

Minutes of the Meeting of the Research Advisory & Monitoring Committee (RAMC) of the Botanical Survey of India (BSI) held at Port Blair on March 22, 2013

The Meeting of the Research Advisory & Monitoring Committee was held in the conference room of the hotel Megapode Resort at Port Blair on 22nd March, 2013. As the Chairman of the Committee, Prof. A.K. Koul, had expressed his inability to attend due to some compelling reasons, Dr R.R. Rao, INSA Honorary Scientist and one of the RAMC members, on the advice of the Ministry, agreed and acted as Stand-in Chairman and presided over the meeting. The meeting was followed by a visit to the associated botanic garden of the Andaman & Nicobar Regional Centre (ANRC) of BSI at Dhanikhari, where all the members not only inspected the development of the garden but also planted saplings of *Cycas rumphii* in an avenue of the garden. Field visits to Magar Nullah area of the Baratang Island and Mt. Harriet in Bamboo Flat Island to have the first hand knowledge of the richness of the flora and difficulties in exploration were made by all members of the committee. The list of members who attended the meeting is appended at the end.

At the outset, Dr Paramjit Singh, Director, BSI, extended a warm welcome to Dr. R. R. Rao, as well as other distinguished members of the Committee and the Special Invitees. He wished and hoped that the valuable inputs from the Committee would not only help the Survey to develop a holistic vision on 'Plant Taxonomy', but would also encourage collaborative research programmes towards inventorying of all plant groups and promoting *ex situ* conservation.

Dr R.R. Rao, Stand-in Chairman, remarked that the BSI is the premier research organization which is contributing tremendously towards the knowledge of the plant diversity of the country, for which it needs to be complimented. He further stressed that an Organisation like BSI needs no advices/suggestions but needs serious monitoring of the progress of various research programmes. He observed that the BSI is currently focussing on diversity at species level only, but the Survey should also look into diversity at infraspecific level and phenotypic diversity in populations. He further observed that every year about 200 new taxa are being added to the Indian flora, which suggests that the Botanical Surveys are yet not complete, and emphasised the need for more intensive surveys, especially in areas where from more and more new species are being reported. He also emphasized the need for capacity building in the field of Cryptogams.

The Agenda Items were then taken up in seriatim.

Agenda Item No. 1: Confirmation of the minutes of last meeting:

Dr D.K. Singh, Member Secretary, informed the Committee that the minutes of the last meeting, held at Arid Zone Regional Centre of BSI at Jodhpur on 22nd September 2012, were circulated among the members on 25th October, but no comments were received. He therefore, requested that the same may be confirmed. The minutes were later confirmed.

Agenda Item No. 2: Action taken on the decisions of the previous meeting:

- 1. Engagement of consultants for editing / writing of 'Flora of India'.** It was informed that a proposition for engagement of consultants for editing/writing of 'Flora of India' was discussed in the Program Management Committee (PMC) of BSI on October 25,

2012. Shri B.M.S. Rathore, Joint Secretary, MoEF also explained the need for hiring of Consultants and a formal proposal was sent to MoEF in November 2012. In this connection the queries raised by MoEF on the proposal were also answered. The Committee expressed concern over the delay and viewed that the Director BSI should be empowered to appoint Consultants in order to expedite time bound research programs.

2. **Enhancement of fellowship amount of BSI research scholars on par with DST and CSIR:** It was informed that the proposal for enhancement of fellowship of BSI research scholars was discussed in the PMC of BSI on October 25, 2012 and a formal proposal was sent to MoEF on October 31, 2012. The decision of the ministry is still awaited. Dr C.S. Nautiyal, Director, NBRI, informed that non NET qualified candidates can be appointed as 'Project Fellows' only. The Committee suggested that the matter is to be pursued more vigorously.
3. **Raising the number for Emeritus Scientists in BSI to 10 and the upper age limit to 70 years and extension of tenure of Dr V. Singh, as a special case:** It was informed that on an earlier occasion in 2010, the Department of Expenditure, Ministry of Finance had rejected the similar proposal of both BSI and ZSI for enhancing the upper age limit to 70. The committee had recommended appointment of Dr. V. Singh as a Consultant. Accordingly, the MoEF has been requested to appoint Dr V. Singh, former Emeritus Scientist of BSI, as a Consultant. It was further informed that as recommended by the Committee earlier, three positions of Emeritus Scientists were advertised in 'Current Science', but only one application was received from a BSI scientist who will be retiring on superannuation in May 2013.

