

Minutes of the Meeting of the Research Advisory & Monitoring Committee (RAMC) of the Botanical Survey of India (BSI) held at Gangtok on May 10–11, 2014

The 6th meeting of Research Advisory & Monitoring Committee was held in the Committee room of Sikkim Himalayan Regional Centre, BSI, Gangtok on 10th&11th May 2014, under the chairmanship of Prof. A.K. Koul, Dean, Academic Affairs, School of Biosciences and Biotechnology, Baba Ghulam Shah Badshah University, Rajouri. The meeting was preceded and followed by visit to the campus garden, orchidarium, herbarium, library and the laboratory of the Centre. The list of members / invitees, who attended the meeting, is appended at the end.

At the outset, Dr Paramjit Singh, Director, BSI, welcomed the Chairman, other distinguished members and the Special Invitees. He observed that the deliberations of the Committee have been very helpful in fine-tuning the priorities of BSI towards exploration and documentation of country's plant diversity and hoped that a collaborative approach will further expedite the process.

Prof. A.K. Koul, Chairman, greeted all the members and expressed happiness over the presence of Dr R. Dalwani, Advisor (CS), MoEF in the meeting as it helps in follow up of the recommendations of the Committee at Ministry level. He emphasized the need for strengthening of BSI, which in turn should develop synergy between centers of plant resources and institutes of taxonomy in the country. He observed that BSI alone cannot fulfil the demand of documentation of India's plant wealth, hence collaborative approach and networking of organizations working for the same goal is needed for documentation of all plant groups, especially the '*Flora of India*'. He also emphasized the need for in-service skill refinement of BSI scientists to enable them to achieve the assigned task effectively and expeditiously. The Chairman also observed that the digitization programme of BSI, conservation of threatened species and documentation of endemic taxa need more emphasis. He further observed that MoEF should facilitate rehabilitation of threatened taxa, and their multiplication with financial assistance to various gardens across the country, through State Forest departments.

Dr. (Mrs.) R. Dalwani, Advisor, MoEF, appreciated the good work done by the RAMC and emphasized the need for strengthening of monitoring mechanisms by developing management information system (MIS), digitization and website development. She observed that to ensure visibility, BSI should expeditiously develop its website. She also stressed upon the need to update the Red Data Book of Indian plants and the red list status of important species. She asked BSI to provide complete status of manpower so that the gaps can be taken care of.

Thereafter, 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 that the minutes of the last meeting, held at Northern Regional Centre of BSI at Dehradun on 22nd October 2013, were circulated among the members on 4th April 2014, 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. The position of Director, BSI should be upgraded to the level of Scientist H to empower him administratively and financially to take expeditious decisions necessary for fulfilling department's mandate.** It was informed that the proposal is being prepared for submission to the ministry for action. Dr. (Mrs.) R. Dalwani observed that for upgradation of position of Director, BSI, a case could be made before the 7th Pay Commission. However, ministry may look into any proposal for improving administrative powers of the Director.
- 2. The BSI should publish on-line 'Pictorial Flora of India'.** It was informed that the efforts in this direction have already been initiated, and once the website of BSI, which is currently under reconstruction, is launched, the on-line publications on different thematic areas, including 'Pictorial Flora of India' will commence, and to begin with color photos included in recent BSI publications will be used for the purpose.
- 3. The 'Guidelines' for the Emeritus Scientist Scheme of BSI should be revised raising the number of positions from 6 to 10 and the upper age limit from 65 to 70 years.** It was informed that the draft 'Guidelines' for the Emeritus Scientist Scheme of BSI have been revised and the draft has been submitted to the ministry for approval. Dr. D.K. Singh Member Secretary, further informed that there will be no financial implication of increasing the age limit of the Emeritus Scientists as their total tenure will remain 5 (3+2) years as of now. But, increase in number from existing six to ten will have additional financial requirement of Rs. 11.60 lakh per annum as per the current rate of honorarium (Rs. 20,000/= p.m.) and contingency (Rs. 50,000/= p.a.).
- 4. Enhancement of the amount of Junior/Senior Research Fellowship of JRFs / SRFs working in BSI bringing it at par with best in the country.** It was informed that the proposal for enhancement of the amount of Junior/Senior Research Fellowship of JRFs / SRFs working in BSI was placed before the Project Management Committee (PMC) of BSI, held on 6th November 2013, which informed that as a policy, MoEF has decided to offer enhanced rate of fellowships to NET qualified candidates only. The RAMC strongly felt that NET qualification should not be made essential qualification for JRFs/SRFs in BSI, as NET qualified candidates invariably opt for applied research. Hence any discrimination in the amount of fellowship to the JRFs/SRFs working in BSI will further discourage young researchers to take-up taxonomic research. Dr. N. Sathyanarana suggested that job opportunities need to be created to attract bright young students to taxonomy. Dr Usha Lachungpa suggested that BSI should open its website for amateurs to contribute.
- 5. Appointment of Dr Veena Chandra, formerly Scientist F, FRI, Dehradun, as Emeritus Scientist in BSI.** It was informed that the proposal has been submitted to the ministry for approval and the subsequent queries raised by the MoEF have also been replied. The Chairman suggested that Dr Chandra

