

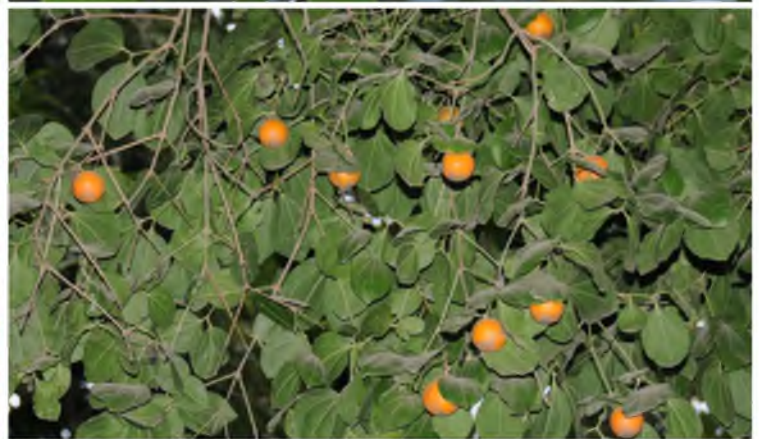
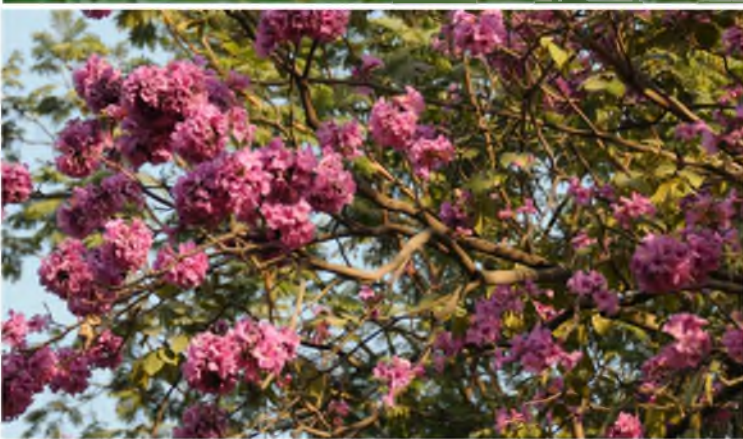
BSI NEWSLETTER

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CGO Complex, 3rd MSO Building, Block – F
5th Floor, DF Block, Sector – I, Salt Lake City
Kolkata – 700 064



HEAD QUARTERS, KOLKATA

Dr. R.K. Gupta, Scientist 'D' conducted one field tour to Rajgir and Munger, Bihar from 18th to 25th 2017 and collected 78 samples mostly the members of blue green algae. The data such as Temperature, pH, Dissolved Oxygen (DO), Total Dissolved Solids (TDS) and Electrical Conductivity (EC) were also recorded by the party in main kund and the outer channel.

In connection with the 'Studies on Wild Mushrooms of East and South Sikkim', 'Studies on the Macrofungi of AJCBIBG', 'Wood rotting fungi of Rajmahal hills', 'Hot Spring Algae of Rajgir and Munger, Bihar', 'Revision of the family Metzgeriaceae in India', and 'Liverworts & Hornworts Flora of Darjeeling District, West Bengal' identifications, descriptions and camera lucida illustrations were done and microphotographs were also taken. Besides, ArcGIS maps were prepared for five species of wood rotting fungi.

The micro-morphological features of the pollen grains of *Cycas* sp., was studied under Light Microscope (LM), which was collected from AJC Bose Indian Botanic Garden campus (Field No. 4980) in connection with the Project, "Pharmacognosy of Indian Cycads" by Dr. A.B.D. Selvam, Scientist 'D'.

Dr. Devendra Singh, Scientist 'D' prepared the database of 27 general liverwort specimens of CAL herbarium.

Dr. (Ms.). Monalisa Dey, Scientist 'B' acted as a resource person for the Green Skill Development Programme, Advanced course (Parataxonomist), being held at Central National Herbarium in which provided training on "Brief introduction about Bryophytes and collection, identification and preservation techniques" to the trainee students on 12.12.2017.

Sri Arvind Parihar, Bot. Asst. incorporated three holotype specimens received from Priyanka Uniyal, Research Scholar, HNB Garhwal University, Srinagar, Uttarakhand: *Lactarius indozonarius* (Accession No. CAL1633), *L. queletii* (Accession No. CAL1634), and *L. rajendrae* (Accession No. CAL1635).

Public service rendered

A manuscript, on Boletoid mushrooms from Garhwal Himalaya was reviewed for *Indian Phytopathology* by Dr. Kanad Das, Scientist 'D'.

Dr. (Ms.). Monalisa Dey served as an external examiner in M.Sc. Botany, I – Semester practical examination at Vidyasagar University, Midnapore on 22.12.2017.

Dr. A.B.D. Selvam pharmacognostically studied and authenticated a vegetable crude drug sample, as roots of *Symplocos racemosa* (Symplocaceae), which was received from M/s Emami Ltd., Vapi, Gujarat.

Dr. A.B.D. Selvam pharmacognostically studied and authenticated a vegetable crude drug sample, as roots of *Leptadenia reticulata* (Apocynaceae), which was received from M/s Emami Ltd., Kolkata.

Dr. Selvam also pharmacognostically studied and authenticated 3 vegetable crude drug samples *Solanum virginianum* L. (Solanaceae) – Aerial parts; *Terminalia arjuna* (Roxb. ex DC.) Wight & Arn. (Combretaceae) – Bark; *Desmodium gangeticum* (L.) DC. (Papilionaceae) – Leaves received from M/s Emami Ltd., Vapi, Gujarat.

Meeting /lecture attended

Manoj Emanuel Hembrom, Botanist attended the training, "Basic training programme of working in Hindi on computer" from 11th and to 15th December 2017 at Department of Official Language, Nizam Palace, Kolkata.

The scientific officials of Hqrs., BSI working at Central National Herbarium building attended a talk on "Understanding Biodiversity" by Dr. D. Narasimhan, Retd. Professor of Botany, Madras Christian College, Chennai on 18.12.2017.

Visitors/students

Dr.(Ms.) Monalisa Dey attended 14 students of B.Sc., 2nd year Botany of Vijaygarh Jyotish Ray College, Jadavpur on 04.12.2017 and eight students of B.Sc., 2nd year Botany (Hons.) of Bhairab Ganguly College, Belgharia on 05.12.2017.

Publication

Majumdar, S. and Dey, M. 2017. *Acrolejeunea meghalayensis*, a new synonym of *Acrolejeunea recurvata* (Lejeuneaceae: Marchantiophyta). *Phytotaxa* 328(1): 95–98. [<http://dx.doi.org/10.11646/phytotaxa.328.1.7>]

CENTRAL NATIONAL HERBARIUM, HOWRAH

Dr. Mahua Pal, Bot. Asst., undertaken one survey tour to Dalma Wild Life Sanctuary and took photos of plants and surrounding areas for the study of Indicative Flora of Eco-Sensitive Zone of Dalma Wild Life Sanctuary, Jharkhand from 14th to 19th December 2017.

