सत्यमेव जयते

अनुसंधान सलाहकार एवम् अनुवीक्षण समिति की नौवां बैठक

9th MEETING OF THE
RESEARCH ADVISORY & MONITORING COMMITTEE

मई 30 – 31, 2019/**May 30 – 31, 2019**

कार्यवृत्त/**MINUTES**

भारतीय वनस्पति सर्वेक्षण
BOTANICAL SURVEY OF INDIA

पर्यावरण वन एवम् जलवायु परिवर्तन मंत्रालय

MINISTRY OF ENVIRONMENT, FORESTS & CLIMATE CHANGE
भारत सरकार/GOVERNMENT OF INDIA

MINUTES OF THE 9TH RAMC MEETING OF BOTANICAL SURVEY OF INDIA HELD AT CENTRAL NATIONAL HERBARIUM ON 30-31ST MAY 2019.

The 9th meeting of the Research Advisory & Monitoring Committee (RAMC) of Botanical Survey of India was held under the chairmanship of Dr. (Prof.) A. K. Koul at the Central National Herbarium, BSI, Howrah on May 30 & 31, 2019. The list of members who attended the meeting is placed at **Annexure I**.

At the outset, Dr. V.P. Prasad, HOO, CNH greeted the Chairman and members of the RAMC for attending this meeting. In his welcome address, Dr. A. A. Mao, Director, BSI informed the members that the BSI has decided to expedite the publications of Flora of India on priority. In view of expediency and volume of the work, 70 scientists and scientific personnel have been tasked for this work to ensure that the task is accomplished within the next three years. This will involve updating the manuscripts submitted by different scientists, filling gap areas if any, compiling the volumes not complied so far. He also informed that the Flora of India checklist has already been finalized; Volume I comprising monocots will be published by June 2019 and the Volumes II and III dealing with dicots will be published by September 2019.

Thereafter the agenda was taken up in seriatim. The Chairman, in his opening remarks welcomed the members of RAMC attending the meeting including three new ex-officio members Prof. (Dr.) S. K. Barik, Director, CSIR-NBRI, Dr. R.S Rawal, Director, GBPIHD, Almorah and Dr. R. Prakashkumar, Director, JNTBGRI for the first time. He thanked the members who have been participating regularly in the RAMC meetings and contributed richly to the deliberations. He requested the Director, BSI to take note of continuous absence of some members and find substitutes. He said that in all meetings he kept on emphasizing the need for compilation of the flora of India on priority basis. He commended the initiative taken by the incumbent Director for expediting finalization of Flora of India which RAMC had been recommending repeatedly and assured the support.

Agenda Item 1: Confirmation of the minutes of the last meeting.

The Minutes were confirmed with following three observations.

(i) The Chairman emphasized that, the minutes of the Meetings should be finalized and circulated within one month at the best from the date of the meeting.

(ii) He also stressed that the Agenda papers for the Meetings should be sent to members well in advance to give them sufficient time to study.

(iii) Prof. (Dr.) S. K. Barik suggested that, a reminder be sent to Director, NBPGR to finalize the MoU between his institute and BSI, as had been decided in the last meeting of RAMC.

The minutes were approved

Agenda Item No: 2 : Review of progress of BSI since last meeting

Dr. B.K.Sinha, member secretary presented **Progress Report of BSI** for the period April 2018 - March 2019; The draft Annual Report for this period was provided to all members for their perusal and comments. The committee commended the achievements made.

Agenda item No. 3: Approval of Annual Research Programme for the period of 2019-2020.

Dr. B. K. Sinha, presented the on-going **Research Proposal submitted by the Scientific staff** which were approved by the committee (**Annexure 2**) and 9 **new Research proposals** submitted by members of scientific staff during 2019 – 2020 and (**Annexure-3**). The members opined that the proposal “Identification and incorporation of backlog herbarium

specimens" should not be submitted as a project. Instead, it should be carried out as routine work.

