

BSI NEWSLETTER

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HEAD QUARTERS, KOLKATA

In connection with the Studies on wild mushrooms of Sikkim, Dr. Kanad Das conducted a macrofungal survey tour to East and South districts of Sikkim from 21st to 27th August 2017 and collected 38 field numbers of specimens belonging to 28 species.

For Studies on the macrofungi of AJC Bose Indian Botanical Garden, Howrah Dr. Kanad Das, Mr. Manoj Emanuel Hembrom, Botanist and Sri Arvind Parihar, Bot. Asst. collected specimens of three field numbers, KMA-17-23; KMA-17-24; KMA-17-25 and made their macro-characterization and preservation. Identified two specimens KMA-17-23 as *Hjortstamia friesii* (Lév.) Boidin & Gilles (Phanerochaetaceae) and KMA-17-24 as *Geastrum* sp. (Geastraceae).

For the project, "Pharmacognosy of Indian Cycads" Dr. A.B.D. Selvam, Scientist 'D' studied anatomical features of the cross section on the leaf of *Cycas* sp. under Light Microscope (LM), which was collected from AJC Bose Indian Botanical Garden campus.

For the ongoing projects, Revision of the family Metzgeriaceae in India, Liverworts and Hornworts Flora of Darjeeling District, West Bengal and Wood rotting fungi of Rajmahal hills the scientists identified the specimens and made drawings and descriptions.

Public service rendered

Dr. A.B.D. Selvam pharmacognostically studied and authenticated 5 vegetable crude drug samples, which were received from PSG College of Pharmacy, Coimbatore, Tamil Nadu as detailed below:

Rhizomes of *Alpinia officinarum* Hance (Zingiberaceae).

Dried rhizomes of *Zingiber officinale* Roscoe (Zingiberaceae).

Fruits of *Piper longum* L. (Piperaceae).

Roots of *Anacyclus pyrethrum* (L.) Lag. (Asteraceae).

Roots/stems of *Glycyrrhiza glabra* L. (Papilionaceae).

For the officials of Forest Survey of India, Eastern zone, Kolkata Mr. Manoj Emanuel Hembrom with the help of Power Point Presentation demonstrated how to identify the common tropical wood rotting fungi. Mr Hembrom also taken them to AJC Bose Indian Botanical Garden as a part of field study and also explained how to characterize fungal specimens under microscope to identify them.

Workshop /seminar/meeting attended/lecture delivered

Dr. R.K. Gupta, Scientist 'D', Dr. D. Singh, Scientist 'D', Dr. Monalisa Dey, Scientist 'B' and Mr. Arvind Parihar, Bot. Asst. attended five-day Workshop cum Hands on Training on "DNA barcoding Molecular analysis & Bioinformatics approaches" from 21st to 25th August 2017 at Eastern Regional Centre, BSI, Shillong.

Dr. A.B.D. Selvam attended the meeting organized by Wildlife Crime Control Bureau (WCCB), held on 03.08.2017 at the Conference Hall, Frontier HQ South Bengal, Border Security Force, Kolkata.

Dr. Kanad Das delivered a talk on "Diversity of wild mushrooms in India" in 1st one day state level seminar on Forest resource and sustainable management in West Bengal organized by Dept. of Botany, Lalgarh Govt. College, Jhargram on 31.08.2017.

Publication

Mukhia, S., Mandal, P., Singh, D.K. and Singh, D. 2017. Study of Bioactive Phytoconstituents and *In-Vitro* Pharmacological properties of thallose liverworts of Darjeeling Himalaya. *Journ. Pharm. Res.* 11 (5): 490–501.

CENTRAL NATIONAL HERBARIUM, HOWRAH

Sri P.P. Ghoshal, Botanist undertaken one field tour to Betla National park from 22.07.2017 to 04.08.2017 and collected 300 plant specimens under 115 field numbers. During the field tour, he identified eight species viz. *Aegle marmelos* (L.) Corrêa, *Cyperus compressus* L., *Phyla nodiflora* (L.) Greene, *Hygrophila polysperma* (Roxb.) T. Anderson, *Lindernia ciliata* (Colsm.) Pennell, *Polygonum plebeium* R.Br., *Glinus lotoides* L. and *Sesamum indicum* L.

Herbarium specimens identification

Dr. V.P. Prasad, Scientist 'D' corrected the identity of five Cyperaceae specimens.

Dr. Vinay Ranjan, Scientist 'D' and Sri Anant Kumar, Bot. Asst. identified 11 field numbers collected from Neora Valley National Park, Darjeeling district, West Bengal.

Dr. O.N. Maurya, Scientist 'C' identified three field numbers collected from Vikramshila Gangetic Dolphin Wildlife sanctuary, Bhagalpur, Bihar.

Public Service rendered

Dr. Prasad evaluated one manuscript for the journal *Phytotaxa* on a new species of *Fimbristylis* from India.

Dr. V. Sampath Kumar, Scientist 'D' reviewed an article on *Premna* (Lamiaceae) for the *Journal of Threatened Taxa*.

Dr. Subir Bandyopadhyay, Scientist 'B' provided PDF of 4 pages from *J. Bot.* 69: 1931 on *Terminalia* to Amol P. Salve, Research Scholar, Department of Botany, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, Maharashtra; of 4 pages from *Rec. Bot. Surv. India* Vol. 16(1), of 3 pages of the protologue of *Flemingia bhutanica* Grierson (*Notes Roy. Bot. Gard. Edinburgh* 44(2): 257–129. 1987) and of 3 pages on *Flemingia* from *Flora of Bhutan* 1(3): 1987 to Dr. Manoj Lekhak, Shivaji University, Kolhapur, Maharashtra and attended the query on the typification of *Terminalia catappa* L. from Amol P. Salve, Research Scholar, Department of Botany, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, Maharashtra.

Dr. G. Krishna, Bot. Asst. identified one specimen as *Artemisia maritima* L., specimen received from Brig. H.S. Narang, through Director, Botanical Survey of India.

Meetings/conference attended

Dr. K. Karthigeyan, Scientist 'D', attended a meeting with Dr. Kulandaivel, Joint Director of Sunderbans Biosphere Reserve, regarding floristic studies in Sunderbans Biosphere Reserve on 10.08.2017.