Herbarium identification

Dr. Vinay Ranjan, Scientist 'D' and Sri Anant Kumar identified 15 specimens collected from Neora Valley National Park, Darjeeling district, West Bengal.

Dr. O.N. Maurya, Scientist 'C' identified 25 specimens of the Indicator flora of Eco-Sensitive Zone of Nagi dam Sanctuary, Bihar.

Dr. Avinash Bharti, Scientist 'B' Identified of 62 specimens of the Indicator flora of Eco-Sensitive Zone of Nakti dam Bird Sanctuary, Jamui district, Bihar'.

Public Service rendered

Provided PDF of 24 pages on Orchidaceae from Deb (1983). Flora of Tripura State 2: 446–467 and the title pages to Arjun Adit, Research Scholar, Department of Botany, University of Delhi and 31 pages from Mabberley (1980); a copy of the "Indian catalogues" with particular reference to Hortus Malabaricus. In. Manilal, K.S. (ed.), Botany & History of Hortus Malabaricus. 80–110. Oxford & IBH Publishing Co., New Delhi, Bombay, Calcutta) to Dr. A.A. Ansari, former scientist, BSI; 10 pages on history of CNH from *Bull. Bot. Surv. India* 1: 1959 to Dr. Jaideep Mazumdar, Krishna Chandra College, Hetampur, Birbhum, West Bengal.

Lecture delivered

Dr. Avishek Bhattacharjee delivered a lecture to the trainees of the Parataxonomist Course under the Green Skill Development Programme (GSDP) funded by MoEF&CC, New Delhi on 07.12.2017.

Dr. S. Bandhyopadhyay, Scientist 'B' delivered a lecture to the school students under 'Educational & Environmental Awareness Programme' on 16.12.2017.

Dr. A. Bhattacharjee acted as a member of the National Advisory Committee of the National Conference on 'Advances in Biodiversity, Biotechnology and Environment' held at SSGM College, Kopargaon, District Ahmednagar (Maharashtra) on 22nd and 23rd December, 2017.

Visitors/students

137 students of Anand Mohan College, Kolkata and 70 students accompanied by 04 teachers from Bijoy Krishna girl's College, Howrah on 07.12.2017.

25 students of B.Sc. (Botany) from D.R. College, Golaghat on 11.12.2017.

37 students of B.Sc. (Botany) from Vidyanagar College, 24 Parganas (South) and 25 students accompanied by 02 teachers from Seth Anandram Jaipuria College, Kolkata on 13.12.2017.

30 students accompanied by 04 teachers from Banwari Lal Bahlotia College, Burdwan and 69 students accompanied by 02 teachers from Dr. Kanai Lal Bhattacharya College on 15.12.2017.

30 students accompanied by 04 teachers from Kosalpur Balika Vidyalaya, 24 Parganas, on 19.12.2017.

50 students accompanied by 04 teachers from Shyampur Siddheswari mahavidyalaya Ajodhya, Howrah on 21.12.2017.

22 students of B.Sc. (Botany) from Asansol Girls' College, Bardhaman; 52 students of Class XI Standard from Bolpur High school, Birbhum and 35 students accompanied by 05 teachers from Jagat Ballavpur College, Howrah on 22.12.2017.

14 students of Kalara High School, West Bengal on 29.12.2017.

Meetings/Seminar/conference attended /organised

Dr. Avinash Bharati attended meeting with technical experts of CSICO, HP, Z-COM, GS computers, Vortex Company, D-link, Sea Info Tech. and Ruckus regarding establishment of Wi-Fi infrastructure in the CNH building.



Photo: D.L. Shirodhkar

Glimpses of National Conference on Status of Invasive Alien Species in India organized by BSI and ZSI at Kolkata

Drs. P.V. Prasanna, V. Sampath Kumar, Pushpa Kumari, Avishek Bhattacharjee and Sri Shyam Biswa attended National Conference on Status of Invasive Alien Species in India Organized by Botanical Survey of India and Zoological Survey of India on 14th and 15th December 2017 at The Park, Kolkata.

Central National Herbarium organized a lecture on "Understanding Biodiversity" by Dr. D. Narasimhan, Retd. Professor of Botany, Madras Christian College, Chennai on 18.12.2017 in the CNH Committee room.

Publications

Bhattacharjee, A. 2017. 'উদ্ভিদের বিজ্ঞানসম্মত নামকরণের উপযোগিতা ও পদ্ধতি' (in Bengali) [Need for scientific naming of the plants and the process]. In the brochure of 'Educational & Environmental Awareness Programme', Botanical Survey of India, Kolkata.

Singh, P., Arisdason, W. and Sampath Kumar, V. 2017 (eds.). *Invasive Alien Plants of India*. Botanical Survey of India, Kolkata. 120 pp.

Madhukar, V.K. and Bandyopadhyay, S. 2017. Correction of a typographical error in *Bignonia 'ghorta'* (Bignoniaceae). *Phytotaxa* 331(1): 147–150.

Bandyopadhyay, S. 2017. Comments on the typification of *Cheniella glauca* (Leguminosae: Cercidoideae). *Int. J. Adv. Res. Bot.* 3(4): 40–41.

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

INDUSTRIAL SECTION INDIAN MUSEUM, KOLKATA

The botanical paintings of Roxburgh are being interpreted with updated nomenclature. In this work, four members of Poaceae – *Agrostis tenacissima* L.f., *Andropogon aciculatus* Retz., *A. binatus* Retz. and *A. ischaemum* L. were interpreted. .

Database of Herbarium Specimens

As a part of preparing a database of herbarium specimens at BSIS, 230 numbers of Dicot herbarium specimens were listed and documented.

Updating of nomenclature of digitized Herbarium Specimens at BSIS

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

Public service rendered

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



Visitors at BSI stall at Damodar Mela, Amta, Howrah from 7th to 13rd December 2017



BSI stall at Sundarban Mela and visitors attended the stall from 22nd to 29th December 2017

Awareness programme, Workshop, Seminar organized/attended

As a part of its objective to spread awareness among common public on importance of plants to human beings ISIM, BSI participated in “Damodar Mela” at Raspur, village – Amta, Dist.- Howrah, West Bengal from 7th to 13th December, 2017. Sri D.L. Shirodkar, Sri B.C. Dey attended the exhibition and guided the visitors. ISIM, BSI participated jointly with ZSI, Kolkata in 22nd Sunderban Krishi Mela-O-Loko Sanskriti Utsab-2017, at Basanti, 24 Parganas (S), West Bengal from 20th to 29th December 2017. Sri S.K. Sharma and Sri Subir Dutta attended the exhibition and guided the visitors.