Prof. (Dr.) S. K. Barik suggested that molecular work should be taken up only for "species complexes" where species delimitation on the basis of morphological characters is difficult. In view of this observation the proposed project on 'Molecular systematics of genus *Potentila* L. (Rosaceae) in Eastern Himalaya and NE India' submitted by Eastern Regional Centre, was **not accepted**.

The decision on the proposal submitted by Central Regional Centre entitled "Cytotaxonomical studies in *Solanum nigrum* L. complex and selected cryptic taxa of non-tuberous *Solanum* L" - it was deferred. It was resolved that the concerned scientist be asked to consult Dr. J. L. Karihaloo, former Director, NBPGR who holds expertise of the genus *Solanum* to redraft the proposal. It was further resolved that the revised proposal be submitted for consideration by RAMC. Resolved also that the project proposal entitled "Seed Morphology of *Biophytum* of Tamil Nadu by using SEM" submitted by Southern Regional Centre, be not accepted in present form. Dr. D. K. Singh Ex-Scientist-G, (BSI) and special invitee suggested that such studies should be integrated and the concerned scientist be asked to undertake ultra structure of seed and pollen as part of routine taxonomic description of various taxa including *Biophytum*. The Committee also resolved that the project "Studies on natural Dye from some selected plants of West Bengal for dyeing cotton fabrics", be considered only after the concerned scientist provides some leads. Also, that a chemist be involved in the execution of the project if it gets the approval for execution.

The project "Studies on Gilled (excluding milk caps), Poroid, Toothed Fleshy mushrooms and Caterpillar fungi of Tawang, West Kameng, East Kameng and Kurung Kumey districts of Arunachal Pradesh: morpho-taxonomy and molecular phylogenetic

inferences" submitted by Dr. Kanad Das and team, was approved with the condition that it should only confine to Taxonomic studies on the genus *Ophiocordyceps* should be taken up for two years (2019-21). The entire Indian Himalayan Region (IHR) be explored for caterpillar fungi. Phyto-chemical profiling of the fungi collected be undertaken in collaboration with NBRI, Lucknow.

Compilation of Flora of India: The discussion on compilation of pending volumes of Flora of India was preceded by a brief presentation on the subject by Dr. R.R. Rao in which he informed the members that Flora of India project was initiated in the year 1985. He further briefed about various initiations taken in Flora work and elaboration on the current status. Thereafter, 9 team leaders made brief presentations about the road maps they propose to follow to compile the volumes of the Flora assigned to them by the in house committee:

After that, the team leaders for different volumes of the Flora of India, as detailed below, presented their plan of work (**Annexure IV**).

1. Volume 8 (Family: Rosaceae; target: December 2020**)** team leaders: Dr S. S. Dash
2. Volume 10 (Melastomataceae to Datiscaceae; target: March 2020**)** team leaders: Dr B. K. Sinha
3. Volume 11 (Cactaceae to Adoxaceae; target: March 2020) team leaders: Dr. C. Murugan
4. Volume 14 (Rubiaceae to Dipsacaceae; target: March 2020) team leaders: Dr M. Gangopadhyay & Dr Arti Garg
5. Volume 15 (Stylidiaceae to Primulaceae; target: December 2020**)** team leaders: Dr A.A. Mao & Dr S.S. Dash
6. Volume 16 (Myrsinaceae to Apocynaceae; target: March 2020) team leaders: Dr W. Arisdasan

