplex* (Jal Bahar); *Schefflera venulosa*; *Thevetia peruviana* (Yellow Oleander or Lucky Nut or Kaner); *Tradescantia pallida* (Lal Patti); *Echinodorus palifolius* (Mexican sword plant); *Myriophyllum aquaticum* (Parrot feather); *Nymphaea caerulea* (Blue Nymphaea : Neel Kamal).

In connection with the proposed construction work of Metro Line, an inventory were made within the corridor of alignment of the Metro Line Phase – II inside the garden premises and submitted the report to DMRC as well as to the authorities of BSI and MOEF & CC for further necessary action.

Inventorying the Birds and Butterflies existing inside the BGIR premises was initiated on 26.10.2014 by Ms. Nitu Sethi, Bird Watcher of Sarita Vihar and Dr. Savitri Singh, Principal, A.N. Dev College, Delhi University. They observe these faunal species for a year at least once in a week from 6.00 AM to 9.00 AM.

Meetings attended

Dr. Sheo Kumar, Scientist 'D' attended 16th meeting of the Executive Committee for Biodiversity Parks, which was held under the Chairmanship of Vice-Chairman of DDA in Vikas Sadan, INA, New Delhi on 20.10.2014.

Dr. Sheo Kumar also attended the meeting of Project Evaluation Committee under 'Assistance to Botanic Garden' held under the Chairmanship of Sri Hem Pande, Addl. Secretary in the MoEF & CC on 28.10.2014.

Students/ visitors

Total about 350 visitors were attended during this month, which include 186 students, 12 teachers and 11 foreigners.

News Released: Five (four in Hindi and one in English daily)

देश में पहली बार कलम से तैयार हो रहा कल्पवृक्ष –
हिन्दुस्तान, 05.10.2014, पृष्ठ 6.

नोएडा का बाटेनिकल गार्डन बनेगा भारतीय वनस्पति उद्यान
(प्रदेश का सबसे विकसित वनस्पति उद्यान बनेगा) –
दैनिक जागरण, 10.10.2014, पृष्ठ 23.

वनस्पति उद्यान या औषधियों का खजाना (यहाँ पौधों के रूप
में उपलब्ध है हर मर्ज की दवा) – *दैनिक जागरण*,
15.10.2014, पृष्ठ 24.

नोएडा में बाटेनिकल गार्डन के लिए मओयू अनुमोदित –
दैनिक जागरण, 22.10.2014, पृष्ठ 8.

Kalindi Kunj Metro route to uproot over 200 rare plants:
Metro to pass through 1 Km stretch of NOIDA Botanical
Garden – *The Times of India*, 30.10.2014, pp. 5.

CENTRAL REGIONAL CENTRE, ALLAHABAD

In connection with the ongoing projects on floral diversity of Upper Ganga Ramsar site, Uttar Pradesh, Flora of Chhattisgarh, Floristic diversity of Parvati Aranga Wildlife Sanctuary and adjoining Tikri forest area, Gonda, U.P. a total of 46 species were identified. Similarly, for the Systematic studies on the lichen flora of Kerala, Revisionary studies on the family Pertusariaceae as well as Roccellaceae, Taxonomic studies on lichenised non thlotremoid Indian Graphidaceae identified/ verified 47 specimens by studying morpho-anatomy and Thin Layer Chromatography (TLC) methods.

In connection with the Ex-situ conservation of EET plants of the region in the experimental garden of the office recorded phenological data of 25 plant species.

Students/ Visitors

A group of 37 students of B.Sc. (Botany) and 03 Assistant Professors of Kulbhaskar Ashram Degree College, Allahabad visited the Experimental garden, Herbarium and Library of the regional centre on 20.10.14. A lecture was given by Dr. G.P. Sinha, Scientist 'D' & HoO on herbarium methodology, core objectives and activities of BSI.