The Committee suggested the engagement of experienced and active retired taxonomists to expedite the work under 'Flora of India' program of BSI as well as editing of several pending manuscripts. The committee also suggested to evolve some yardsticks, like publications in peer-reviewed journals, research guidance etc., for considering time extension of time period for Emeritus Scientists and recommended revising the guidelines for 'Emeritus Scientist' scheme of BSI for approval by the MoEF.

4. **BSI should bring out publication documenting plants rediscovered / recollected after long intervals along with reasons for non-collection, biotic and natural threats, etc.:** It was appraised that BSI has already listed 20 species of both flowering and non-flowering plants that have been recollected/rediscovered after an interval of 50 years or more since 2011. The Committee was also appraised that seeds of *Polyalthia crassa* and *Pyrenaria khasiana* – a member of tea family Theaceae, which were recently collected after a long gap of over 130 years, have been recollected for introduction in the garden. The Chairman suggested grafting technique may be tried as well for their introduction and multiplication in the conservatory. Dr D.K. Singh further informed that the orchid *Taeniophyllum filiforme*, earlier recollected from North Andaman after a gap of nearly 135 years, was recently collected again from Middle Andaman. The committee commended the BSI Scientists for such discoveries.

It was further suggested that publications documenting such species should be brought out periodically.

5. BSI should enter into collaborative research programs with peer institutions/ stakeholders in the areas of core competence of the collaborating partners based on mutually agreed terms and conditions without affecting its on-going activities:

It was informed that a meeting of the senior scientists of BSI and the National Botanical Research Institute (NBRI), Lucknow was held in November 2012 to identify the areas of collaboration and the matter is being pursued. Another collaborative research programme between UP State Forest Department and the BGIR, Noida for eco-restoration of Surajpur wetland in Greater Noida has been submitted to MoEF for funding. A draft MoU between BSI and the Ashoka Trust for Research in Ecology and the Environment (ATREE) for collaboration in research activities in Plant science with special emphasis on taxonomy, biodiversity and plant conservation has been submitted to the ministry for approval. The proposal envisages a compilation of the checklist of flowering plants of India by 2015 in the first phase.

Prof. Kamal Bawa, Distinguished Professor at the University of Massachusetts, Boston, attending the meeting as a Special Invitee, underlined the need for strengthening collaborative research programs, the role of molecular taxonomy in refining the data and ensuring data compatibility while building databases for easy sharing. He also expressed that there shall be valuable data on herbarium sheets in assessing climate change and implications in phenology of species.

Agenda Item No. 3: Review of the Progress report of BSI from March to August 2012:

Dr D.K. Singh made the presentation on the progress made by the BSI between September 2012 and February 2013, during which 75 field tours (including those by BSI research scholars) were undertaken in four wetlands, 19 protected areas and different ecosystems spreading across 08 bio-geographic regions, viz. Western Himalaya, Eastern Himalaya, North-east India, Arid-Semi Arid region, Gangetic Plains, Deccan Peninsula, Western Ghats and the Coasts in three biodiversity hot spots, i.e. the Himalaya, Indo-Burma and the Western Ghats-Sri Lanka; c. 14000 specimens of flowering as well as non-flowering plants were collected; over 7000 specimens were identified into 2779 species; 23 taxa were discovered as new to science, two genera and 38 species and three varieties recorded as new to India and documented range extensions in 94 taxa across major geographical regions/States; recollected six species after a gap of over 50 years; 107 taxa under national flora, 808 taxa under regional/state/district flora, 675 taxa under flora of protected areas were documented; ethno-botanical information from Balangir, Nabrangpur and Barh districts of Odisha and Dang district of Gujarat were documented; over 3500 live plants belonging to c. 290 threatened, endemic or economically important species were introduced in AJC Bose IBG, BGIR and other associated botanic gardens of BSI; nutraceutical value of 16 wild edible plants of Meghalaya were analyzed; 11 books, including vol. 23 of 'Flora of India', two periodicals, 132 research papers and 31 popular articles were published; over 2500 type specimens were digitized; 1,216 specimens were identified for the students/scientists outside BSI c. about 1100 pages of literature was provided and a workshop on 'Botanical Nomenclature' was organized.