A new model on “Indigo Extraction” introduced in 3rd floor Botanical gallery at ISIM on 07.12.2017, which was donated by Sutra, NGO during an international event on Indigo (Seminar, Workshop and Exhibition) at Indian Council for Cultural Relations, Kolkata.

Dr. M. Bhaumik, Dr. A.K. Sahoo and Sri D.L. Shirodkar attend two days national seminar on “Status of Invasive Alien species in India”, jointly organized by BSI and ZSI at The Park, Kolkata, December 14th and 15th 2017.

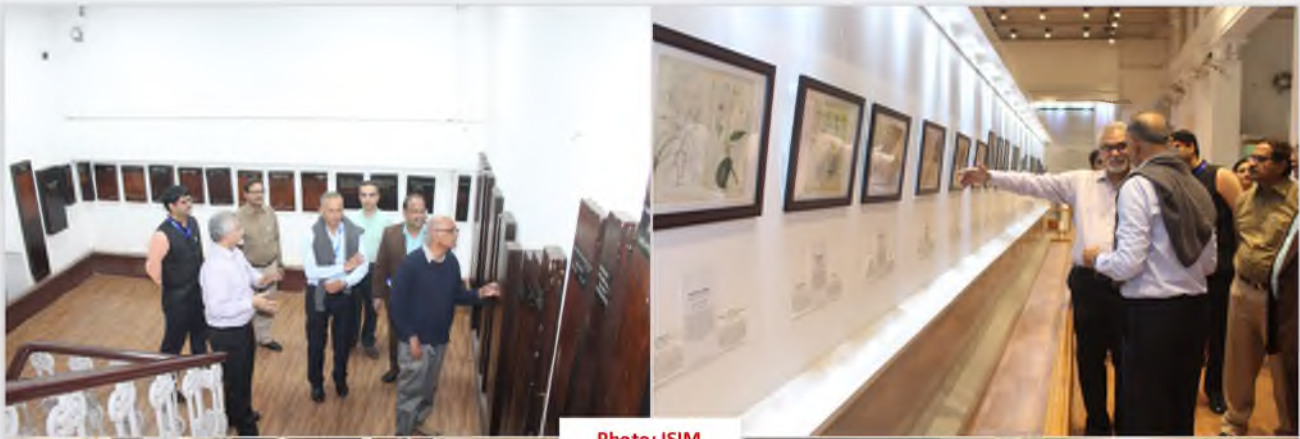


Photo: ISIM



Dr. C.R. Babu, Prof. S.P. Singh, Dr. Manjoor Shah, Dr. A.K. Singh, Dr. K. Ravichandran visited Botanical Galleries, ISIM along with BSI and ZSI Directors and other BSI officials on 15.12.2017

Visitors/students

Prof. C.R. Babu, Emiretus Professor, Delhi University; Prof. S.P. Singh, Kumaun University, Nainital; Dr. Manjoor Shah, Sr. Asstt. Prof., Kashmir University; Dr. A.K. Singh, Director, ICAR, DCFR, Vhimtal; Dr. K. Ravichandran, CCF, Dept. of Forest, Daman visited Botanical Galleries, ISIM along with BSI and ZSI Directors and other BSI officials on 15.12.2017.



Photo: ISIM

Students from Shyambazar A.V. School visiting ISIM, BSI Galleries on 23.12.2017 under EEA Programme

As per BSI's Environmental Education Awareness Programme, 28 students along with 2 teachers from Shyambazar A.V. School visited Botanical galleries on 23.12.2017.

– Dr. Manas Bhaumik
Scientist 'D' & HoO

ANDAMAN & NICOBAR REGIONAL CENTRE, PORT BLAIR

In connection with Annual Action Plan Flora of Kyd, Pitman and James Islands, South Andaman (2017–18), Dr. Sanjay Mishra, Scientist 'B', Dr. C.P. Vivek, Bot. Asst. and Sri Gautam Anuj Ekka, Presv. Asst. conducted a plant collection tour from 11th to 15th December 2017, vouched total 99 field numbers (33092-33190) along with the GPS data and brought seeds and seedlings of 28 plant species for introducing in the Dhanikhari Experimental Garden cum Arboretum (DEGA).

Dr. C.P. Vivek conducted a tour to Dugong Creek, Little Andaman in association with ANTRI in the study of Ethno-medicine among the aboriginal tribes of A & N Islands. Surveyed and documented 17 plants practiced among *Onges* tribe.

Digitization of herbarium specimens

Herbarium sheets Scanned: 826 numbers of Agavaceae, Amaryllidaceae, Cannaceae, Commelinaceae, Dioscoreaceae, Hypoxidaceae, Liliaceae, Maranthaceae, Musaceae, Pontederiaceae, Smilacaceae, Taccaceae, Xyridaceae and Zingiberaceae.

Herbarium details computerized in Excel format: 1,100 herbarium specimens of families Agavaceae, Amaryllidaceae, Cannaceae, Commelinaceae, Dioscoreaceae, Flagellariaceae, Hypoxidaceae, Juncaceae, Liliaceae, Maranthaceae, Menyanthaceae, Musaceae, Orchidaceae, Pontederiaceae, Smilacaceae, Taccaceae, Xyridaceae and Zingiberaceae were fed in the computer in a prescribed format.

Hindi workshop

Two days Hindi workshop was organized at ANRC, BSI on 26.12.2017 and 27.12.2017.

Meeting(s) /workshop conducted/attended

Dr. Lal Ji Singh, Scientist 'D' & HoO participated 47th meeting of the general body, Andaman Adim Jan Jati Vikas Samiti, Chaired by Hon'ble Lt. Governor, Andaman and Nicobar Islands at Raj Niwas.

Dr. T.A.M. Jagadeesh Ram Scientist 'D' provided training on the techniques on characterization and identification of lichens to Sri M. Niranjan, Research

Scholar, Pondicherry University, School of Life Sciences, Department of Biotechnology, Pondicherry from 6th to 8th December 2017.

Dr. Singh attended meeting pertaining to the multidisciplinary study on *Onges* tribe at ANTRI, Port Blair on 15.12.2017.

Official Hindi Council meeting was organized on 19.12.2017.

Dr. Sanjay Mishra, Scientist 'B' participated in quarterly meeting of Departmental Rajbhasha implementation committee on 19.12.2017.

Dr. Singh and Dr. Mishra attended Half yearly meeting of Town Official Language Implementation Committee (TOLIC) on 22.12.2017 held at ICAR- Central Island Agriculture Research Institute, Port Blair.

Dr. S. Mishra participated in the Joint Hindi Workshop held at Town Official Language Implementation Committee (TOLIC) AT CIARI (Central Island Agriculture Institute), Port Blair on 23.12.2017.