Thesis submitted

A thesis, work done under AICOPTAX project, entitled "Lichen Flora of Assam" by Ms. Pooja Gupta, JRF was submitted to Devi Ahilya Vishwavidyalaya, Indore, Madhya Pradesh for the award of Ph.D. degree. This work was done under the Joint Supervision of Prof. C.M. Solanki and Dr. G.P. Sinha.

DECCAN REGIONAL CENTRE, HYDERABAD

Dr. L. Rasingam conducted a field tour to Atmakur, Nagaluty, Dornala and G.V.Pally ranges of Nagarjunasagar Srisailam Wildlife Sanctuary for a week and collected specimens by utilising 82 field numbers. Sri K. Chandra Mohan, JRF conducted a field tour for a fortnight to Purunakote range, Satkosia Wildlife Sanctuary, Odisha and collected specimens of 159 field numbers and identified 6 species. Dr. K. Prasad, Research Associate conducted one day field tours to

Nallamala forest and Saneepai hills, Kadapa and Identified 3 *Habenaria* species and also planted species of *Habenaria*, *Bulbophyllum*, *Acanthephippium*, *Eulophia* and *Goodyera*.

During this month scientists of this Regional Centre completed the documentation of 14 species collected from Seshachalam Biosphere Reserve and Nagarjunasagar Srisailam Wildlife Sanctuary.



***Ceropogia candelabrum* from NSTR WLS**



**Plant survey at Nagarjunasagar Srisailem
Wildlife Sanctuary**

Public service rendered

Identified specimens for the students of Malla Reddy college of Pharmacy, Secunderabad (5 nos.) and for Bhaskar College of Pharmacy, Moinabad (1 no.).

Publication

Venu, P. and Sanjappa. M. 2014. Some observations on a report on Scientometric analysis on Botanical Survey of India. *Curr. Sci.* 107 (7): 1103–1104 (10 October, 2014).

EASTERN REGIONAL CENTRE, SHILLONG

One field exploration tour was conducted by Dr. S.K. Singh, Scientist 'D' for a fortnight to Karnataka and Maharashtra states and collected 40 samples of *Riccia* and 301 samples of other liverworts and hornworts under the 'Project Taxonomic revision of Genus *Riccia* (Marchantiophyta) in India'.



View of Kudremukh National Park, Karnataka

During this month identified 70 taxa (69 Species and 1 var.), description made for 32 spp., in connection with the Floras (Murlen National Park, Mizoram, Assam, South Garo Hills Dist., Meghalaya, Laokhowa Wildlife Sanctuary, Assam, Flora of Eastern Nagaland), finalizing the report of Bryoflora of

Mizoram and Flora of Nagaland checklist by the scientists and scientific staff.

In connection with the Ex-situ conservation of Endemic, Threatened and Economically important plants of the region and recording phenological data on flowering and fruiting of species growing in Barapani Experimental garden, observed and recorded phenological data of 12 plant species growing in the garden.

For the project related to Micro-propagation of RET species, set up an experiment for multiple shoot induction by using different concentrations of plant growth regulator (BAP) for *Ilex khasiana*. Data is being recorded regularly. For *Cymbidium tigrinum*, MS Media prepared and subculture was done. Cultures established *in vitro* are being maintained. 10 plantlets of this species were transferred to the greenhouse. For *Armadorum senapatianum*, MS media prepared with addition of charcoal. Subculture done were at regular intervals. Observations were recorded at regular intervals. 09 plantlets were transferred to the greenhouse. For *Rhododendron coxianum* subculture was done.

For project related to Micropropagation, Phytochemical Screening of Medicinal Plants and Molecular Characterization of selected species of NE India, for *Paris polyphylla* subculture and maintenance of rhizomes in MS medium were done.

More than 100 plant saplings were supplied to AJCIBG, BSI, Howrah for plantation purpose. Scanned images of *Balanophora spp.* were sent to Deccan Regional Centre, BSI, Hyderabad.

Meeting attended

Dr. N. Odyuo, Scientist 'C', represented BSI and attended the meeting of Assam State Board for Wildlife on 21st October, 2014.