7. Volume 17 (Asclepiadaceae to Menynthaceae; target: March 2020) team leaders: Dr J. Jayanthi

8. Volume 18 (Polemoniaceae to Solanaceae; target: March 2020) team leaders: Dr S.L. Meena

9. Volume 19 (Scrophulariacae to Lentibulariaceae; targetMarch 2020) team leaders: Dr Arti Garg

10. Volume 20 (Gesneriaceae to Acanthaceae; target: August 2019) team leaders: Dr P. . Laxminarasingham

11. Volume 21 (Verbenaceae to Plantaginaceae; target: June 2020) team leaders: Dr V. Sampat Kumar

12. Volume 22 (Nyctaginaceae to Elaeagnaceae; target: March 2020) team leaders: Dr Manas Bhaumik

13. Volume 24 (Urticaceae to Ceratophyllaceae; target: March 2020) team leaders: Dr P.K. Pusalkar

14. Volume 25 & 26 (Hydrocharitaceae to Orchidaceae; target: June 2020) team leaders: Dr. D.K. Agrawala

15. Volume 27 (Bromeliaceae to Smilacaceae; target: March 2020) team leaders: Dr Rajib Gagoi

16. Volume 28 (Pontederiaceae to Juncaginaceae; target: March 2020) team leaders: Dr M.U. Sharief

17. Volume 29 (Eriocaulacaee to Cyperaceae; target: March 2020) team leaders: Dr V.P. Prasad

18. Volume 30 (Poaceae-Bambusoideae; target: December 2019) team leaders: Dr. Puspa Kumari

19. Volume 31 & 32 (Poaceae; target: March 2020) team leaders: Dr. P.V. Prasanna

The Committee appreciated the work plan and **approved the same**. The Committee appreciated the need of Scientific man power. Accordingly the committee suggested that BSI should immediately fill up all vacant positions of **Acharya Jagadish Chandra Bose Post Doctoral Fellowship** and make them available to different Team Leaders.

Agenda item No. 4: Engagement of two Consultants for Publication of Flora of India.

Compiling the Flora of Jammu & Kashmir (Vols. II, III and IV) was approved by the committee after seeking approval of the Ministry and following codal Procedures.

The committee also approved entrusting finalization of Flora of Andaman and Nicobar (Vols. II and III) to Dr. K. Kartigeyan, Scientist D for finalization on or before by March 30, 2020.

Agenda Item No. 5 : Review of Identification Charges

The committee was appraised that the present charges for identification of Herbarium specimens are in vogue since 1998 and need to be revised. After due deliberations, the Committee approved following rates:

(i) Rs. 500/- per plant specimen from NGOs and commercial organizations

(ii) Rs. 200/- per plant specimen for Scientists, Research Scholars and Students.

The Committee also approved the charges for Scanning Electron Microscopy services as under:

Rs.1000/- per sample for research scholars, teaching faculty and scientists

Rs.2000/- per sample for commercial sector.

Agenda Item No. 6: Increase in contingency amount for JPF and SPF

The Committee was apprised that the existing contingency grant for JPF and SPF is Rs. 15000 and Rs.20000/- respectively since 2012. The Committee appreciated that in view of cost escalation over the years, the amount calls for revision as proposed. The Committee suggested that the revised amount be fixed as is paid by CSIR.

RECOMMENDATION

- Appointment of consultants for editing different flora volumes to be brought out on priority basis.

Annexure-1

List of RAMC Members Attended Meeting

1.	Prof. A.K. Koul,	Chairman
2.	Prof. S.C. Srivastava, Lucknow University, Lucknow (Banglore)	Members
3.	Dr R.R. Rao, Former Director, CIMAP, Banglore	Members
4.	Prof. S.K. Barik, Director, NBRI, Lucknow	Member
5.	Dr. R. S. Rawal, Director, GBPNIHESD, Almora	Member
6.	Dr R Prakashkumar, Director, JNTBGRI, Palode, Thiruvananthapuram	Member
7.	Dr D.K. Singh, Former Scientist-G, BSI, Kolkata	Special Invitee
8.	Dr A.A. Mao, Director, Botanical Survey of India	Member
9.	Dr B.K.Sinha, Scientist-F, BSI,Kolkata	Member Secretary