The Committee commended the achievements of BSI during the period under review. The Chairman observed that progress under different areas, like flowering plants, non-flowering plants, etc. should be presented by different scientists. He suggested

depositing the germplasm of proposed new species of *Musa* in the repository of National Bureau of Plant Genetic Resources (NBPGR).

Prof. D.J. Bhat observed that the progress of work is undoubtedly remarkable and the publications of BSI displayed on the side-table are wonderful and praiseworthy. He emphasized the need for giving proper publicity to new discoveries made by BSI through both print as well as electronic media. He also stressed on adopting/employing molecular data to support the morphological basis for describing a novelty particularly in the lower groups.

Dr P.G. Latha, Director, JNTBGRI, observed that data on nutraceutical values of different plant species investigated during the period should also have been presented.

Agenda Item No. 4: Approval of the Annual Research Program 2013 – 14:

Dr D.K. Singh informed that for 2013 – 14 a total of 107 research programs have been proposed, 76 of which are ongoing while 31 are new proposals. These include 16 towards 'national flora', 05 'regional flora', 05 'district flora', 30 protected areas, 02 under wetlands and so on. It was also informed that 104 field tours for collection of dried specimens, 16 field tours for collection of live germ plasm for introduction in gardens and 37 herbarium consultation tours will be undertaken during the period. After due deliberations, the Committee approved the Annual Research Programme. The Committee also approved time period extensions for the projects (i) Ferns of Maharashtra (up to March 2014), (ii) Follicolous fungi of Maharashtra (up to March 2016) and (iii) Seaweed survey of Kerala coast (up to December 2013) and asked BSI to ensure the completion of the projects within the extended time period in case the executing scientists are transferred to another centre.

Agenda Item No. 5: Extension of the tenure of Emeritus Scientists of BSI:

Dr D.K. Singh informed that the Emeritus Scientists in BSI are initially appointed for a period of three years, with the tenure extendable by a further period of two year, subject to the upper age limit of 65 years, in case their work is found satisfactory. Currently three Emeritus Scientists, viz. Dr H.J. Chowdhery (Revisionary studies on some sub-tribes of the Family Orchidaceae), Dr K.P. Singh (Revisionary studies on lichen family Pertusariaceae s.l. in India) and Dr J.R. Sharma (Family Hymenochaetaceae in India), are working in BSI, who will be completing their tenure of three years in June 2013. The Committee asked them to make brief presentations introducing their project, achievements made so far and the quantum of work yet to be completed. Accordingly, the three Emeritus Scientists made their presentation.

Prof. Kamal Bawa commended the excellent work done by all the Emeritus Scientists and once again reiterated the need for data sharing. He desired to know the rate at which new species of orchids are added annually to Indian flora and suggested to link the results of taxonomic researches to various biodiversity issues. Prof. D.J. Bhat reiterated the need for supplementing morphological data with molecular data, while Dr P.G. Latha suggested that the phytochemistry in case of lichens should be looked into in more detail and offered any assistance from her institute in this regard.

The Chairman thanked all the Emeritus Scientists for their excellent presentation. The Committee found the progress report presented by the three Emeritus Scientists satisfactory and unanimously recommended the extension of the tenure of all the three Emeritus Scientists for a further period of two years from the date it becomes due.

Towards the end Dr C. Murugan, Scientist C-in-Charge, ANRC, BSI, Port Blair and Dr M. Venkat Ramana, Project Fellow, BSI-DBT project, made brief presentations on the activities and achievements of the centre and methodology and achievement under the project 'Quantitative Assessment of Plant Diversity in Andaman & Nicobar Islands' respectively.