Public service rendered

Identified about 45 samples of specimens received from various institutions. 102 number of plant saplings are supplied to English and Foreign Languages University, Shillong for plantation purpose as per their requisition. Plant saplings viz. *Azalea hybrid*, *Camellia sp.* and *Sansevieria sp.* are supplied to Pyllun Village, Ri-Bhoi District, Meghalaya for plantation purpose as requested by them.

Students/visitors

Two Scientists, seven Professors, four Research Scholars, 87 Students, two Teachers, one Taxonomist and two Garden attendants visited the Centre from various Institutions, Colleges and Universities.

Publications

Talukdar, A.D., Roy, D. K. Sinha, B.K and Dutta Choudhury, M. 2014. *Sauromatum meghalayense* (Araceae; Tribe: Areae), a

new species from Meghalaya, India. *NeBIO*, 5(3): 1–3.

Kumar, R., Singh, S.K., Sharma, S. and Mao, A.A. (2013) 2014. New and noteworthy records of Gingers from North-east India. *Keanean J. Sci.* 2: 13–18.

Kumar, R., Singh, S.K., and Sharma, S. (2013) 2014. Fourteen new distributional records of Orchids from Mizoram. *Keanean J. Sci.* 2: 19–24.

Panday, S., Singh, S.K., Kumar, R. and Sinha, B.K. (2013) 2014. Notes on two interesting and less known orchids of Meghalaya. *Keanean J. Sci.* 2: 63–66.

Sharma, S., Singh, S.K., Kumar, R. and Mao, A.A. (2013) 2014. A compendium of Monopodial Orchids of Meghalaya. *Keanean J. Sci.* 2: 93–106.

Panday, S., Verma, D., Singh, S.K. and Sinha, B.K. (2013) 2014. *Bulbophyllum picturatum* – a rare and less known orchid recollected from Mizoram, Northeast India. *Keanean J. Sci.* 2: 53–56.

Verma, D., Singh, S.K., Kholia, B.S., Sinha, B.K. and Panday, S. (2013) 2014. Pteridophytes of Ngepui Wildlife Sanctuary, Mizoram, India. *Keanean J. Sci.* 2: 3–12.

Verma, D., Singh, S.K. and Mao, A.A. (2013) 2014. Notes on diversity and distribution of tribe Orchideae in Meghalaya. *Keanean J. Sci.* 2: 83–92.

NORTHERN REGIONAL CENTRE, DEHRADUN

Ms. Deepa Mishra, SRF conducted a plant collection tour to Banikhet, Lakarmandi, Kajihaar, Kalatope and surrounding areas of Chamba Dist., Himachal Pradesh for about 10 days from the mid-October.

Identified 92 species and made description for about 100 species of Angiosperm in connection with the ongoing projects on Flora of Uttarakhand, Flora of Sultanpur and Kalesar National Park, Floristic Diversity and Phytosociological study of Simbalbara National Park, Flora of Nandhour Wild Life Sanctuary, Flora of Sonanadi Wildlife Sanctuary, Pteridophytes and Bignoniaceae-Revisionary study on the Tree ferns of India and genus *Lepisorus* in India.

Public Service Rendered

Dr. S.K. Srivastava, Scientist 'D' & HoO conducted a three-day tour to inspect the infrastructural facilities at HAPPRC garden at Tungnath from 13th to 15th October 2014. Provided information about the preservation techniques of plant specimens to Ms. Harpreet Kaur, Research scholar, Kurushetra

University. Identified 34 plant specimens received from students, research scholars of various Institutes and Universities.

Students/visitors

20 PG students of Pandit L.M.S. P.G. College, Rishikesh has visited the Herbarium and Botanic Garden. Dr. S. Natesh, Sr. Advisor (Retd.) Department of Biotechnology has visited the centre on 20.10.2014.