Annexure-II

BOTANICAL SURVEY OF INDIA, ON GOING ANNUAL RESEARCH PROGRAMME 2019-2020

ARUNACHAL PRADESH REGIONAL CENTRE, ITANAGAR

Sl. No.	Name of The Project	Period	Quantifiable deliverables for 2019-20
1.	**Pteridaceae of India (excluding Genus *Pteris*)** **Dr V.K.Rawat, Scientist-D** (ca 54 species excluding Genus Pteriris (41 species)	(2018 – 2022)	Q1: Herbarium consultation tour carried out to CNH, ASSAM, BSA and BSIWRC identified 135 specimens Q2-Q4: Three field tours w. e. f. 29/01/19 to 07/02/19 and 17/03/19 to 27/03/19 were conducted to different parts of Meghalaya and Lower Dibang Valley, Siang, Tirap and Changlang during these field tours, more than 500 field numbers were collected. All the identified specimens were incorporated into the herbarium **Total: 3 Field Tours and 1 Herbarium Con. Tour**
2.	**Flora of East Kameng, Arunachal Pradesh** Dr Umesh Kumar Tiwari, Scientist-C (Area 4600 Sq Km)	2015- July, 2019	One Field tour was conducted to the area from 23-08-18 to 04-09-2018 Final Report writing and will be submitted till the end of July 2019 Un Identified specimens will be identified and research paper will be communicated as soon as possible All the collected specimens will be accessioned and deposited in the ARUN herbarium **Total: 1 Field Tour**
3.	**Introduction, Conservation of Germ Plasm of Muasa, Bamboos & Zingibers** Sri B.B.T. Thams	**(2018-on going)**	List of the RET plant species to be given for introduction in the Garden. Number of saplings to be survived is also given

EASTERN TEGIONAL CENTRE, SHILLONG

Sl. No.	Name of The Project	Period	Quantifiable deliverables for 2019-20
4.	Flora of Nagaland (Vol. 1 & 2). Dr. N. Odyuo & Dr. D.K. Roy (under guidance of Dr. A. A. Mao) (Vol. I: Ranunculaceae to Asteraceae (Approx. 1500 taxa) by March 2020. **Vol. II & III**: Campanulaceae to Ceratophyllaceae and Hydrocharitaceae to Poaceae (Expected 1500 taxa).	*(2016 – 2021)*	Till date 556 taxa documented Q1: Tour to Phek district. Q2: Tour to Wokha and Mokokchung district. Q3. Identification and documentation. Q4. Herbarium Consultation Tour to CNH for 10 working days. **Total:2 Field Tours and 1 HCT**

	To continue till March 2021.		
5	Micropropagation of RET Plants of North East India in ERC, Shillong Miss I. Chanu & Dr Deepu Vijayan	*On going*	Development of culture protocols for *Ilex khasiana*, *Paphiopedilum hirsutissimum* and *Rhododendron coxianum.* Maintenance of existing culture in all Quarters. Target: Maintenance of existing culture in all Quarters. Hardening and introduction of the seedlings in the Garden.
6	*Ex*-situ conservation & multiplication of endemic, rare, threatened and economically important plants of North-East India at Experimental Botanic Garden, BSI, ERC, Barapani Dr. David, and Shri L.R. Meitei	*On going*	Recording of phenological data of plant species growing in EBG, Barapani and multiplication of RET species in all four quarters. One field tour in 3rd Quarter to Khasi Hills, Meghalaya for collection of live plants of RET species. **Total:1 Field Tours**
7	DNA barcoding and phylogenetic analysis of 20 selected endemic plant specis of North East India and Phytochemical Screening of 11 medicinal plants Dr Deepu Vijayan, & Dr. Dilip Kr.Roy	*2017-2020*	Q1. Quantitative phytochemical analysis of selected medicinal plants using spectroscopy Q2. Collection tour to Dawki, Meghalaya. Quantitative phytochemical analysis of selected medicinal plants using UHPLC Q3. DNA barcoding of selected endemic plant species Q4. Final report preparation Local tour: 1 **Total:1 Local Field Tour**
8	Diversity and phylogeny of Aquatic fungi from North east India Dr. Ashish V. Prabhugaonkar,	*2018-2020*	Q1.Collection and isolation of fungi from streams in East and south Khasi hills, 2 field visit. Molecular phylogenetic analysis of selected isolates.DTE: Rs.4,000/- Q2. Collection and isolation of fungi from streams in Jaintia hills, 1 field visit. Molecular phylogenetic analysis of selected isolates. DTE: Rs.4,000 Q3. Collection and isolation of fungi from streams in West Khasi hills and East Garo hills 1 field visit. Compilation of work for submission. .DTE: Rs.4,000, contingency 4000/- Q4. Compilation of work and submission. **Total:2 Field Tours and 1 HCT**
9.	Flora of India Vol.: 20: Genus *Strobilanthus* (Family Acanthaceae) of North-Eastern India and Eastern Himalayas (*ca.* 70 spp.) Dr. Dilip Kr. Roy	*2018-2020*	**Q1:** Finalised the Genus *Strobilanthus* manuscript and submission of manuscript of in **June 2019**