Dr. Pushpa Kumari, Scientist 'D' attended the Expert Committee meeting as an invited expert member of Scheme for Young Scientists and Technologists (SYST) of Department of Science and Technology, for assessment of the project proposals on 18th and 19th August 2017.

Dr. Avishek Bhattacharjee, Scientist 'B' attended as a member of Programme committee for the project monitoring meeting on 'Scheme for Young Scientists & Technologists (SYST)' of the SEED Division of DST held at CNH on 18th and 19th August, 2017.

Dr. A. Bhattacharjee and Dr. Gopal Krishna attended workshop cum Hands on Training on "DNA barcoding - Molecular analysis & Bioinformatics approaches" organized by Eastern Regional Centre, Botanical Survey of India from 21st to 25th August, 2017.

Lecture delivered /programme organised/celebrated

Central National Herbarium organized a 5-day training programme for 28 Technical staff of Forest Survey of India, Eastern Zone, Kolkata by involving BSI and ZSI scientists as resource persons. The training was inaugurated on 21st August in presence of the Director, BSI and Regional Director, FSI in the committee room of CNH. After completing the training programme a valedictory function was arranged on 25th August. Director, ZSI and Regional Director, FSI were the guests in presence of the Director, BSI. Other senior scientists, staff and scholars of BSI attended the function and certificates were presented to all the 28 trainees by the dignitaries.

Central National Herbarium also organised and coordinated the arrangement of SYST (Scheme for Young Scientists and Technologists) meeting of an expert committee of DST in CNH for the evaluation of DST projects.

An invited lecture by Dr. P. Radha, research officer, CCRS, Palayamkottai, Tirunelveli District, Tamil Nadu on "Indian Cycas" was arranged at Central National Herbarium on 29.08.2017 .

Visitors/students

Dr. Sudanshu Dole, Boston, USA on 15.08.2017.

15 students from Gangadharpur Vidyamandir on 21.08.2017.

Publications

Banik, D., Bora, P.P. Sampath Kumar, V. and Bezbaruah, R.L. 2017. Conspectus on Indian *Gymnacranthera* and *Myristica*. *Rheedea* 27(1): 1–12.

Bandyopadhyay, S. and Bhattacharjee, A. 2017. Responding to requests. *Curr. Sci.* 113(2): 197.

Singh, H., Dhole, P.A., Saravanan, R. and Baske, P.K. 2017. Ethnobotanical Plants used in Sexual disorder in Bolangir and Deogarh district, Odisha, India. *Int. J.Curr. Sci.* 20(3): 57–62.

– Dr. P.V. Prasanna
Scientist 'F' & HoO

INDUSTRIAL SECTION INDIAN MUSEUM, KOLKATA

The botanical paintings by Roxburgh are being interpreted with updated nomenclature. Under this project, two names were interpreted and description of two taxa viz. *Diospyros ebenum* Roxb., *D. kaki* Roxb., prepared from the family Ebenaceae and also 90 names of Poaceae members in Icones Roxburghianae were listed.

Database of Herbarium Specimens

As a part of preparing a database of herbarium specimens at BSIS, 195 numbers of Dicot herbarium specimens were listed and documented.

Updating of Nomenclature of digitized Herbarium Specimens at BSIS

342 numbers of Digitized Herbarium specimens were updated with valid botanical names, basionyms/synonyms.

Public service rendered

Under the Narcotic Drugs & Psychotropic Substances (NDPS) Act, Three samples received from West Bengal Police were identified.

Awareness programme/training organized/attended

In connection with closing ceremony of associated school projects on J.D. Hooker's exhibition (a collaborative programme with CUEH, University of Sussex, UK) about 50 students from Dum Dum Kishore Bharti High School and Dum Dum Motijheel Girls' High School participated in Sit & Draw



School students participating in Sit & Draw and Essay writing competitions at ISIM, Kolkata

and Essay writing competitions (on Environment protection & conservation) followed by prize distribution by Director, BSI held on 05.08.2017 at ISIM, Kolkata. Dr. M. Bhaumik, Scientist 'D' & HoO deliver a lecture on Forests of North East India and identification of common plants to Forest Survey of India trainee at CNH, Howrah on 22.08.2017. Smt. Geeta Chaudhury attended a DDO's training programme on 18.08.2017 at Gangaram Auditorium, Indira Paryavaran Bhawan, Jorbagh, New Delhi.



Director, BSI distributing prize to winners of Sit & Draw and Essay writing competitions at ISIM, Kolkata



Six members DST delegates during a meeting with Director, BSI at ISIM, BSI, Kolkata on 19.08.2017



Six members DST delegates with Director, BSI at herbarium of ISIM, BSI, Kolkata on 19.08.2017



Sri Hem Pandey, IAS, former Special Secretary, MoEF & CC in a meeting with BSI & ZSI officials on 24.08.2017



Sri Hem Pandey, IAS along with Directors, BSI & ZSI and other officials visiting gallery at ISIM, Kolkata

Visit made

Ms. Usha Gopinathan of Thiruvananthapuram visited Botanical Gallery and gathered information in connection with writing of a book on E.K. Janaki Ammal on 10.08.2017.

Mr. Rajarshi Sengupta, Ph.D. Scholar from Dept. of Art History, Visual Arts & Theory, University of British Columbia, Vancouver, Canada visited Botanical Gallery and consulted Thomas Wardle's Natural Dyes Volumes on 10.08.2017.

Six members of DST delegate along with Director, BSI visited ISIM Gallery & J.D. Hooker's exhibition on 19.08.2017.

Sri Hem Pandey, IAS, former Special Secretary, MoEFCC along with Director BSI & Director ZSI and other delegates visited J.D. Hooker's exhibition and discussed various issues with BSI & ZSI officials during a meeting on 24.08.2017.

**– Dr. Manas Bhaumik
Scientist 'D' & HoO**

ANDAMAN & NICOBAR REGIONAL CENTRE, PORT BLAIR

Scientists of BSI described two new species of *Cycas* (*Cycas dharamrajii* & *Cycas pschannae*) and one new species of *Musa* (*Musa paramjitiana*).



New species *Cycas dharamrajii*

New species *Cycas pschannae*



New species *Musa paramjitiana*

Digitization of herbarium specimens

Herbarium sheets Scanned: 594 numbers of family Moraceae, Myristicaceae and Urticaceae.

Herbarium details computerized in EXCEL format: 408 herbarium specimens of families Moraceae and Urticaceae were fed in the computer in a prescribed format.