Dr. L.J. Singh participated the Anniversary of Thirteen Year of Tsunami 2004 held at the Tsunami Memorial situated at Andaman Water Sports Complex, Aberdeen on 26.12.2017.

Dr. L.J. Singh attended the meeting at Technology information, Forecasting & Assessment Council (TIFAC), New Delhi on 29.12.2017.



Photo: C.P. Vivek

Dr. Lal Ji Singh, Head of Office addressing the gathering during two days Hindi workshop at ANRC, BSI, Port Blair

Dr. Mishra attended 74th anniversary of first flag hoisting by Netaji Subash Chandra Bose at Port Blair near on 30.12.2017 at Netaji stadium, Port Blair.

Dr. C.P. Vivek attended the Central Government Employees Welfare Committee meeting at seminar hall of Andaman, Lakshadweep Harbour Works.



Photo: G.A. Ekka



Sri Ashok Kumar Pateshwary, ITS, Director, Ministry of Environment, Forest and Climate Change, New Delhi at Herbarium and Dhanikhari Experimental Garden and Arboretum, Nayashahar, ANRC, BSI



Photo: C.P. Vivek

Prof. Arun K. Lall, Punjab Engineering College, Chandigarh at Herbarium and Garden, Nayashahar, ANRC, BSI

Visitors

Sri Ashok Kumar Pateshwary, ITS, Director, Ministry of Environment, Forest and Climate Change, New Delhi visited ANRC office and Dhanikhari Experimental Garden and Arboretum on 02.12.2017 and 03.12.2017 respectively. Sri P. Shiva Rama Krishnan, PGT (biology), Kendriya Vidyalaya - 1, Port Blair visited garden on 03.12.2017. Sri Joju P. Alappatt, Director, FTI, Wimberligunj visited herbarium and library for consultation on 12.12.2017. Sri Sanjay Kumar Pal, C/12-4, GPRA, visited library and Herbarium on 19.12.2017. Prof. Arun K Lall, Punjab Engineering College, Chandigarh visited the ANRC office and Dhanikhari Experimental Garden and Arboretum on 21.12.2017 and 22.12.2017 respectively.

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

ARID ZONE REGIONAL CENTRE, JODHPUR

In connection with the on-going projects, identified specimens of about 100 Field numbers, which were collected by the AZRC scientific officials from various regions.



Photo: P. Hari Krishna

Flowering and fruiting of *Justicia adhatoda* at Botanical Garden, AZRC, Jodhpur



Flowering of *Asparagus racemosus* at Botanical Garden, AZRC, Jodhpur



Photo: P. Hari Krishna

Fruiting of *Mimosa pudica* at Botanical Garden, AZRC, Jodhpur



Fruiting of *Tylophora indica* at Botanical Garden, AZRC, Jodhpur

Meeting/programme organized/ attended

Rajbhasha Hindi Meeting organized in this office on 21.12.2017.

Organised Hindi workshop in this office on Constitutional provisions for Rajbhasha Hindi by Sri J.P. Yadav on 22.12.2017.

Organised different sports events like Volleyball, Cricket, Badminton and Running race. All the Phyton club members are participated in this event from 7th to 12th December 2017.

The events were managed by Sri Ravi Prasad and Dr. Peddi Harikrishna.



Photo: P. Hari Krishna

Sri J.P. Yadav delivering lecture at BSI, AZRC during Hindi workshop on Constitutional Provisions

– Sri Vinod Maina
Scientist 'D' & HoO

CENTRAL REGIONAL CENTRE, ALLAHABAD

A total of 70 species belonging to 95 specimens were identified for the project, 'Floristic Diversity of Bhoj Wetland, M.P.'

Taxonomic description of 30 species were completed for the project, 'Trees of Allahabad city and its Environs'.



Photo: A.N. Shukla

Flowering in *Handroanthus impetiginosus* (Mart. ex DC.)
Mattos at CRC garden, Allahabad



Flowering in *Markhamia lutea* (Benth.) K. Schum.
at CRC garden, Allahabad

A total of 150 specimens belonging to 75 species were identified under 'Floristic diversity of Kishanpur Wildlife Sanctuary, Lakhimpur Kheri, U.P.'

Updation of nomenclature, consequential changes in key to genera and species and editing of families Convolvulaceae, Cuscutaceae, Solanaceae, Scrophulariaceae, Orobanchaceae, Lentibulariaceae, Gesneriaceae and Bignoniaceae were done for Flora of Uttar Pradesh, Vol. II.

Cytological investigations of *Senna tora* (L.) Roxb. and *S. obtusifolia* (L.) H.S. Irwin & Barneby were completed for 'Cytotaxonomical studies of selected taxa of Indian subtribe *Cassiinae*'.

For the project, 'Flora of Chhattisgarh' Vol. II, Dr. A.K. Verma, Scientist 'B' updated nomenclature of 20 species and Dr. Nitisha Srivastava, Bot. Asst. completed taxonomic description of 11 species.

A total of 103 specimens were identified in connection with the project, 'Identification of old unidentified specimens of BSA'.

GSDP: Advance Course for Para-taxonomists

This course was inaugurated on 18.12.2017. In this training programme, lectures were delivered on the topics 'Phytogeographic regions of India', 'Community reserve', 'Introduction of Natural habitats, types of natural habitats', 'Detail introductory information about the topic Gathering

pertinent information (Library/Internet)' respectively by Dr. Arti Garg, Scientist 'D', Dr. A.N. Shukla, Scientist 'B', Sri Vineet Kumar Singh, Bot. Asst. and Dr. Nitisha Srivastava, Bot. Asst.



Photo: A.N. Shukla

Fruiting in *Strychnos nux vomica* L.
at CRC garden, Allahabad



Photo: A.N. Shukla

GSDP-Advance course for Parataxonomists Inaugural
function held on 18.12.2017 at CRC, BSI, Allahabad

Visitors

Dr. Anupam Srivastava, Head Patanjali Herbal Research Department, Patanjali Research Foundation, Haridwar along with two scientists visited herbarium, library and garden of CRC on 22.12.2017 and 23.12.2017.

Public service rendered

Dr. A.P. Tiwari, Bot. Asstt. Identified /authenticated 18 herbarium specimens received from PMB, Gujarati Science College, Indore, Madhya Pradesh.

Dr. Arti Garg provided 12 photograph of six Alien Invasive Species - *Croton bonplandianus* Baill., *Eclipta prostrata* (L.) L., *Hyptis suaveolens* (L.) Poit., *Ipomoea carnea* Jacq. subsp. *fistulosa* (Mart. ex Choisy) D.F. Austin, *Mecardonia procumbens* (Mill.) Small and *Amaranthus spinosus* L. to Dr. V. Sampath Kumar, Scientist 'D', CNH, BSI, Howrah.