SIKKIM HIMALAYAN CIRCLE, GANGTOKE

Sl. No.	Name of The Project	Period	Quantifiable deliverables for 2019-20

10.	Taxonomic revision of *Impatiens* L. (Balsaminaceae) of Sikkim & Darjeeling Himalaya Dr. Rajib Gogoi	*(2017 – 2020)*	Q1. Identification of earlier collections Q2. Field tour to Darjeeling & West Sikkim Q3. Field tour to North & East Sikkim Q4. Finalisation of Mss. and submission of report. **Total:2 Field Tours**

CENTRAL REGIONAL CENTRE, ALLAHABAD

Sl. No.	Name of The Project	Period	Quantifiable deliverables for 2019-20
11.	Develop Botanic Garden of Central Regional Centre, Allahabad and Recoded the Phenological data of the existing Tree species in the Garden Dr Sheo Kumar, & Sri Vineet Kr. Singh,	(On going)	List of the Garden Tree species to be prepared. Recorded month wise compilation of flowering of tree species data as per field observation. Develop all the sections in Garden Develop irrigation system of the Garden Develop net house / green house.
12.	SEM studies of the species belonging to family Acanthaceae available at BSA Dr. Nitisha Srivastava,	*2018 – 2021*	To examine the seeds and epidermal features of the species belonging to the family Acanthaceae available in BSA **Q1:** SEM studies of leaf and seed of ca.06 species. Analysis and description of features **Q2:** SEM studies of leaf and seed of ca. 06 species. Analysis and description of features **Q3:** SEM studies of leaf and seed of ca. 06 species Analysis and description of features **Q4:** SEM studies of leaf and seed of ca. 06 species Analysis and description of features
13.	Revision of Genus *Adiantum* L. (Adiantaceae) in India (only 28 species) Dr. Brijesh Kumar (Comments: Should complete the project work within December 2019)	*2016 – 2020* (December, 2019)	**Q1:** Identification, dissection and preparation of Illustration of specimens. **Q2:** One Herbarium Consultation tour to **PAN, PUN, DD and BSD** herbarium**.** **Q3:** One Herbarium Consultation tour to **LWG** herbarium & finalisation of description and submission of manuscript of Genus *Adiantum* L. (Adiantaceae) in India in **December**. **Total:2 HCT**

NORTHERN REGIONAL CENTRE, DEHRADUN

Sl. No.	Name of The Project	Period	Quantifiable deliverables for 2019-20
14.	Flora of Himachal Pradesh Volume I	*(2017 – December 2019)*	
	(Ranunculaceae – Papavaraceae) (Estt. Spp.: 161) Dr S.K. Singh & Sri P.K. Deroliya (Earlier Dr Ambrish Kumar)	*(2017 – December 2019)*	Q1-Q3: Listing of species from published literature and herbarium and documentation of 53 species. One herbarium consultation tour to RRLH, PLP, Herbarium of Jammu University, Jammu Herbarium of Himalayan Forest Research Institute Shimla in Q3.Finalization and submission of manuscript in **December, 2019**.