Meeting/seminar/training programme attended

Dr. Lal Ji Singh, Scientist 'D' & HoO attended Flag Hoisting ceremony at Netaji Subhas Chandra Bose Stadium, Port Blair on 15.08.2017 and also attended a reception on Independence Day at Raj Niwas, Port Blair on 15.08.2017.



Photo: Vivek C.P.

Dr. Lal Ji Singh conducting practical to the trainees of GSDP, Foundation Course at ANRC, BSI



Photo: Vivek C.P.

Trainees of GSDP, Foundation Course visited Horticulture Farm of Department of Agriculture



Photo: G.A. Ekka

Dr. Lal Ji Singh hoisting National Flag at ANRC, Port Blair

Dr. Lal Ji Singh delivered lecture on various topics (Taxonomy, Morphology, Anatomy and Plant Diversity) to the trainees of Green Skill Development Programme, Foundation Course by MoEF & CC at BSI, ANRC, Port Blair.

Dr. Singh attended thesis seminar on "Taxonomy and Ecology of Opisthobranches" in Andaman and Nicobar Islands" at Zoological Survey of India, ANRC, Port Blair on 16.08.2017.

Dr. Singh delivered an invited lecture on Flora of Andaman and Nicobar Islands for Eco-Eureka on Youth engagement workshop on nature and labs at Forest Training Institute, Wimberlygunj, South Andaman on 18.08.2017.



Photo: Vivek C.P.

Dr. Lal Ji Singh delivering lecture for Eco-Eureka on Youth engagement workshop on nature and labs

Dr. T.A.M. Jagadeesh Ram, Scientist 'D' attended the 'Training Programme for DDOs' at Ganganagar Auditorium of Indra Paryavaran Bhavan, MoEF & CC, New Delhi on 18.8.2017.

Dr. Jagadeesh Ram and Sri Gautam Anuj Ekka, Presv. Assts. attended the Workshop cum Hands on training on 'DNA Barcoding - Molecular Analysis & Bioinformatics Approaches' at BSI, ERC, Shillong from 21st to 25th August 2017.

Dr. Sanjay Mishra, Scientist 'B' and Dr. Vivek C.P., Bot. Asst. accompanied the trainees of Green Skill Development Programme for study tour to Horticulture Farm of Department of Agriculture at Dhanikhari on 11.08.2017.

Dr. Mishra delivered lecture on "Introduction to basic classification of plants" and "Introduction to common local flora with their local and scientific names" on 23.08.2017 to the trainees of Green Skill Development Programme, Foundation Course by MoEF & CC at BSI, ANRC, Port Blair.

Dr. Mishra delivered lecture on "Introduction to the concept of Rare, Endangered and Threatened flora &

causes of threats" and "Basics of Tissue culture, techniques, visit to TC lab" on 24.08.2017 to the trainees of Green Skill Development Programme, Foundation Course by MoEF& CC at BSI, ANRC, Port Blair.

Dr. Vivek attended the Ph.D. synopsis presentation of Mr. Seepana Rajendra at ZSI, Port Blair on topic "Studies on the soft coral (Alcyoniidae) of Andaman and Nicobar Islands" on 21.08.2017.



Dr. Sanjay Mishra and Dr. Vivek C.P. accompanied the trainee students of GSDP for study tour to Horticulture Farm of Department of Agriculture

Visitors/students

Dr. M. Sabu, Department of Botany, Calicut University visited herbarium for consultation on 02.08.2017, 03.08.2017 and 12.08.2017.

Sri Joju P. Alappatt, Director, FTI, Wimberligunj visited Herbarium for consultation on 03.08.2017 and 31.08.2017.

25 students and 05 officials of C.P.R. environmental education centre, Port Blair visited office, Library and herbarium on 21.08.2017.

Mr. Hareesh V.S., Research Scholar, Dept. of Botany, University of Calicut, Kerala visited herbarium and library for consultation on 22.08.2017.

Ms. Karthika, Ms. Sugandit, Ms. Shaba, M.Sc., Plant science, JNRM College, Port Blair, visited herbarium, library and Garden on 23.08.2017 and 30.08.2017.

Dr. P. Ragavan, SERB-National Post-Doctoral fellow, CSIR-NBRI, Lucknow to herbarium for herbarium consultation on 29.08.2017.

Publications

Singh, L.J. 2017. *Cycas dharmrajii* sp. nov. (Cycadaceae) from Andaman and Nicobar Islands, India. *Nordic Journal of Botany* 35(1): 69–76.

Singh, L.J. 2017. *Musa paramjitiana* sp. nov. (Musaceae) from Andaman and Nicobar Islands, India. *Nordic Journal of Botany* 35(1): 77–84.

Singh, L.J., and Misra, D.R. 2017. Identity and status of recently described *Cycas pschannae* (Cycadaceae) in the Andaman and Nicobar Islands, India. *Bionature*, 37(1): 38–55.

Singh, P., Jagadeesh Ram, T.A.M. and Singh, K.P. 2017. Record of graphidoid Graphidaceae (lichenized Ascomycota) from the Andaman & Nicobar Islands, India. *Geophytology* 47(1): 37–44.

Jagadeesh Ram, T.A.M. and Sinha, G.P. 2017. Additional lichen records from the Andaman and Nicobar Islands – 3. *Indian J. Forestry* 40(2): 163–172.

Singh, L.J., Mishra, S. and Ekka, G.A 2017. Plant genetic diversity of the Andaman and Nicobar Islands. In: K. Ravichandram, D. M. Shukla and Tarun Coomar (eds.), 50 Years of Indian Forest Service, Department of Environment and Forests, Andaman and Nicobar Islands, India. *Souvenir* 50–56.

– Dr. Lal Ji Singh
Scientist 'D' & HoO

ARID ZONE REGIONAL CENTRE, JODHPUR

Dr. Peddi Harikrishna, Bot. Asst. and Sri Ramesh Kumar, Bot. Asst. conducted a field tour from 10.08.2017 to 28.08.2017 in connection with 'Vegetation characterisation and floristic studies in Bassi Wildlife Sanctuary, Rajasthan using Remote Sensing and GIS' and collected 391 field numbers and 18 live plants for *ex-situ* conservation.

Herbarium specimens identification

Specimens of 55 field numbers identified during the month of August 2017.