Agenda Item No. 6: Any other issue for consideration with permission of the Chair:

Prof. Kamal Bawa observed that it was important to identify the areas which need to be urgently explored and linking the taxonomy to the biodiversity science. He emphasized the need for digitization of data available with BSI and sharing the same in a transparent manner. He said that one of the reasons for decline in taxonomy in the country is closing ourselves to international experts. He underlined the need for a crash program of international training of 10-15 young scientists under experts of different taxonomic groups. He said that training in computational taxonomy is also important as no molecular taxonomic work can be done without that. Talking about the proposed collaborative program between BSI and ATREE, Prof. Bawa invited BSI to co-own the 'Checklist of Indian Plants' being prepared by ATREE.

Prof. D.J. Bhat suggested that BSI should set up molecular biology laboratory and encourage collaborative research to add molecular data to classical taxonomic work.

Dr K.P. Singh, Emeritus Scientist, BSI, said that the exploration of non-flowering group of plants should be given more impetus.

The Chairman said that instead of international training, international collaborations should be encouraged and efforts should be made to send BSI scientists on exchange programme to give them exposure to contemporary technologies and methodologies in the field of taxonomy and biodiversity research. Drawing attention to the proposed 'National Taxonomy Congress', he suggested that the deliberations of the Congress should be in 'Panel Discussion' mode where international experts should also be invited and the points of discussion could be (i) significant achievements by the taxonomists with high socio-economic impact, (ii) future of taxonomy, (iii) contribution of taxonomy in well-being of mankind and (iv) mainstreaming of taxonomy with biodiversity and livelihood issues. To make the event more appealing to people, exhibitions and side-events should also be organized. He thanked all the members and the Special Invitees for actively participating in the deliberations.

Recommendations:

The following recommendations emerged from the deliberations:

1. Director BSI should be empowered to appoint Consultants in order to expedite time bound research programs. **(Action: MoEF)**
2. The 'Guidelines' for the Emeritus Scientist Scheme in BSI should be revised raising the number of Emeritus Scientists from 6 to 10 and the upper age limit from 65 to 70 years. **(Action: BSI/MoEF)**
3. Extension of the tenure of Dr H.J. Chowdhery, Emeritus Scientist, BSI, NRC, Dehradun; Dr K.P. Singh, Emeritus Scientist, BSI, CRC, Allahabad and Dr J.R. Sharma, Emeritus Scientist, BSI, NRC, Dehradun for a further period of two years from the date it becomes due. **(Action: BSI/MoEF)**

The meeting ended with vote of thanks by Dr D.K. Singh.

List of Participants

1.	Dr R.R. Rao	Stand-in Chairman
2.	Dr C.S. Nautiyal, Director, NBRI, Lucknow	Member
3.	Dr P.G. Latha, Director, TBGRI, Trivendrum	Member
4.	Prof. D.J. Bhat, Goa	Member
5.	Prof. S.C. Srivastava, Lucknow	Member
6.	Dr P. Singh, Director, BSI	Member
7.	Prof. Kamal Bawa, Boston, USA	Special Invitee
8.	Dr S. Dam Roy, Director, CARI, Port Blair	Special Invitee
9.	Dr S. Jayakumar, Head, Department of Plant Sciences, JNRM (Govt.) College, Port Blair	Special Invitee
10.	Dr H.J. Chowdhery, Emeritus Scientist, BSI, Dehradun	Special Invitee
11.	Dr K.P. Singh, Emeritus Scientist, BSI, Allahabad	Special Invitee
12.	Dr J.R. Sharma, Emeritus Scientist, BSI, Dehradun	Special Invitee
13.	Dr P. Venu, Scientist F, BSI, Hyderabad	Invitee
14.	Dr C. Murugan, Scientist C-in-Charge, BSI, Port Blair	Invitee
15.	Dr M.Y. Kamble, Scientist C, BSI, Port Blair	Invitee
16.	Dr Lalji Singh, Scientist C, BSI, Port Blair	Invitee
17.	Dr T.A.M. Jagdeesh Ram, Scientist C, BSI, Port Blair	Invitee
18.	Dr D.K. Singh, Scientist F, BSI, Kolkata	Member Secretary