Explaining about SEM to PG students from Rishikesh

Explaining Herbarium techniques to PG students from Rishikesh



SIKKIM HIMALAYAN REGIONAL CENTRE, GANGTOK

In connection with the Red listing of Orchids of Eastern Himalaya as per IUCN criteria, 33 orchid species were identified by Dr. Dinesh Kumar Agarwala, Scientist 'C' based on fresh collection and herbarium specimens available at BSHC. Morphological characterization and illustration prepared for 3 species. Total 219 specimens at BSHC were finalized in respect of their identity, geo-coordinates and entry in excel sheets.



Coelogyne nitida—orchid



Pleione praecox— orchid

For the ongoing project on 'Family Rubiaceae for Flora of India (Amplification of the description of ca 65 poorly known species supplemented with illustration and possible photographs)', drawing and description of 10 species were completed by Dr. Mohan Gangopadhyay, Scientist 'D' & HoO. Two local field tour were conducted at Sombaria and Yoksum area, West district of Sikkim and collected specimens with 37 field numbers.

Under Flora of the Shingba Rhododendron Sanctuary work, identification and description of 14 plant species completed by Dr. C.S. Purohit, Bot. Asst. Apart from these projects, phenology of 50 EET plants in the campus garden was recorded weekly, and 71 specimens were identified.



Luculia gratissima with beautiful flowers

Publications

Kumar, V., Agrawala, D.K. Chowdhery, H.J. and Bankoti, N.S. 2014. Lectotypification of *Cyrtopera mannii* H.G. Reichenbach (Orchidaceae). *Richardiana* 15 (October): 91–95.

Kumar, S., Purohit, C.S. and Kulloli, R.N. 2014. Seed germination trends in Threatened Desert Species. In: A. Sharma, O.P. Chaubey and R. Prakash (Eds.), *Seed Technology and Seed Pathology*. Pp. 6–22. Pioneer Publishers.



Paphiopedilum fairrieianum – orchid

SOUTHERN REGIONAL CENTRE, COIMBATORE

For the newly initiated project, 'Seaweed Survey of Karnataka Coast', the west coast of India was extensively surveyed by Dr. M. Palanisamy, Scientist 'C' and Sri S.K. Yadav, Bot. Asst. for about two-week. During the field tour, a total of 226 algal samples (in duplicate) were collected and 452 herbarium sheets were prepared, besides 50 samples of live specimens were preserved in plastic containers for lab study.



Seaweed – *Ulva rigida*



Seaweed – *Gracilaria corticata*

Under the fragile ecosystems, specimens of 23 field numbers were identified from previous collections for the wetland project Karaivetti (ca 4.54 sq. km) and Vaduvur (ca 1.28 sq. km.) Wildlife Sanctuaries, Tamil Nadu by Dr. G.V.S. Murthy, Scientist 'F' & HoO, Dr. Kaliamoorthy, Scientist 'C' and Sri Yarrayya Kondru.

Identification of the previous collections are being carried out by Dr. K.A.A. Kabeer, Scientist 'C' and Sri G. Gnanasekaran, Bot. Asst. for the ongoing project Srivilliputhur Grizzled Giant Squirrel Wildlife Sanctuary, Tamil Nadu (ca. 485 sq. km.). Similarly, specimens of 19 field numbers were identified by Dr. J.H. Franklin Benjamin. Scientist 'B' and Sri R.G. Vadhyar for the Malabar Wildlife Sanctuary, Kerala (ca. 74.22 sq. km.).

Taxonomic descriptions for 16 taxa of the sedge family Cyperaceae were completed by Dr. K.A.A. Kabeer and Dr. J.H. Franklin Benjamin for the *Flora of Kerala*.

Under *Ex-situ* conservation of endangered and threatened plants, Dr. S. Kaliamoorthy, Sri B.S. Elango, and Sri T.S. Saravanan introduced 3 new plants of 2 species, multiplied 79 orchids and transplanted 44 plants at National Orchidarium & Experimental Garden (NO & EG), Yercaud. They also developed 174 seedlings, 13 cuttings and repotted 8. Besides these, recorded the phenology of 26 species including 15 orchids. They also collected and inoculated 4 orchid taxa namely (a) *Coelogyne nitida*, (b) *Coelogyne nervosa*, (c) *Cymbidium bicolor* and (d) *Vanda* spp. onto basal MS medium for tissue culture study.