Photo: P. Harikrishna

Catharanthus pusillus at Bassi Wildlife Sanctuary, Chittorgarh, Rajasthan



Scientists of AZRC, Joshpur collecting phytosociological data at Bassi Wildlife Sanctuary, Chittorgarh, Rajasthan



Photo: P. Harikrishna

Flower of *Monochoria vaginalis* at Bassi Wildlife Sanctuary, Chittorgarh, Rajasthan

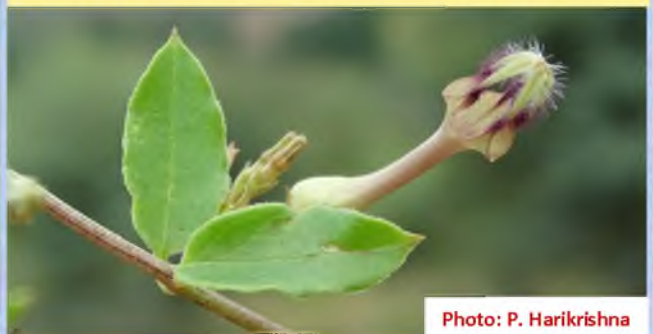


Photo: P. Harikrishna

Ceropegis bulbosa var. *bulbosa* at Bassi Wildlife Sanctuary, Chittorgarh, Rajasthan



Photo: AZRC

Flowering of *Wrightia tinctoria* at Botanical Garden, AZRC, BSI, Jodhpur



Flowering of *Santalum album* at Botanical Garden, AZRC, BSI, Jodhpur

Programme attended

All the Scientists and scientific staff members are attended the closing ceremony of Green Skill Development Programme (GSDP) organised at ZSI, Jodhpur on 28.08.2017.

– Sri Vinod Maina
Scientist 'D' & HoO

CENTRAL REGIONAL CENTRE, ALLAHABAD

Drs. Arti Garg, Scientist 'D' and A.P. Tiwari, Bot. Asst. conducted a field tour to Bhoj Ramsar site and adjoining buffer zones from 24.07.2017 to 04.08.2017 and 327 field numbers were collected under the project, 'Floristic Diversity of Bhoj Wetland, Madhya Pradesh.'



Bhoj Ramsar site - view of a catchment area

Photo: CRC



Nymphaea nouchali in bloom at Bhoj Ramsar site

Herbarium specimen identification

A total of 81 specimens were identified in connection with the project, 'Identification of old unidentified specimens of BSA'.

Dr. Pushpi Singh, DST –SERB N-PDF' identified 13 lichen loan specimens from LWU- LWG herbaria under project 'Taxonomic and phylogenetic reassessment and revision of the genus *Phaeographis* and allied genera in the family Graphidaceae (lichenized fungi: Ascomycota) of India'.

Dr. Pooja Gupta, AJC Bose PDF, consulted cryptogamic herbarium of BSA and sorted about 35 specimens of *Lecidea* for the further studies under 'A taxonomic revision of the genus *Lecidea* Ach. in India.'

Taxonomic descriptions of 15 species were completed under the project 'Trees of Allahabad city and its Environs'.

Dr. G.P. Sinha, Scientist 'E' & HoO, updated nomenclature, consequential changes in key to genera and species and editing of Family Asteraceae under the project 'Editing of Flora of Uttar Pradesh, Vol. II'.

Dr. Arti Garg completed taxonomic description of 6 species of Poaceae under 'Flora of Chhattisgarh' Vol.- II.

Dr. A.N. Shukla, Scientist 'B' recorded exicata and distributional records of 5 species (*Cassia fistula* L., *Cassia occidentalis* L., *Cassia tora* L., *Cassia siamea* Lam., *Bauhinia racemosa* L.) under 'Studies of fossil and living plants with reference to the impact of climate change on flora of Gangetic Plains and Central India.'

Dr. A.K. Verma, Scientist 'B' performed cytological investigations in *Cassia roxburghii* DC. (2n=24) under project 'Cytotaxonomical studies of selected taxa of Indian subtribe Cassiinae.'

On behest of District Administration, Allahabad, Drs. G.P. Sinha and A.P. Tiwari in Association with Retd. Prof. S.N. Srivastava and Sri Umesh Kumar Uttam, Garden Superintendent, Chandrasekhar Azad Government Garden (Company Bag), Allahabad visited and identified living tree species of the Garden on 19.08.2017 and 27.08.2017 in connection with display of plant names in the garden for public awareness.



Dr. G.P. Sinha along with officers and staff, hoisting National Flag at CRC, Allahabad on Independence Day

Dr. Arti Garg prepared key to families (82 families) and generic key to the family Rubiaceae and Scrophulariaceae for the Flora of Lakshadweep islands and submitted to Dr. P. Lakshminarsimhan, Scientist 'E', WRC, BSI, Pune.

Identification services rendered

Sri V.K. Singh and Dr. A.P. Tiwari authenticated 152 specimens into 74 species received from National Center for Natural Resources, Pt. Ravishankar Shukla University, Raipur, Chattisgarh .

Dr. Nitisha Srivastava, Bot. Asst. authenticated three specimens received from students of Shambhunath Institute of Pharmacy, Jhalwa, Allahabad.

Ex situ conservation

Drs. Dr. A.N. Shukla and A.K. Verma brought three seedlings of *Nepenthes khasiana* Hook.f. and 5 seeds of *Aesculus assamica* Griff. from ERC, BSI, Shillong for introduction in CRC, BSI, Garden.

Symposia / seminars/workshop attended/lecture delivered

Dr. G.P. Sinha, Dr. A.N. Shukla and Sri Vineet Kumar Singh attended a National Seminar on "Paryawaran Evam Samaveshi Vikas: Chunautiyan evam Samadhan" held at MNNIT Allahabad on 04.08.2017 to 05.08.2017.

Dr. G.P. Sinha attended a two days Regional Consultation Workshop on Mainstreaming of Biodiversity: National Biodiversity Action Plan, National Biodiversity Targets and India's sixth National Report to CBD' organised by MoEF&CC, New Delhi through BCIL under a UNDP project at NBRI, Lucknow on 22.8.2017 to 23.8.2017.

Drs. A.N. Shukla and A.K. Verma attended a workshop on "DNA barcoding - Molecular analysis & Bioinformatics approaches" from 21.08.2017 to 25.08.2017 organized by ERC, BSI, Shillong.