			Total: 1 HCT
	(Geraniaceae – Moringaceae) (Estt. Spp.: 155) Sri Sachin Sharma,	*(2017 – December 2019)*	Q1-Q3: Listing of species from published literature and herbarium and documentation of 40 species. Finalization and submission of manuscript in **December, 2019**
	(Portulaceae – Zygophylaceae) (Estt. Spp.: 70) ~~By Dr. M.R. Debta~~ Revised: Sri Sameer Patil, Botanist.	*(2017 – December 2019)*	Q1-Q3Listing of species from published literature as well as from Herbarium and documentation of 40 species. Finalization and submission of manuscript in **December, 2019**
	(Brassicaceae to Caryophyllaceae) (Estt. Spp.: 148) Dr. K.S.Dogra, Sci. C	*(2017 – 2019)*	Q1-Q3: Listing of species from published literature as well as from Herbarium and documentation of remaining 48 species. Finalization and submission of manuscript in **December 2019**.
	(Fumariaceae; Capparaceae-Polygalaceae) (Estt. Spp.: 50) Dr. Puneet Kumar	*(2017 – December 2019)*	Q1-Q3: Listing of species from published literature as well as from Herbarium and documentation of remaining 11 species.Finalization and submission of manuscript in **December 2019**.
	Flora of Himachal Pradesh, Vol.-1 Introduction Part Dr. S.K. Singh, Sci.-E, Dr. Puneet Kumar, Sci.-C, Dr. K. S. Dogra, Sci.-C& Dr. P.K. Deroliya, Botanical Assistant	April, *2019-Dec. 2019*	Q1-Q3: Literature survey, data collection and analysis, selection of photographs. Writing, finalization and submission of manuscript in **Dec, 2019.**
15.	Flora of Sechu Tuan Nala Wildlife Sanctuary, Chamba District, Himachal Pradesh Dr. Puneet Kumar,	*((2017 – December 2019)*	Q1 Identification and writing description of identified species. Q2 One field tour to the under explored areas the sanctuary. Q3- Identification and writing description of identified species. Finalization and submission of manuscript. **Total: 1 Field Tour**
16.	Documentation and database of Alien Invasive species of Himachal Pradesh (North Western Himalaya) Dr. K. S. Dogra	*(2017* – Dec. *2019)*	Q1. Listing of species from literature and Herbarium data recording Q2. Survey and collection tour to be conducted in such a way to collect maximum number of alien invasive species. Q3. Identification and preparation of data base of identified invasive species. **Total: 1 Field Tour**
17.	**Ex-situ conservation of endemic threatened and**	(On going)	Documentation of data on phenology of species growing in

	economic plant species in the associated garden of NRC and documentation of monthly data on flowering and fruiting Dr. S.K.Singh, Dr. B.S. Kholia, Dr. P.K. Pusalkar, Dr. K.S. Dogra, Sri P.K. Deroliya &, Shri Sachin Sharma		the botanic garden. Q1. One tour to Biodiversity rich ares of Uttarakhand. Q2 Local tour for collection of threatened plants. Q3 Local tour for collection of threatened plants. *Maintenance* of germplasm collected in previopus year. Target for collection of economic and threatened species=10 **Total: 1 Field Tour**
18.	Pictorial Flora of Pteridophytes of Uttarakhand by Dr. B. S. Kholia Scientist D	*(2018 – 2021)*	Q1: One survey and collection tour to lower elevation of Kumaon. Q2: One survey and collection tour to middle elevation of Garhwal and identification of collected species. Q3: One survey and colletion tour to higher elevation of Garhwal. One herbarium consultation tour to PUN, PAN & DD and identification and work out identifiedspecies. Q4: One survey and colletion tour to lower elevation of Uttarkashi and identification and documentation of collected specimens. **Total: 4 Field Tours; Total: 1 HCT**
19.	Micropropogation of endangered *Tricholepis roylei, Jasminum parkeri and Eulophia dabia* (Orchidaceae). Dr. Giriraj Singh, Sc. C and Dr. Bhavna Joshi, Botanical Assistant	*(2018 – 2020)*	Q1 Screening of plant growth regulators for the multiple shoot induction and proliferation. Q2 Screening of optimal growth medium for the root induction Q3 Screening of plant growth regulators for the root induction. Proliferation of roots. Q4 Hardening and acclimatization of in vitro regenerated plantlets in the green house. Shifting of the acclimatized plants in the field