Public service rendered

Total more than 240 pages of photocopies were supplied to the researchers, who visited SRC library for consultation.

Dr. J.H. Franklin Benjamin, Mr. J.V. Sudhakar, Bot. Asst., Sri S.K. Yadav, Bot. Asst., and Mr. R.G. Vadhyar delivered 4 lectures and conducted taxonomy classes to the PG students of the Dept. of Plant Genetic Resources, Tamil Nadu Agricultural University. The SRC, in a joint collaboration with the KKTm college, Kodungallur, Kerala conducted a national seminar cum workshop on "Plant Systematics and Herbarium Techniques" at KKTm college, Kodungallur, Kerala. In this, Sri J.V. Sudhakar and Sri R.G. Vadhyar delivered lectures and practically demonstrated the herbarium techniques to the participants. Sri Sudhakar also accompanied the team of Bharathidasan University, Trichirapalli to Palani hills for collection of plants. Sri G. Gnanasekaran demonstrated herbarium digitization technique to the scientists of Central Council for Research in Unani Medicine, Chennai with assistance of R. Mehala Devi and also delivered a lecture to the PG students of Devagiri College, Calicut.



Booklet of herbarium techniques compiled by BSI staff released at a National seminar at KKTm college, Kodungallur, Kerala

Scanning Electron Microscopy

Sri G. Gnanasekaran imaged 20 SEM micrographs of the leaf surface and seeds of the genus *Andrographis* (Acanthaceae). Sri Gnanasekaran also scanned seed samples of five species of *Smithia* (Legume) for Dr. M. Sanjappa, former Director, BSI.

Students/visitors

Total 133 visitors including research scholars, scientists/professors/lecturers, UG and PG students consulted MH herbarium and SRC library, whilst a total of 556 persons in 87 parties visited NO & EG, Yercaud.

Meetings attended

The scientific personnel of this centre attended the Ph.D. viva-voce of Sri M.A. Joseph and Ms. P. Binitha at Bharathiar and Karpagam Universities, Coimbatore on 8 and 9 October 2014 respectively.

Publication

Palanisamy, M., Yadav, S.K. and Murthy, G.V.S. 2014. Distribution and diversity of marine macro algae of Kasaragod coast, Kerala; *Seaweed Res. Utiln.*, 36 (1&2): 1–5.



Demonstration of herbarium techniques by BSI officials at National Seminar held at Kerala

WESTERN REGIONAL CENTRE, PUNE

Ms. Shreya Sen Gupta, JRF conducted one fungal exploration tour from the last week of September to first week of October under the project 'Microfungi of Biligiri Rangaswamy Temple wildlife Sanctuary'

Dr. S.K. Das Das, Botanist conducted a field tour to Sharavathi WLS for about a fortnight from the second week of October under the project "Flora of Sharavathi Valley Wild life Sanctuary, Shimoga, Karnataka".

Devendra Tripathi, JRF conducted one field tour to Lonawala, Khandala, Mahabaleshwar and Purandar for collection of Pteridophytes along with Dr. S.K. Singh, Scientist 'D', ERC, Shillong on 3 different days .

Dr. A. Benniamin, Scientist D & HoO and DevendraTripathi JRF conducted one day field tour to Puranther forest area along with Dr. S.K.Singh, Scientist 'D', ERC, Shillong on 21. 10. 2014.

Dr. A. Benniamin and Devendra Tripathi, conducted one field tour to Kudremukh National Park, Karnataka from the end of October to 1st week of November 2014 under the project "Ferns of Karnataka".

During this month 48 angiosperms specimens, 33 fungal

specimens and 5 pteridophyte specimens were identified by different scientists and research scholars of this centre.