GSDP Trainees during Nature visit tour to Jhansi area of Allahabad, Uttar Pradesh

GSDP Trainees during a visit to Bioed Research Institute of Agriculture and and Technology

Green Skill Development Programme (GSDP) 'Foundation Course: Biodiversity Conservationists'

Daily lectures were delivered by Dr. A.N. Shukla, Scientist B & Coordinator on 'PBR'; Dr. Neelam Gautam, on 'Economic Botany, Medicinal Plants and Traditional Knowledge'; Dr. Ashutosh Kumar Verma on 'Nature Guide Training'; Sri Vineet Kumar Singh on 'Wetland Ecosystems' and 'Basic Computer Skills' with Rakesh Kesharwani; Dr. Nitisha Srivastava on 'Conservation issues and efforts'; Dr. A.P. Tiwari on Horticulture and Nursery Techniques and 'Field works and Hands on Training'; Dr. Pushpi Singh, N-PDF on 'Introduction to Floral Diversity of India' and Dr. Pooja Gupta, AJCB-PDF on 'Biodiversity' to trainees under GSDP. Three combined field tours were also undertaken by the above trainers for GSDP trainees.

A six member team of Zoological Survey of India, Kolkata visited CRC, Allahabad and imparted 35 hours theoretical and field training on 'Introduction to Faunal Diversity of India' to GSDP trainees from 21.08.2017 to 25.08.2017.

Publications

- Gupta, P. and Sinha, G.P. 2017. A note on extended distribution of *Icmadophila ericetorum* (L.) Zahlbr. *J. Non Timber Forest Products* 24(2): 97-98.
- Gupta, P. and Sinha, G.P. 2017. Lichen diversity in Sohelwa Wildlife Sanctuary, Uttar Pradesh, India. *Indian J. Forestry* 40(2): 201-204.
- Jagadeesh Ram, T.A.M. and Sinha, G.P. 2017. Additional lichen records from the Andaman and Nicobar Islands – 3. *Indian J. Forestry*. 40(2): 163-172.
- Shaikh, M., Khan, M.A.W. and Tiwari, A.P. 2017. A new species of *Fimbristylis* (Cyperaceae) from Madhya Pradesh, India. *Phytotaxa* 314 (2): 297-300.
- Sikarwar, R.L.S., Tiwari, A. P. and Dubey, P.C. 2017. *Cordia macleodii* Hook. f. & Thomson (Cordiaceae) - a critically endangered tree species from Central India. *Indian For.* 143(7): 716-717.
- Shaikh M. and Tiwari, A.P. 2017. *Solanum americanum* Mill. (Solanaceae) –an addition to the flora of Madhya Pradesh, India. *J. Econ. Taxon. Bot.* 40(1-2): 62-63.

– Dr. G.P. Sinha
Scientist 'E' & HoO

EASTERN REGIONAL CENTRE, SHILLONG

During the period, one field tour was conducted by Sri S.R. Talukdar, Bot. Asst. to West and South west Khasi hills district from 7th to 18th August, 2017 under the Project for Flora of West & South-West Khasi hills district, Meghalaya with reference to the sacred groves by Dr. Chaya Deori, Scientist 'D' and Sri S.R. Talukdar and collected 388 field numbers and 51 live plants for cultivation in the Botanical garden of ERC, BSI, Shillong. During this period identified 36 species and 38 species described for Flora of Eastern Nagaland by Dr. N. Odyuo, Scientist 'D' and Dr. R. Daimary, Bot. Asst. Consulted literature pertaining to study of genus *Riccia*. viz., Hepaticae and Anthocerotae of North America 1992 by R.M Schuster. Hepaticae of South Africa 1963 by S. Arnell, Bryophytes of India Ricciaceae by K.P. Srivastava, Cryptogamie Bryologie Tome 7: 1987 pp. 287-430, Studied the protologue of *Riccia discolor* L., *Riccia himalyensis* Steph., *Riccia gollanii* Levier and *Riccia intermedia* Jones by Dr. S.K. Singh, Scientist 'D'.

Observed and recorded phenological data of flowering and fruiting of 98 plant species by Dr. M. Murugesan, Scientist 'B' and Sri L.R. Meitei. Lab to land transferred of *C. tigrinum* (about 2000 plants) in greenhouse is maintained. Data analyze, interpretation, literature survey for *Armadorum senapatianum*, *C. tigrinum*. Statistical analysis of *A. senapatianum*, *C. tigrinum*. Subcultured seedlings of callus of *Rhododendron coxianum*, *A. senapatianum* (app.50 nos.), *C. tigrinum* (app. 100 nos.) Experiment on *Illex khasiana* and *P. hirsutissimum* is set up by Dr. A.A. Mao & L. Ibemhal Chanu Bot. Asst.

Under Micropropagation, Phytochemical Screening of Medicinal Plants and Molecular Characterization of Selected Species by Dr. Deepu Vijayan, Scientist 'B', Extracted DNA from *Pyrenaria khasiana* R.N. Paul var. *lakhimpurensis* and checked the quality and quantity in agarose gel. Fungi studied during period- *Acrodontium crateriforme* fungus associated with pitcher trap liquid and submitted four sequences of two fungi to NCBI-Genbank: *Fusicoidium indicum* ITS gene region MF588672, LSU gene region MF588673 and *Acrodontium crateriforme* LSU gene region MF613959, ITS gene region MF613646 by Dr. Ashish Venkatesh Prabhugaonkar, Scientist 'B'.

Public service rendered

Identified about seventeen samples of specimens received from various institutions.

Workshop organised/lecture attended/delivered

A Workshop cum Hands on Training on "DNA barcoding- Molecular analysis & Bioinformatics approaches" from 21st - 25th August, 2017 was organised and was attended by 30 participants from all the regions of Botanical Survey of India.

During the workshop Resource person Prof. S.N. Raina and Prof. S.B. Babbar from Delhi University delivered lectures on DNA Barcoding.

Dr. Ritesh Kumar Choudhary, Scientist from Agharkar Research Institute, Pune, delivered on the topic Online database and retrieval of biological information, construction of phylogenetic trees etc.

Dr. Deepu Vijayan presented a brief introduction to plant genomic DNA isolation, PCR, DNA fingerprinting and DNA barcoding, how to score the gel images and to use that binary data in preparing a dendrogram using statistical software. Demonstrated and given hands on training to the participants starting from DNA extraction, PCR and to purify the PCR products before sending it for sequencing. Dr. David Biate gave a lecture on the topic "Primer designing".