Ex-situ conservation in the associated garden of CRC

Dr. A.P. Tiwari, Bot. Asst. brought live germplasm of two species viz., *Syzygium jambos* (L.) Alston and *Hedychium coronarium* J. Koenig for introduction in the associated botanic garden of the centre.

Publications

Tiwari, A.P., Shaikh, M., Gavade, S.K., Lekhak, M.M. and Sunojkumar P. 2017. *Leucas pachmarhiensis* (Lamiaceae; Lamiaceae) a new species from Central India. *Nordic Journal of Botany*. Doi: 10.1111/njb.01636.

Verma, A.K., Gautam, N.K. and Bharti, K.A. 2017. Macro and micro morphological characteristics of *Plantago* seeds and its implication for species identification. *Curr. Botany*. 8: 159–163.

Singh, H.B., Verma, A.K. and Bharati, K.A. 2017. भारत के प्राकृतिक रंजक एवं उनके स्रोत. *Swadeshi Vigyan* 1: 3. (<http://swadeshivigyan.com/naturaldyes>).

– Dr. G.P. Sinha
Scientist 'E' & HoO

DECCAN REGIONAL CENTRE, HYDERABAD

Dr. G. Swarnalatha, Bot. Asst. identified six macro lichen specimens for the project, "Inventory of Macrolichen diversity of Odisha State".

Dr. K. Chandra Mohan, SPF, identified 14 species for the project, "Flora of Satkosia Tiger Reserve", Odisha.

Digitisation of Herbarium specimens

300 herbarium sheets were scanned belonging to various families at BSID.

Public service rendered

Dr. L. Rasingam, scientist 'D' & HoO evaluated a Ph.D. thesis, "Studies on Genetic diversity, Mapping, Reproductive biology, Anatomy, Bio-efficacy and Mass propagation of *Jatropha maheshwarii* Subr. & Nayar, A steno endemic species" for Manonmanium Sundaranar University, Tirunelveli.

Dr. J. Swamy, Bot. Asst. delivered two lectures on "Botanical Survey of India - An Overview & Its Role in Advancement of Taxonomic Research & Conservation in India" and "Herbarium Techniques" to M.Sc., Botany students from Andhra University, Visakhapatnam, Andhrapradesh on 8th December 2017.

Dr. G. Swarnalatha explained about Lichens to 37 M.Sc., Botany students and faculty members of Andhra University from Visakhapatnam, Andhra Pradesh on 08. 12. 2017.

Sri V.N. Rao demonstrated herbarium techniques and also explained about museum exhibits to 37 M.Sc., students and two faculty members of Andhra University from Visakhapatnam, Andhra Pradesh on 08. 12. 2017.

Dr. J. Swamy Identified 31 plant for various universities and colleges from Andhra and Telangana states.

Meeting / workshop attended

Dr. L. Rasingam attended State level workshop on the Preparation of 6th National Report to CBD at Vijayawada, organised by the Andhra Pradesh State Biodiversity Board on 19.12.2017.

Dr. S. Mudadla, Scientist 'B' attended Telangana State Wildlife board meeting at secretariat on 19.12.2017.



Photo: DRC

Dr. L. Rasingam interacting with the students of Andhra University, Vishakapatnam



Dr. G. Swarnalatha delivering talk on Lichens



Photo: DRC

Dr. J. Swamy delivering talk on herbarium techniques



Sri V.N. Rao demonstrating the herbarium techniques

Visitors/students

Thirty seven (37) M.Sc. Botany students and two staffs from Andhra University visited this centre as part of their curriculum on 08.12.2017.

Dr. S. Bhavana, Researcher of Andhra Pradesh visited this centre for Herbarium and literature consultation on 04.12.2017.

Dr. Faiz Bux, Researcher from Odisha, visited this centre for Herbarium and literature consultation on 05.12.2017.

Publications

Chandramohan, K., Bhanja, M.R. and Reddy, Ramchenna, C. 2017. *Aralia thomsonii* (Araliaceae) - A new distributional record for Peninsular India. *J. Econ. Taxon. Bot.* 40(3 & 4): 159–160.

Swamy, J. and Annamma, P.S. 2017. New Distributional Record of an Endemic Species *Hygrophila serpyllum* (Acanthaceae) from Kawal Tiger Reserve, Telangana, India. *J. Econ. Taxon. Bot.* 40(3-4): 174–176.

Dr. L. Rasingam
Scientist 'D' & HoO

EASTERN REGIONAL CENTRE, SHILLONG

During the period, one field tour were conducted by Dr. N. Odyuo, Scientist 'D', from 20th November to 9th December, 2017 and collected 204 field numbers for Flora of Nagaland (Vol. 1 & 2); During this period 24 species identified for Flora of West & South-West Khasi hills district, Meghalaya with reference to the sacred groves by Dr. Chaya Deori, Scientist 'D' and Dr. S.R. Talukdar, Bot. Asst. and Flora of Eastern Nagaland by Dr. N. Odyuo and Dr. R. Daimary, Bot. Asst. For Micropropagation, Phytochemical Screening of Medicinal Plants and Molecular Characterization of Selected Species of NE India DNA was extracted from *Pyrenaria khasiana*, *Pyrenaria khasiana* var. *lakhimpurensis*, *Pyrenaria barringtoniifolia* and the extracted DNA was quantified on 0.8% agarose gel and documented by Dr. Deepu Vijayan, Scientist 'C'.

In Taxonomic Revision of genus *Riccia* (Marchantiophyta) in India by Dr. S.K. Singh, Scientist 'D', Identified 5 samples of *Riccia* belonging to 2 species namely *Riccia billarderi* and *Riccia discolor* from Western ghats.

Under Taxonomy, phylogeny and *ex-situ* conservation of Micro-fungal diversity from North-east India with special emphasis on fungi associated with endemic and threatened plants of Meghalaya, Five fungal species (*Yuccamyces* sp., *Torula* sp., *Cryptophiale* sp., and two unidentified cultures) were grown in malt extract both for DNA isolation, DNA isolated from three fungal species is amplified in Polymerase chain reaction (PCR). by Dr. Ashish Venkatesh Prabhugaonkar, Scientist 'B'.

In Micro-propagation of RET Plants of Northeast India by Dr. A.A. Mao, Scientist 'F' & HoO and L. Ibemhal Chanu, Bot. Asst. 25 *Cymbidium tigrinum* planted in greenhouse, 5 *Armorum senapatianum* planted in greenhouse.