should work at Northern Regional Centre of BSI at Dehradun once she gets the offer of Emeritus Scientist instead of Forest Research Institute.

Agenda Item No. 3: Review of the Progress report of BSI from September 2013 to March 2014:

Dr D.K. Singh made the presentation on the progress made by the BSI from September 2013 to March 2014, during which 87 field tours (including those by BSI research scholars) were undertaken to two wetlands, 41 protected areas, 13 sacred groves and different ecosystems spread across 09 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 four biodiversity hotspots, i.e. the Himalaya, Indo-Burma, Sundaland and the Western Ghats-Sri Lanka, and Antarctica; c. 11,851 specimens of flowering as well as non-flowering plants were collected; over 11,893 specimens were identified into 6,226 taxa; one genus, 39 species and 07 varieties were discovered as new to science, 03 genera, 95 species and 02 subspecies recorded as new to India and documented range extensions in 97 taxa across major geographical regions/States; recollected two species after a gap of over 50 years; 171 taxa under national flora, 1,622 taxa under regional/state/district flora, 2,055 taxa under flora of protected areas were documented; ethno-botanical information from Koraput and Deogarh districts of Odisha were documented; c. 413 threatened, endemic or economically important species were introduced in AJC Bose IBG, Howrah and other associated botanic gardens of BSI. Tissue culture-raised seedlings of *Illex Khasiana*, *Cymbidium tigirnum*, *Rhododendron wattii* and *Rhododendron macabeum* were transferred from lab to land; nutraceutical values of 16 wild edible plants of Meghalaya were analyzed; 08 books, two periodicals, 170 research papers and 04 book chapters were published; 16,427 specimens were bar-coded and digitized; 805 specimens were identified for the students/scientists outside BSI; about 2,120 pages of literature was provided and two training programme/ workshops were organized. Dr Singh also informed that as a part of Cyber-taxonomy initiative, Flora of India vols.1-4 were converted into web enabled and searchable e-flora for the development of digital 'Indian Plant Diversity Information System (IPDIS)'; e-checklist of monocots of India has been completed and 1,28,000 pages of rare books have been digitized.

The Committee commended the achievements of BSI during the period under review. While appreciating the progress, including the geographical area coverage and the new discoveries, Chairman felt that the West Himalayan region, especially the trans-Himalayan flora has received less attention. Dr. D.K. Singh informed that BSI has already completed the documentation of flora of 'cold deserts of NW Himalaya' and the manuscript is currently under publication, the first volume of 'State Flora of Jammu & Kashmir' has already been published based on the collections made from different parts of the State till 1989 and the specimens available in different herbaria, both within and outside BSI, moreover, the manuscripts for another three volumes have also been completed and are currently under review. The Chairman suggested that populations of rare and endemic species should also be studied.