Visitors/students

Fifteen scientists, one botanist, two professors, two lecturers, two teachers, eight Bot. Asst., two Presv. Asst., one PDF, five research scholars, one hundred twenty eight students and five other visitors from various Institutions, Colleges and Universities visited the Centre.

Publications

Das, H.K. 2017. Exploring Open access web Resources on Plant Taxonomy. *Granthakuti* 3: 9–22.

Pratibha, J. and Prabhugaonkar, A. 2017. *Torula goaensis*, a new asexual ascomycetous fungus in Torulaceae. *Webbia* 72: 1. Published online.

– Dr. A.A. Mao
Scientist 'F' & HoO

NORTHERN REGIONAL CENTRE, DEHRADUN

Identified total 40 species and made description for 37 species of Angiosperm in connection with the projects, Flora of Himachal Pradesh Vol. I, Floristic Diversity and Phytosociological study of Simbalbara National Park, Flora of Nandhour Wildlife Sanctuary, Flora of Sonanadi Wildlife Sanctuary, Revision of family Bignoniaceae, Cyatheaceae and genus *Lepisorus* (Sm.) Ching in India.

Digitization of Herbarium specimens

Scanned and digitized 95 specimens of the family Capparidaceae and of Pteridophytes.

Public Service rendered

Identified *Paeonia emodi* for Praveen joshi, Kumaun University, Nainital.

Meetings/training attended

Dr. Kumar Ambrish, Scientist 'D' & HoO attended RAC meeting for the Forest Botany on 18.08.2017 at Forest Research Institute, Dehradun as one of the members.

Dr. Kumar Ambrish attended meeting of Uttarakhand Biodiversity Board, on 23.08.2017 at Uttarakhand Biodiversity Board Dehradun as one of the experts.

Dr. M.R. Debta and Dr. Puneet Kumar Scientist 'B' attended training program on DNA barcoding- Molecular analysis & Bioinformatics approaches organized at ERC, BSI, Shillong from 21st to 25th August, 2017.

Swatantrata Diwas

Centre has celebrated Swatantrata diwas on 15th August, 2017 in the office.



Photo: R.K. Thakur

Trainees from Ranger's College attending lecture at conference hall of NRC, BSI, Dehradun



Photo: NRC

Dr. Kumar Ambrish delivering speech at valedictory function of GSDP 'Fundamental Course' at NRC, BSI

Visitors

40 trainees from Ranger's College, Haldwani visited the regional centre.

GSDP Programme

Green Skill Development Programme have been successfully completed at the centre and a valedictory function was conducted on 28 August, 2017.

Publications

Singhal, V.K, Kumar, R., Singhal, H., Kumar, P., Kaur, D., Kaur, M., Rana, P.K. and Gupta, R.C. 2017. A profile of male meiosis, chromosomal variation and status in species of *Impatiens* from North-West Himalaya in India. *Caryologia* 70(3): 258-269, DOI: 10.1080/00087114.2017.1344084.

Dr. Kumar Ambrish
Scientist 'E' & HoO

SOUTHERN REGIONAL CENTRE, COIMBATORE

Dr. K.A.A. Kabeer, Scientist 'D' and Mr. A. Ravi Kiran, Bot. Asst. conducted a plant exploration to Kodaikanal WLS, Tamil Nadu from 7th to 18th August 2017 and vouched 118 field numbers. They also identified 38 field numbers from previous collection.

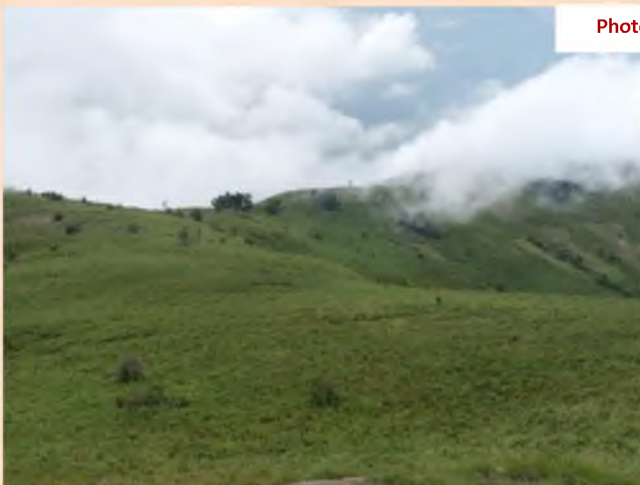


Photo: SRC

Vegetation Type of Kodaikanal Wildlife Sanctuary,
Tamil Nadu – Grasslands



Vegetation Type of Kodaikanal Wildlife Sanctuary,
Tamil Nadu – Moist Evergreen Forest

Sri R.G. Vadhyar, Bot. Asst. undertook five days Herbarium consultation tour to JNTBGRI, Thiruvananthapuram and KFRI, Thrissur from 7th to 11th August 2017 in connection with Red list assessment of Ebenaceae.



Photo: SRC

Habenaria rariflora (ORCHIDACEAE)*Ixora notoniana* (RUBIACEAE)

Photo: SRC

Psydrax ficiformis (RUBIACEAE)*Strobilanthes pulneyensis* (ACANTHACEAE)

Herbarium specimen identification

Dr. C. Murugan, Scientist 'D' and Dr. S. Arumugam, Bot. Asst. identified 15 field numbers in connection with Meghamalai wildlife Sanctuary, Tamil Nadu. Dr. J.H. Franklin Benjamin, Scientist 'C' and Mr. Rakesh G. Vadhyar, Bot. Asst. identified 22 field numbers for Flora of Kanniyakumari Wildlife Sanctuary, Tamil Nadu. Under the documentation of Phytodiversity, for Cyperaceae of Tamil Nadu, Dr. C. Murugan, Dr. J.V. Sudhakar, Bot. Asst. and Dr. S. Arumugam identified 10 Cyperaceae members.

Scanning Electron Microscopy (SEM)

Dr. J.V. Sudhakar submitted the final manuscript on SEM study of seed morphology of all the allotted 15 taxa of *Ficus* L. Dr. Sudhakar and Ms. Anantha Lakshmi, Sr. Pres. Asst. scanned 54 SEM images from the nutlets of 9 species of cyperaceae.