Observed and recorded phenological data of flowering and fruiting of 54 plant species viz., *Aesculus assamica*, *Ageratum conyzoides*, *Albizia lucidior*, *Allamanda cathartica*, *Bixa orellana*, *Bougainvillea glabra*, *Bulbophyllum careyanum*, *Bulbophyllum pteroglossum*, *Calanthe sylvatica*, *Caryota urens*, *Catunaregam spinosa*, *Cephalantheropsis obcordata*, *Cerasus cerasoides*, *Cheilocostus speciosus*, *Cleisostoma paniculatum*, *Cleisostoma racemiferum*, *Coelogyne ovalis*, *Coelogyne punctulata*, *Coelogyne viscosa*, *Dendrobium amplum*, *Dendrobium chapaense*, *Dienia ophrydis*, *Dillenia indica*, *Dracaena angustifolia*, *Elaeocarpus floribundus*, *Eria bambusifolia*, *Eurya acuminata*, *Exbucklandia populnea*, *Gastrochilus dasypogon*, *Hedychium aureum*, *Hedychium flavescens*, *Hedychium flavum*, *Hedychium thyriforme*, *Lagerstroemia speciosa*, *Liparis cordifolia*, *Liparis odorata*, *Liparis viridifolia*, *Magnolia champaca*, *Melastoma malabathricum*, *Nepenthes khasiana*, *Oberonia mucronata*, *Oberonia acaulis*, *Paphiopedilum insigne*, *Phaius mishmensis*, *Pholidota imbricata*, *Rauvolfia serpentina*, *Sterculia hamiltonii*, *Tabernaemontana divaricata*, *Taxus wallichina*, *Zeuxine affinis*, *Zingiber murlenica*, *Zingiber neotruncatum*, *Zingiber roseum* and *Zingiber zerumbet* available at EBG, Barapani by Dr. M. Murugesan, Scientist B and Sri L.R. Meitei, Bot. Asst.

Public service rendered

Identified about 43 samples of specimens received from various institutions.

Workshop/meeting attended

Dr. A.A. Mao, Dr. S.K. Singh and Dr. Deepu Vijayan attended inaugural programme of Northeast Regional Brainstorming workshop on 'Biosresources Development and sustainable Utilization' organised by BRCD, Shillong on 04.12.2017 at NEC Auditorium, Shillong.

Dr. A.A. Mao attended inter-departmental Wildlife Crime meeting organised by Forest Department, Govt. of Nagaland at Dimapur on 06.12.2017.



A team of scientists from different universities of Japan visiting ERC, BSI, Shillong for consulting herbarium

Visitors/students

Dr. Masashi Yamamoto, Professor, Faculty of Agriculture, Kagoshima University, Japan; Mr. Toshiki Osada, Emeritus Professor, Research Institute of Humanity and Nature, Japan; Dr. Akira Kitajima, Professor, Kyoto University, Japan and Dr. Machiko Yamashita, Department of Food Technology, Koyoto, Japan visited herbarium (ASSAM) of ERC, Shillong for consultation of Herbarium specimens.

Five scientists, six Professor, one research scholars, two post doctoral students, 22 students and four other visitors from various Institutions, Colleges and Universities visited the Regional Centre.

– Dr. A.A. Mao
Scientist 'F' & HoO

NORTHERN REGIONAL CENTRE, DEHRADUN

Dr. Kumar Ambrish, Scientist 'D' & HoO undertaken a field tour to the different parts of Naldhera Valley and Kufri Valley from 14th to 19th December 2017 for floristic survey.

Herbarium specimens identified

Identified total 48 species and made description for 44 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 165 specimens of the family Rubiaceae and of Pteridophytes.

Public Services rendered

Identified nine species for students and staff from different institutes/Universities.

Interview conducted

Conducted an Interview for the recruitment of 10 GSDP students for advance course of Para taxonomist on 21.12.2017.

Hindi Karyashala

Hindi Karyashala was organized by the centre on 26.12.2017.

Visitors/students

A batch of 20 students of Centre for Heritage Management, University of Ahmadabad and a batch of 30 Students (M.Sc.) of Department of Botany, Rohelkhand University, Bareilly visited the centre.

Publication

Sharma, S., Deroliya, P.K. and Kholia, B.S. 2017. *Murlen Rashtriya Udyan, Mizoram ke Maanav Adhivashit buffer kshtra me Parnang vividhata. Vanaspati Vani* 26: 6–8.

Kharakwa, K. and Kumar Ambrish. 2017. *Vishva Dharohar Phulo ki Ghati ka Vaanaspatik avlokan. Vanaspati Vani* 26: 16–20.

Kumar Ambrish, Kumar, Arvind and Srivastava, S.K. 2017. *Nandhour Vanya Jeev Abhyaran me paayi jane vali vanaspaityo ki Padap jaiv vividhata. Vanaspati Vani.* 26: 21–28.

Rajni Kant and Kumar Ambrish. 2017. *Great Himalayan Rashtriya Uddyan-Ek Parichaya. Vanaspati Vani* 26: 29–32.

Singh, H. and Kumar, Puneet. 2017. *Pangi Ghati (Chamba, Himachal Pradesh) ki vanspati ka sankshipt vishleshan. Vanspati Vani.* 26: 33–36.

Deroliya, P.K., Srivastava, S.K. and Kumar Ambrish, 2017. *Yarsha Gumba - Ashtitva ke liye sangharshrat ek kavak. Vanaspati Vani* 26: 54–55.

Singh, Shalini and Kumar Ambrish. 2017. *Doon Ghati me paayi jane vali kuch upyogi vanaspaitiya. Vanaspati Vani* 26: 73–75.

Photo: Rajnikant



Officials of NRC, Dehradun observing Hindi Karyashala

Photo: Rajnikant



Students from Centre for Heritage Management, University of Ahmadabad at NRC, BSI, Dehradun

Dr. Kumar Ambrish
Scientist 'D' & HoO

SOUTHERN REGIONAL CENTRE, COIMBATORE

Dr. M. Palanisamy, Scientist 'D' and Dr. S.K. Yadav, Bot. Asst. conducted a botanical exploration to Goa coastal area from 11th to 22nd December 2017 and vouched 304 field numbers of seaweeds and also preserved 60 field numbers into wet form. Dr. M.Y. Kamble, Scientist 'D' and Dr. T.S. Saravanan, Bot. Asst. conducted an *ex-situ* conservation tour to Agasthyamala Biosphere Reserve, Kerala from 11th to 16th December 2017 and collected and introduced 10 endemic tree species into the National Orchidarium and Experimental Garden (NOEG), Yercaud.