ARID ZONE REGIONAL CENTRE, JODHPUR

Sl. No.	Name of The Project	Period	Quantifiable deliverables for 2019-20
20.	Flora of Jambhughoda Wildlife Sanctuary, Gujarat (Sanctuary Area 130.38 sq. km.) Dr. S.L. Meena,	(2017 – 2020)	Q1. Identification, inventorisation and documentation of specimens collected in previous tours. One field tour Q2.Identification,inventorisation and documentation of specimens collected in previous tours. One Herbarium Consultation tour to BARO (Dept. of Biosciences, M.S. University, Vadodara) Q3. Synthesis and submission of the report. **Total 02 tours (Field 01 tour; HCT 01)**
21.	Flora of Navsari District, Gujarat (Area *area* of 2,211 square kilometres)	(2015-2020)	Q1-Q3: Identification and documentation of Herbarium specimens. Finalization and submission

	Dr. Ramesh Kr & Sri Vinod Maina,	Dec-2019	of manuscript in **December, 2019.**
22.	Flora of Todgarh-Raoli Wildlife Sanctuary, Rajasthan Dr. C.S. Purohit	(2015 – 2020) Dec-2019	Identification of unidentified herbarium specimens. Finalization and submission of manuscript in **December, 2019.**
23.	*Ex-situ* conservation of RET and economically important species of the Arid region in the experimental Garden of AZRC and documentation of phonological data on flowering and fruiting Also ABG Scheme Dr S. Misra & Dr V. Maina	(On going)	Q1. One field tour for the collection of germplasm of Rare and Threatened plants. Q2. One field tour for the collection of germplasm of Rare and Threatened plants. 10 Spp. Plant saplings of RET and economically important species will be collected during various tours for *Ex-situ* conservation in the Experimental Garden of AZRC and documentation of phenological data on flowering & fruiting. **Total:2 Field Tours**
24.	Vegetation characterization and floristic studies in Bassi Wildlife Sanctuary, Rajasthan using remote sensing and GIS (Area: 288 km²) Dr. P. Hari Krishna,	*(2017 – 2020)*	Q1. Identification and inventorisation of specimens collected in previous tours Q2. Identification, inventorisationand one HC tour to M.L.S. University Udaipur and Govt. Collge, Bhilwara. Q3. Report Synthesis and Submission **Total: 1 HCT**
25.	GIS mapping of Endemic, Endangered and Threatened plants species of Rajasthan Sri Hari Krishna & Dr S. Misra	*(2017 – 2020)* *2019*	Identification and manuscript writing

DECCAN REGIONAL CENTRE, HYDERABAD

Sl. No.	Name of The Project	Period	Quantifiable deliverables for 2019-20
26.	Flora of Manjeera Wild Life Sanctuary, Telangana (Area- 20 km^2) Dr. L. Rasingam, (It should should be extended (2019- 2022. Due to engagement of red sanders NDRF studies)	*(2017 – 2021)* *(*2018- 2021)	Q2: One field tour in August Q3: Two field tours in October and December Q4: One Herbarium Concultation Tour to CNH **Total:3 Field Tours and 1 HCT**
27.	Grasses of Telangana State India Mr. S. Nagaraju, Botanical Assistant (It should should be extended (2019- 2022. Due to engagement of red sanders NDRF studies)	*(2017 – 2021)* (2019- 2021)	Q2: One field tour and two Herbarium Consultation tour to SKU, KU, HY Q3: Two field tours Q4: One field tour **Total:4 Field Tours**
28.	Flora of Kinnerasani Wild Life Sanctuary, Telangana (Area: 635.40 km^2) Sri J. Swamy	*(2017 – 2021)* (2019- 2021)	Q1: One field tour and One herbarium consultation tour to HY Osmania University, Htyderabad, & KU (Kakatiya University, Warangal, Q2: One field tour Q3: One field tour