Dr R.R. Rao commended the achievements in spite of several constraints and congratulated the scientists of BSI for the same. Dr P.G. Latha suggested that BSI should also carry out hybridization of orchids and offered the 'cryopreservation' facilities at JNTBGRI for long-term storage of seeds and other propagules by BSI on mutually agreed terms. Dr C.S. Nautiyal suggested that CSIR-NBRI could also join BSI in organizing 'Taxonomy training workshops'. Dr H.K. Badola observed that

there is lot of scope for collaborative research between BSI and GB Pant Institute of Himalayan Environment & Development in the area of conservation biology and population studies of threatened plants. Dr Usha Lachungpa mentioned about the joint publications on wild mushrooms and ferns and fern-allies of Sikkim by BSI and the Sikkim Forest Department and hoped that similar collaborative ventures will continue in future as well. Er A.K. Pathak observed that there is a need for digital dissemination of huge data available with BSI. Dr N. Sathyanarayana said that the biggest challenge for taxonomy as a science today is creating opportunities for its practitioners. Prof. N.D. Paria observed that BSI is doing commendable work on taxonomy using morphological and palynological data of adult plants, but there is general lack of effort to identify plants at seedling stage. Commending the quality of BSI publications, Prof. S.C. Srivastava emphasized the need for their effective publicity by uploading the publicity material on BSI website as well as by sending it to different universities and colleges.

Dr. M. Gangopadhyay, Scientist-in-Charge, Sikkim Himalayan Regional Centre, BSI, Gangtok made brief presentation on the activities and achievements of the centre. The Committee appreciated the achievements of the Centre and expressed the need for more manpower.

Agenda Item No. 4: Approval of the Annual Research Programme 2014–2015:

Dr. P. Venu, Additional Director, BSI presented the Annual Research Programme of BSI for the year 2014-2015. During this year BSI proposes to work on 114 projects (including 23 new) for which 134 field tours (including 19 for germplasm collection of RET plants) covering all four biodiversity hotspots, nine bio-geographic zones, 31 protected areas, 12 sacred grooves and one Ramsar site are proposed to be conducted. The scope of the ongoing projects is proposed to be broadened to include population studies of endemic taxa and GIS mapping of the species. 20,000 herbarium specimens are targeted to be barcoded and digitized along with their label data. Palynotaxonomic studies of Lauraceae and pollen/ seed morphology of species of Bignoniaceae, Orchidaceae, *Lepisorus*, *Andrographis*, *Ficus* etc. and SEM studies on the spores of liverworts, hornworts and mushrooms are proposed to be continued. A multidisciplinary study on the impact of Kedarnath Natural Disaster on the flora of the region is proposed to be undertaken. Further, survey and assessment of growing stock of economic bamboos of West Bengal is proposed to be taken up on request by the West Bengal State Council of Science and Technology.

The committee deliberated on the proposals and felt that, the annual target fixed for some scientists is not achievable in a year and suggested for review of these proposals. Dr. (Mrs.) R. Dalwani suggested forming a 'Regional Review Committee' to review of research programmes and progress thereof before these are brought to RAMC. The Committee approved the Annual Research Programme 2014–15 and authorized the Director, BSI to review those proposals, where it is necessary, to make the targets deliverable.

Agenda Item No. 5: Recommendation for appointment of Emeritus Scientist in BSI

It was informed that BSI received three applications for the position of Emeritus Scientists and the review process for all of them was complete. The Committee noted that in case of Prof. (Retd.) Radhanath Mukhopadhyay, University of Burdwan, all the reviewers had recommended the proposal "A Monographic Study on Indian Adiantums", hence recommended his appointment as Emeritus Scientist in BSI. In case of the proposal on "Threatened Endemic Plants of Kashmir Himalaya", submitted by Prof. (Retd.) A.H. Munshi, University of Kashmir, the Committee