Exposed rocks supporting seaweed growth at Goa coast



Luxuriant growth of *Sargassum cinctum* J. Agardh

Photo: SRC



Enteromorpha linza - a green seaweed exposed on sand during low tide

Herbarium Identification

Dr. C. Murugan, Scientist 'D' and Dr. S. Arumugam, Bot. Asst. identified specimens of 70 field numbers pertaining to Meghamalai WLS, Tamil Nadu. Dr. K.A.A. Kabeer, Scientist 'D' and Sri A. Ravi Kiran, Bot. Asst. identified specimens of 11 field numbers in connection with Kodaikanal WLS, Tamil Nadu. Dr. J.H. Franklin Benjamin, Scientist 'C' and Sri Rakesh, G. Vadhyar, Bot. Asst. identified 85 field nos. pertaining to Kanniyakumari WLS, Tamil Nadu. In connection with documentation of Phytodiversity, Dr. C. Murugan, Dr. J.V. Sudhakar, Bot. Asst. and Dr. S. Arumugam identified specimens of 11 field numbers and also completed description of 6 *Carex* species for Cyperaceae of Tamil Nadu. Dr. R. Manikandan, Scientist 'D', Sri R.K. Singh, Botanist and Ms. R. Mehala Devi, Sr. Pres. Asst. updated nomenclatural citations, distribution data and description of 4 taxa of the family Caprifoliaceae.

Ex-situ conservation

Dr. S. Kaliamoorthy, Scientist 'D', Dr. M. Y. Kamble, Scientist 'D' and his team introduced 10 endemic tree species and 7 other endemic plants, multiplied 84 samples, belonging to 18 species, developed 8 cuttings and recorded the phenological data of 20 plants, including 12 orchids and 8 other angiosperms at the NOEG, Yercaud. They also multiplied 30 numbers of *Bentinckia condapanna* Berry ex Roxb. through seeds into the garden.



Inauguration of Green Skill Development Programme—Parataxonomist Course on 04.12.2018 at SRC, BSI

Meetings/programmes attended/conducted

The inaugural function of the Green Skill Development Programme (GSDP) - Parataxonomy training program was held at SRC, BSI on 04.12.2017. Dr. S. Mahimairaja, Dean, TNAU was a Chief Guest, Dr. H.M. Mubarack, Secretary, R.V.S. College of Arts & Science, was a Guest of Honour and Dr. R. Gopalan, (former Scientist, BSI) Prof. & Head, Dept. of Botany, Karpagam University was a Special speaker. Dr. M. Palanisamy delivered a lecture on “Botanical Survey of India: An overview” to the audience.

Dr. S. Kaliamoorthy attended one day National Seminar on New Horizons in Plant Biotechnology organized by the Department of Biotechnology, Periyar University, Salem on 06.12.2017 as a Resource person and delivered a lecture on “Plant Biodiversity and Conservation in India – with a special note on Rhododendrons”, also chaired a oral presentation session as chairman.

Dr. R. Manikandan attended National conference on status of Invasive Alien species of India held at Kolkata from 14th to 15th December, 2017.

Dr. C. Murugan delivered key note address entitled “Role of Botanical Survey of India in Bio-resources Conservation” at the National Workshop on “Conservation of Medicinal Plants at the Siddha Medicinal Plants Garden, Mettur Dam, Namakkal, Tamil Nadu on 16.12.2017.

The Quarterly meeting of the Hindi Committee was organized under the chairmanship of Dr. C. Murugan, HoO, on 18.12.2017 at SRC, BSI office, Coimbatore. Various issues were discussed in order to improve the uses of Hindi language in official communication.

Green Skill Development Program (GSDP)

Under the Green Skill Development Program (GSDP), various classes were delivered by the officials (Dr. M. Palanisamy - Types of Forest in Tamilnadu & Kerala; Dr. J.H.F. Benjamin - Biodiversity, Endemism and Physiography of India; Mr. R.K. Singh- IUCN categories; Dr. J.V. Sudhakar - Phytogeographic regions of India, Types of Inflorescence and Introduction to Herbarium and Hands on training – Label pasting/writing; Dr. S.K. Yadav - Forest types in India; Dr. S. Arumugam - Major ecosystems, Plant Morphology, Biodiversity profile of Tamil Nadu & Kerala and practical classes for collection and processing of monocot specimens, mounting of specimens and functions of Herbarium; Mr. Rakesh G. Vadhyar - Plant Classification by its ecology, Plant processing – Poisoning and Hands on Training – Stitching of Specimens).

Public service rendered

Identified 65 plant specimens for the students / research scholars of various institutions.

Dr. J.V. Sudhakar and Dr. S.K. Yadav delivered lectures on BSI, Madras Herbarium and Herbarium Methodology to 60 B.Sc. (Agri.) students of Kumaraguru Institute of Agriculture, Erode dist. on 28.12.2017.

Miscellaneous

A Fire fighting Demo was organised to train the staff for the uses of Fire Extinguishers on 14.12.2017 at BSI Office, Coimbatore.

Sri R. Suresh, Artist Gr 1, illustrated 21 illustrations / charts/ boards whereas Sri A.T. Durgadas, Artist, is involved in oil painting on a project based on “Endangered species of Western Ghats”.

Sri U.V. Shrivasa, JHT, prepared and translated 9 Hindi letters.

Sri V. Ramesh, Photographer, photographed the various functions / programs held at the centre and scanned 306 numbers of herbarium sheets.

Funded projects

All India Coordinated Projects in Taxonomy (AICOPTAX), “Study of Diversity of Marine Macro Algae of Andhra Pradesh, India”: Sri Aron Santhosh Kumar. Y, Project Fellow, identified 30 field numbers of marine algae, collected 20 references and completed label writing on 60 field numbers of herbarium sheets.

Acharya Jagadish Chandra Bose Postdoctoral Fellowship (AJCBPDF), “Survey, Documentation, Current Distribution, Diversity Status, Conservation Priorities and GIS Mapping of narrow Endemic Plants in Nilgiri Biosphere Reserve”: Dr. V. Ravichandran, AJCBPDF, undertook a field tour to Nilgiris from 4th to 14th December, 2017 and vouched 54 field nos. and identified 7 endemic species of Nilgiri Biosphere Reserve. Also undertook One day field trip with GSDP students to Nilgiris for Fungi/Gymnosperm on 20th December 2017.

Visitors/students

During this month, 55 scientific personnel / officials / students / scholars visited the museum, herbarium and library of this regional centre whereas 704 persons in 74 parties visited the NOEG, Yercaud.

Publication

Yadav, S.K., Palanisamy, M. and Sudhakar, J.B. 2017. Saint Mary Dweep, Karnatak ki Banspatik Vividhta. *Vanaspati vani*. 26: 41–45.

– Dr. C. Murugan
Scientist 'D' & HoO

WESTERN REGIONAL CENTRE, PUNE

Dr. Rashmi Dubey, Scientist 'D' and Sri Amit Diwakar Pandey, Sr. Pres. Asst. conducted one field tour from 19th to 24th December 2017 for the project, "Taxonomic Studies of Microfungi of Sanjay Gandhi National Park along with its 10% peripheral area".

Dr. Alok Chorghhe, Post Doctoral Fellow conducted one field tour to North-East India from 4th to 15th December 2017 for the project, "Taxonomy & Caryopsis macro-morphology of Genus *Themeda* and allied *Spathacea* genera in India".