Scanning Electron Microscopy

Spores of *Anogramma leptophylla*, *Tectaria macrodendata*, *T. coadunata*, *Pteris vittata*, *Lepisorus nudus* were studied and micrographed under Scanning Electron Microscope (SEM).

Students/visitors

Ms. Madhumitha Biswas, Director and Sri Suban Banerjee, SO of MOEF & CC visited for O&M on 17th October 2014. For consultation of herbarium and library students visited from Shivaji University, Kolhapur and Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.

Publications

Dubey, R. and Neelima, A.M. 2014. *Goosomyces bambusicola* – A new cheirosporous anamorphic species from Western Ghats, India. *Curr. Res. Env. App. Mycology (CREAM)* 4(2): 211–216.

Dubey, R. and Neelima, A.M. 2014. Some New Records of conidial Fungi for India. *J. New Biol. Rep.* 3(3):200-203.

“Swatchh Bharat” Abhiyan



Swatchh Bharat pledge being administered at AJC Bose Indian Botanical Garden, Howrah



Cleaning drive in Economic Botany section, CBL, Howrah



Pledge taking at APRC, Itanagar



Staff cleaning at CRC, Allahabad



Officers and staff members while participating Clean India Mission at BSI Office campus, NRC, Dehra Dun



Staff of the SRC, Coimbatore engaged in cleaning of the office premises

PLANT OF THE MONTH



Victoria cruziana A.D. Orb. (NYMPHAEACEAE) - a native of South America is also known as Santa Cruz water lily, named in honour of Andrés de Santa Cruz, President of Peru and Bolivia, who sponsored an expedition to Bolivia in which the first specimens of this species were collected. [Dr. B.K. Singh, AJCBIBG]

Kalindi Kunj Metro route to uproot over 200 rare plants

Metro To Pass Through 1km Stretch Of Noida Botanical Garden

Shafaque Alam
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Noida: Delhi Metro Rail Corporation's Botanical Garden-Kalindi Kunj route will cause a relocation of several ornamental and medicinal plants in the garden as they fall in the proposed route.

Officials at Botanical Garden said the route would affect 160 fully grown and 100 smaller plants that need relocation.

The garden in Sector 38A, sprawling across 160 acres, had been built as a repository of rare plants brought from different parts of India. The existing Rajiv Chowk-Noida City Centre Metro line already crosses over and occupies a large part of the garden, where there is no plantation. About 1km of the proposed Botanical Garden-Kalindi Kunj route will now pass through the garden.

Sheo Kumar, a scientist in charge of the garden, said, he has informed the DMRC officials about the plants that need to be relocated. "We have sub-



Digging in Botanical Garden has already begun

mitted a report to the DMRC. This is a DMRC project and the resettlement will be done by them," he said. Large plants including *lannea coromandelica*, *wrightia tinctoria*, *lagerstroemia*, *pterocarpus marsupium*, *terminalia arjuna*, *lannea coromandelica* will be moved.

DMRC officials said they have already identified the

alignment inside the Botanical Garden and garden authorities are aware of it. They, however, said the number of plants that need to be transplanted would be lesser than 160.

"Some 40 plants are to be transplanted and DMRC has requested the Botanical Garden authorities to execute the work; Delhi Metro will bear the

cost of relocation," Tomojit Bhattacharjee, DMRC spokesperson, said.

DMRC workers have started digging in the garden since the project has been scheduled to complete by 2017.

Experts feel the relocation of grown trees is a difficult task as it needs specialised people and sophisticated technology. Choosing a suitable location for resettlement is very important for the plants' survival. Arun Pandey, professor of Botany at Delhi University said relocating old trees is difficult because of their size and weight. The trees must be placed under intensive care, before, during and after transplanting.

K K Singh, divisional forest officer of Gautam Buddha Nagar, said if the trees are large then their branches need to be pruned. "We do not have sophisticated technologies, hence the plants will be uprooted with JCBs. We will try to transplant all the trees with utmost care," he said. The transplantation work is yet to start.

Send your comments and suggestions

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