observed that although all the reviewers have favored the proposal, yet one of the reviewer had observed that the task proposed is not achievable within the limited tenure of an Emeritus Scientist. The Committee also felt that the task proposed was enormous. In view of the merit of the proposal it was resolved that Prof. Munshi should take up only 25–30 threatened endemic species of Jammu & Kashmir (list to be provided by BSI) for studying of population dynamics, mapping, etc. In case of third proposal “Biodiversity Assessment and Taxonomic Revision of the genus *Brachystelma* (Asclepiadaceae) in India”, submitted by Prof. (Retd.) T. Pullaiah, Sri Krishnadevraya University, Ananathpur, the Committee noted that since all the three reviewers had not recommended it, Prof. Pullaiah may be asked to revise the proposal and restrict it to “Population study and mapping of Endemic /Threatened Endemic Plants of Eastern Ghats”. The Committee was also apprised of the revised proposal “Taxonomic Revision of tribes Merremieae, Convolvuleae and Aniseieae of family Convolvulaceae in India”, submitted by Dr A.A. Ansari, former Scientist E, BSI, Central Regional Centre, Allahabad, but the Committee found the proposal lacking in relevant details and advised to get a detailed proposal from Dr Ansari.

Dr Mohan Gangopadhyay urged the need for replacement of retiring skilled scientists in BSI. The Committee recommended for extension of service of such scientists beyond the age of superannuation. It was informed that such provision already exists for deserving scientists.

Concluding the deliberations, the Chairman observed that as there is general lack of expertise in taxonomy, all efforts need to be made to harness the expertise of every available resource person. He emphasized the need for increasing the number of fellowships and creating positions of Research Associates and Pool Scientists in BSI to address the short term requirement of man-power. He observed that BSI needs to vigorously pursue various issues with ministry for their expeditious settlement. He advised BSI not to pray for lesser load, but pray for greater load and broader shoulders.

Recommendation:

The following recommendations emerged from the deliberations:

1. Creation of regional sub committees for review of research programmes.
(Action: BSI)
2. Creation of positions of Research Associates and Pool Scientists, and raising the number of JRF/SRFs.
(Action: BSI/MoEF)
3. Director BSI be brought administratively at par with Director of CSIR Labs.
(Action: MoEF)
4. Expedite publication of Flora of India.
(Action: BSI)
5. Adopting collaborative approach for expeditious documentation of entire flora of India, including all taxonomic groups.
(Action: BSI)
6. Expedite the digitization of information resources of BSI and strengthening of monitoring mechanisms.
(Action: BSI/MoEF)
7. Appointment of Prof. (Retd.) Radhanath Mukhopadhyay, Department of Botany, University of Burdwan, as Emeritus Scientist in BSI.
(Action: BSI/MoEF)

List of Participants

1. Prof. A.K. Koul	Chairman
2. Dr. (Mrs.) R. Dalwani, Advisor (CS), MoEF	Member
3. Dr. C.S. Nautiyal, Director, NBRI, Lucknow	Member
4. Dr. P.G. Latha, Director, TBGRI, Trivendrum	Member
5. Dr. R.R. Rao, Bangalore	Member
6. Prof. S.C. Srivastava, Lucknow	Member
7. Dr. P. Singh, Director, BSI	Member
8. Dr. H.K. Badola, GBPHID (for Director)	Member
9. Dr D.K. Singh, Additional Director, BSI	Member Secretary
10. Dr. S.V. Reddy, Director, MoEF	Special Invitee
11. Prof. N.D. Paria, Calcutta University	Special Invitee
12. Dr. N. Sathyanarayan, Sikkim University	Special Invitee
13. Mrs. Usha Lachungpa, Forest Department, Gangtok	Special Invitee
14. Dr P. Venu, Scientist F, BSI, Hyderabad	Special Invitee
15. Er. A.K. Pathak, Scientist F, BSI, Kolkata	Special Invitee
16. Dr. M. Gangopadhyay, Scientist in-charge, BSI, SHRC	Special Invitee