Dr. A. Benniamin, Scientist 'D' conducted Garden inspection tour to Maharashtra Udayagiri Mahavidyalaya, Udgir- Dist, Latur, Maharashtra on 14.12.2017, under the Assistance to Botanic Garden Scheme of MoEF & CC, Govt. of India.

Mrs. A.M. Neelima, Bot. Asst. conducted Garden Inspection tour to Lead Botanic Garden, GKVK, Bangalore during 7th and 8th December 2017 under the Assistance to Botanic Garden scheme of MoEF & CC.

Identification of herbarium specimens

Dr. Priyanka Ingle, Scientist 'B' identified 14 specimens for the project, 'Floristic Diversity of Wan Wildlife Sanctuary'.

Dr. C.R. Jadhav, Botanist identified 20 specimens for the project, 'Floristic survey of Someshwara Wildlife Sanctuary, Karnataka'.

Sri S.C. Patil, Bot. Asst. identified three species of plants for the project, 'Flora of Pushpagiri Wildlife Sanctuary, Karnataka'.

Dr. A. Benniamin identified seven Pteridophyte species collected from Karnataka in connection with the project, 'Ferns of Karnataka'.

Sri D. Jesubalan, Bot. Asst. identified four Pteridophyte species for the project, 'Pteridophytic flora of Pushpagiri Wildlife Sanctuary, Karnataka with 10% periphery'.

Sri D. Tripathi, SPF identified four Pteridophyte species for the project, Pteridophyte flora of Kudremukh National Park, Karnataka.

Smt. Shreya Sengupta, SPF conducted SEM studies of 22 samples of micro fungi for the project, 'Microfungi of Biligiri Rangaswamy Temple wildlife Sanctuary, Karnataka' and identified 13 species.

Dr. Alok Chorghhe identified three species of the genus *Themeda* and conducted SEM studies of the caryopsis.

Public services rendered

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

Meetings/seminars/programmes attended

The GSDP Advanced Course on Parataxonomist in WRC, BSI, Pune was inaugurated on 20.12.2017 by Dr. Anandi Subramanian, Sr. Economic Advisor, MoEF & CC., New Delhi. Dr. J. Jayanthi, Scientist 'D' & Course Coordinator made a presentation on the Foundation course (Biodiversity Conservationists) and Advance course (Parataxonomist) of GSDP at BSI, Pune as well as presented about the brief activities of Botanical Survey of India, Western Regional Centre, Pune. Following that Dr. P.S. Bhatnagar, Scientist 'D' & HoO, ZSI, Pune briefed about the GSDP activities at ZSI, Pune.

The presentation was followed with an interactive session which began with a key note address by Dr. Anandi Subramanian, Sr. Economic Advisor, MoEF & CC, New Delhi about the genesis of GSDP course. Trainee students of Parataxonomist course from BSI and ZSI enthusiastically interacted with madam and discussed on various beneficial aspects of this course. The programme was anchored by Smt. A.M. Neelima, Bot. Asst., BSI, Pune.



Dr. Anandi Subramanian, Sr. Economic Advisor, MoEF & CC, Govt. of India interacting with GSDP students trainee during inauguration of Parataxonomist Course

The review meeting was held in presence of Sri Kumar Rajnish, NPC, Envis-Cell, MoEF & CC, Ms. Neha Parki, Indian Institute of Tropical Meteorology, Pune, Dr. P.S. Bhatnagar, Scientist 'D' & HoO, Dr. V. Hegde, Scientist 'D' & Course Coordinator, ZSI, Dr. A. Kalawate, Scientist 'D', ZSI, Dr. Giridathar, Scientist, BNHS, Mumbai and Parataxonomist students from BSI & ZSI.

Dr. P. Lakshminarasimhan, Scientist 'E' & HoO attended the Ph.D. registration presentation of synopsis of the topic, 'A Taxonomic Revision of the Tribe *Argyrieae* (*Convolvulaceae*) in India' of Ms S. Shalini, Senior Project Fellow, BSI, CNH, Howrah in the Department of Botany, Calcutta University on 13.12.2017 [as the Supervisor with Dr. D. Maity as Joint Supervisor].

Dr. J. Jayanthi, Scientist 'D' attended the Subcommittee meeting of Threatened Plants of Maharashtra at Maharashtra State Biodiversity Board at Wanwadi, Pune on 05.12.2017.

Visitors/students

Dr. Sonali Jadiye, visited WRC on 21.12.2017; Dr. Karthick Balasubramanian, Scientist 'C', ARI, Pune visited WRC on 23.12.2017; Dr. Kiran Ranadive, Associate Professor, Waghire College, Saswad visited WRC on 26.12.2017; Dr. Bharti Sharma, Scientist, ARI, Pune visited WRC on 29.12.2017 as resource person for delivering lecture to the GSDP – Parataxonomist students.

Sri Gaikwad Swaroop Singh from Shivaji University, Kolhapur visited WRC for herbarium consultation of Genus *Mucuna* on 04.12.2017.

Ms. V.N. Varsha, student from Dr. B. A. M. University, Aurangabad, visited WRC for herbarium consultation of genus *Abutilon* on 06.12.2017.

Sri Kishor Saste, student from Botany Department, Ramakrishna More College, Akurdi, Pune visited WRC for herbarium consultation of genus *Blumea* on 08.12.2017.

Mr. J. Stephan, Research student from JNTBGRI, Trivandrum visited WRC for herbarium consultation of genus *Humboldtia* on 08.12.2017.

Sri Avinash, Research student from Walchand College, Solapur visited WRC for herbarium consultation of genus *Ziziphus* on 14.12.2017.

About eight students from College of Engineering, Pune, Maharashtra, one research student from Vivekanand College Aurangabad, Maharashtra and Sri Abhijeet, student from Solapur college visited WRC during this month.

Dr. P. Lakshminarasimhan
Scientist 'E' & HoO



Bryophyllum pinnatum (Lam.) Oken (CRASSULACEAE), known commonly as Air Plant, Life Plant, Leaf of Life, Resurrection Plant, etc. It is easy to grow just from one leaf and hence cultivated in many parts of the world as ornamental houseplants and rock or cactus garden plants. This fast growing small shrub tolerates almost all weather conditions. It possesses medicinal properties, used for Asthma or shortness in breath.
Photo: K.A. Sujana



Inauguration of GSDP Advanced Course on Parataxonomist by Dr. Anandi Subramanian, Sr. Econ. Advisor, MoEF & CC, New Delhi at WRC, BSI, Pune on 20th December 2017



Dr. Paramjit Singh, Director, BSI addressing during National Conference on Status of Invasive Alien Species in India, organized by ZSI and BSI held at The Park, Kolkata on 14th and 15th December 2017

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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