Ex-situ conservation

Dr. S. Kaliamoorthy, Scientist 'D', Dr. M.Y. Kamble, Scientist 'D' and his team multiplied 62 samples belonging to 15 taxa, developed 109 cuttings and recorded the phenological data of 31 plants belonging to 22 orchids and 9 other angiosperms at the National Orchidarium and Experimental Garden (NO & EG), Yercaud. They also introduced 14 samples of 3 taxa i.e. *Sirhookera lanceolata* (Wight) Kuntze, *Oberonia ensiformis* (J. E. Sm.) Lindl. and *Vanda testacea* (Lindl.) Rchb. f.

Public service rendered

Dr. S.K. Yadav and Dr. S. Arumugam delivered lecture on BSI and its activities, MH and Herbarium Methodology to 39 UG (B.Tech.) students of Adhiyamaan Engineering College, Hosur on 02.08.2017 and 99 school students of Nirmala Matha Convent School (ICSE), Kuniyamuthur, Coimbatore on 08.08.2017.

Meetings/programmes attended/conducted

Under the Green Skill Development Program, various classes, field tours and practical demo were arranged to the participants of the program under the coordination of Dr. R. Manikandan, Scientist 'D'. In this connection, field tour cum training class on Medicinal Plants, Traditional Knowledge, Economic botany, Sacred groves was conducted to Palamali, Vellingiri and Maruthamali on 14th August 2017 whereas Seaweed collection trip to Pulicat Lake, Chennai coast, Kovalam coast and Mamallapuram coast from 25th to 27th August, 2017. Dr. J.H. F. Benjamin, Dr. J.V. Sudhakar, Dr. S.K. Yadav, Dr. S. Arumugam, Mr. Rakesh, G.V., Dr. V. Ravichandran and Mr. Aron Santhosh delivered lectures on various topics.

National Flag hoisting ceremony was observed on the eve of the Independence Day at SRC, BSI, Coimbatore on 15.08.2017.

Dr. C. Murugan attended State Board of wildlife meeting held at the State Assembly complex, Thiruvananthapuram, Kerala on 16.08.2017 under the chairmanship of Chief Minister of Kerala.

Dr. J.H.F. Benjamin & Dr. S. Arumugam attended Workshop cum Hands on Training on 'DNA barcoding-Molecular analysis & Bioinformatics approaches' held at BSI, ERC, Shillong from 21st to 25th August 2017.

All the scientists of the centre attended "Dr. S. Kedharnath Memorial Lecture" (KML-2017) held at IFGTB, Coimbatore on 28.08.2017.



Dr. Benjamin and Dr. Arumugam with other participants in the Workshop at ERC, BSI, Shillong

Photo: SRC



Dr. Sudhakar delivering a lecture at National Seminar at Kasaragod, Kerala

Dr. J.V. Sudhakar attended "National Seminar on Biodiversity and Importance of Western Ghats for better living" organized by Dept of Botany, Govt. College, Kasaragod, Kerala on 29th & 30th August 2017 and delivered an invited lecture 'Diversity of the genus *Ficus* in Western Ghats and its implications to animals, birds and humans'.

Visitors/students

Dr. Pateshwary, Director, MoEF & CC, New Delhi and Dr. Sandeep Chauhan, Scientist 'D', BSI, Noida visited the centre on 02.08.2017.

20 scientific personnel/officials/scholars visited the museum, herbarium and library of this regional centre. 806 persons in 112 parties visited the NO & EG, Yercaud.

Publications

Arumugam, S. and Murugan, C. 2017. A new species of *Tripogon* (Poaceae: Chloridoidea: Tripogoninae) from India. *Ind. J. Forest.* 40(2): 159–162.

Murugan, C. and Arumugam, S. 2017. A new species of *Syzygium* (Myrtaceae) from Western Ghats of Tamil Nadu, India. *Ind. J. Forest.* 40(2): 189–192.

– Dr. C. Murugan
Scientist 'D' & HoO

WESTERN REGIONAL CENTRE, PUNE

Dr. Rashmi Dubey, Scientist 'D' conducted one field tour to Sanjay Gandhi National Park, Mumbai from 18.08.2017 to 22.08.2017 for the project, 'Taxonomic Studies of Microfungi of Sanjay Gandhi National Park along with its 10% peripheral area'.

Herbarium specimen identification

Dr. J. Jayanthi, Scientist 'D' identified 50 field numbers for the project, 'Floristic Diversity of Biligirirangaswamy (BRT) WLS, Karnataka'.

Dr. Priyanka Ingle, Scientist 'B' identified 13 field numbers for the project, 'Floristic Diversity of Wan Wildlife Sanctuary, Maharashtra'.

Dr. C.R. Jadhav, Botanist identified 10 field numbers for the project, 'Floristic survey of Someshwara Wildlife Sanctuary, Karnataka'.

Sri S.C. Patil, Bot. Asst. has identified six field numbers for the project, 'Flora of Pushpagiri Wildlife Sanctuary, Karnataka'.

Dr. A. Benniamin, Scientist 'D' identified five field numbers for the project, 'Ferns of Karnataka'.

Sri D. Jesubalan, Bot. Asst. identified two field numbers for the project, 'Pteridophytic flora of Pushpagiri Wildlife Sanctuary, Karnataka with 10% periphery'.

Sri D. Tripathi, SPF identified five Pteridophyte species for the project, 'Pteridophyte flora of Kudremukh National Park, Karnataka with 10% periphery'.

Dr. Rashmi Dubey identified five fungal species for the project, 'Taxonomic Studies of Microfungi of Sanjay Gandhi National Park along with its 10% peripheral area'.

Smt. Shreya Sengupta, SPF identified six micro fungi for the project, 'Microfungi of Biligiri Rangaswamy Temple wildlife Sanctuary, Karnataka'.

Public service rendered

During this month 14 plant species identified and issued authentication certificates to students from B. Pharm, M. Pharm. colleges, Ph.D. and P.G. students from different institutions.

Meeting/seminar/conference/programmes attended/organised

Dr. A. Benniamin attended a meeting at Forest Department, Vanbhavan, Pune on 09.08.2017 regarding Proposal Evaluation of the Project entitled, "House Sparrow Assisted Breeding and Conservation Project by Ela Foundation, Pune.

Dr. P. Lakshminarasimhan, Scientist 'E' & HoO, Dr. A. Benniamin, Dr. J. Jayanthi, Dr. S. Bhakta, Bot. Asst. and Mr. D. Jesubalan attended the inaugural function of Foundation course of the Green Skill Development Programme (GSDP) on 10.08.2017 at Zoological Survey of India, WRC, Pune.

Dr. P. Lakshminarasimhan and Dr. Priyanka Ingle attended the Nagar Rajbasha Hindi Samiti meeting at CDAC, Pune on 10.08.2017.

Dr. J.S. Jalal, Scientist 'D' attended one day DDO/training workshop on 18.08.2017 at MoEF & CC, New Delhi. The aim of the workshop was to sensitize about Non Tax Receipt (NTRP), Bhavishya portal, Budget & Expenditure Management System (BEMS) and Important Gol orders issued by MoEF&CC.

Mrs. A.M. Neelima Bot. Asst. and Ms. Madhuri Pawar, Pres. Asst. attended training on "DNA barcoding-Molecular analysis & Bioinformatics approaches" at ERC, BSI, Shillong from 21st to 25th August 2017.

Dr. P. Lakshminarasimhan participated in the Nexus International Workshop 2017 on "Climate Change Adaptions for Sustainable Development: A Vedic Perspective" from 27th to 28th August, 2017 jointly organised by Govardhan Ecovillage, Shree Halari Visa Oswal College of Commerce at Palghar District (sponsored by NEERI).

Visitors/students

Three students from St. Mira's College, Pune visited WRC, BSI, Pune.

Two research students from Nashik, Maharashtra visited WRC herbarium and Library.

– Dr. P. Lakshminarasimhan
Scientist 'E' & HoO



Drosera indica L. (DROSERACEAE) herbaceous insectivorous plant, commonly known as Fly catcher, Sundew plant etc., native to Africa, Australia, China, Southeast Asia and India. Found growing in wet shallow and poor nutrient soils, in wet muds, in swamps, marshes, pools and streams, and in open humid soils. Flowers may be white, pink, orange or purple in colour.

Photo: D.L. Shirodhkar

An Ecotourist Daily of Wide Range National and Territorial News

96307494 | (in-33) Issue-211 | Port Blair | Wednesday 09 August, 2017 | Page-18 | Price-100/-

Two new species of Jurassic Period tree discovered by BSI Scientist

Port Blair, August 8: The Andaman and Nicobar Islands, home to thriving natural population of Cycads. An Indian Cycadologist, Dr. Lalji Singh from the Botanical Survey of India (BSI) has discovered two new species of Cycads. Dr. Singh published *Cycas dharmrajii* International journal *Nordic Journal of Botany*, 2017 and *Cycas pashanae* in a special issue of *Indobotany*, 2017 along with Dr. D. R. Masi, Cycadologist, Professor of Botany at Aligarh University. It is interesting that the Characters of *Cycas pashanae* was first time observed in cultivated plant in 2001 at Dr. A. J. C. Shaw, Indian Botanic Garden, Howrah which may be planted by British. Dr. Singh, have explored various localities from 2011 to 2016 and found the natural population of this species in 9 localities of these island. Dr. Singh who is behind the discovery, said BSI Scientists have explored time to time and collected lot of specimens of Cycads. Cycads are indeed the most ancient and ancient plants and have been referred to as "living fossils", they evolved during the Carboniferous period, some 280-300 Million years ago, and reached to their climax in the Jurassic times coinciding with Dinosaurs of animal world. The group achieved its maximum diversity in the Jurassic and Cretaceous periods, when it was distributed almost worldwide. At the end of the Cretaceous, when the non-avian dinosaurs became extinct, so did most of the Cycads in the Northern Hemisphere. Cycad habitats in Asia have suffered severe reduction and degradation over the centuries and these pressures will inevitably continue and even increase in the near future. Cycas is the well-recognized largest genus



amongst the Oriental Cycads, more than 100 species widely distributed in the tropical and subtropical lowlands of South East Asia, Madagascar, East Africa, North and North east Australia and South west Pacific. It was originally described by Linnaeus (1737-1820, 1753-1188, 1754-495) and subsequently provided the type of generic name in the family Cycadaceae. Although the first botanical description of cycads had been given by a great Linnaean author Jan Rhandi (1676), and called Cycas ornata as 'Touba Panna' a Malayalam name from India. In India the genus Cycas which occurs naturally in the Andaman and Nicobar Islands, Andhra Pradesh, Tamil Nadu, Karnataka, Kerala, West Bengal, Bihar, Jharkhand, Odisha, N. E. India (Old Assam) and Sikkim, nearly 14 species of Cycas have been described from India including

Cycas dharmrajii and *C. pashanae*. *Cycas dharmrajii*, distinguished from known by the presence of abnormal branching habit of the giant trunk with swollen base, often branched, apex of megasporophyll with well-defined 10-20 paired lateral hook-like structures, 2 achrotygamous mucilage canals in leaflets and a characteristic pitting on the pericarpial walls of the epidermal cells of the leaflets and C. pashanae by the presence of abnormal branching habit of giant female trunk, megasporophyll with 2-lateral, unequal horn like curved structures, midrib of leaflets with indented mesophyll cells, semi-circular bundle sheath and V-shaped centrilobial xylem and extra vascular xylem parastichy and lower epidermis of margin is not supported by hypostoma. The apical portions of

young leaves are often coated vegetable and hollow seeds are used as spoon and small box for storage of lime and tobacco (surati Khari) by tribes especially Ranchi, earlier where it naturally occurs in these islands. Leaves are also used as decorative materials during auspicious, religious and cultural ceremonies along with other local palm-leaves and wild banana. Dr. Singh, Dy. Director of BSI, who is behind the discovery, said that Cycads are fascinating "living fossils" and are threatened in many parts of their range. Nearly 65% of Cycads are threatened which the highest value of risk of extinction is given to any group of organism. In these islands, Cycas presents excellent population in protected areas as reserve forest in comparison to unreserved forest blocks which are sparsely scattered and only confined to few localities.



Participants of the workshop cum Hands on Training on "DNA barcoding- Molecular analysis & Bioinformatics approaches" held from 21st to 25th August, 2017 at Eastern Regional Centre, Shillong

Thanks to all the scientists and staff of regional centres and units of Botanical Survey of India for contributing to this newsletter

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