	(It should should be extended (2019- 2022. Due to engagement of red sanders NDRF studies)		Q4: One field tour and one HCT to MH **Total:4 Field Tours and 1 HCT**

WESTERN REGIONAL CENTRE, PUNE

Sl. No.	Name of The Project	Period	Quantifiable deliverables for 2019-20
29.	Taxonomic studies of Micro-fungi of Sanjay Gandhi National Park, Maharashtra along with its10 % peripheral area (Area: 103.84 km^2) Dr. Rashmi Dubey, & Mr. Amit Diwakar Pandey	*(2016 –* December, *2020)*	Q: Isolation, identification and characterisation of fungal species collected from different substrates Q2: Isolation, identification and characterisation of fungal species collected from different substrates & statistical analysis. one Herbarium Consultation tour Q3: One field Tour Isolation, identification and characterisation of fungal species collected from different substrates & statistical analysis. Preparation and submission of Manuscript in Dec-2019 **Total:1 Field Tour**
30.	Floristic Diversity of Wan Wildlife Sanctuary Dr. Priyanka Ingle,	*(2016 – December, 2019)*	Finalisation of the manuscript and submission in Dec. 2019
31.	Flora of Pushpagiri WLS, Karnataka Mr. Sameer Patil, & Dr. P. Lakshminarasimhan,	*(2016 – Dec. 2019)*	Critical identification of c. 45 species. Herbarium processing (Required 1 HCT to BSI, Pune) Ecological data analysis of shola grasslands Documentation of Final report **Total: 1 HCT**
32.	Pteridophytic Flora of Pushpagiri Wildlife Sanctuary, Karnataka with 10%Periphery Mr. D. Jesubalan, & Dr. A. Benniamin,	*(2016 – Dec., 2019)*	Two field tour will be undertaken to the Pushpagiri Wildlife Sanctuary One Herbarium Consultation tour will be undertaken Preparation of manuscript for the AAP project and will be submitted in December 2019 **Total:2 Field Tours and 1 HCT**
33.	Seed morphology and cyto taxonomy of some selected Orchids of Northern Western Ghats Mrs. A.M. Neelima,	*(2019-2020)*	Q1: Identification of the remaining species. Short tours to cover the gap in collection, microscopic and SEM studies of the remaining species, micro-morphometry of seeds to be carried out for analysis. Q2: SEM and Light microscopy of the collected specimens. Interpretation of the data. Short field tours to collect terrestrial orchids, micro-morphometry of seeds to be carried out for analysis. Q3: SEM and Light microscopy of the collected specimens. Interpretation of the data. Short field tours to collect specimen, micro-morphometry of seeds to be carried out for analysis. Q4: Interpretation of the data generated by SEM and Light microscopic studies. compilation of data and report writing
34.	Pteridophytes of Goa Dr. A. Benniamin,	*(2018 – 2020)*	Two Field Tours will be undertaken in unexplored areas of Goa for collection of Pteridophytes in Q2 and Q3. Cytological studies will be done for the remaining species

			of Pteridophytes. Spore Morphology for all the species under Scanning Electron Microscope (SEM). Distribution Map will be prepared for all the species by using QGIS Software. Preparation and Submission of Manuscript. **Total:2 Field Tours**
35.	Flora of India, Vol. 26 **Sub-family: Orchidoideae**: (11 genera, 138 species). Sub-family Epidendroideae: (8 genera, 93 species). Dr. Jeewan Singh Jalal, Scientist D	*(2019 – 2020*	Q1: Data collection and compilation Q2: Data collection and compilation Q3: One herbarium consultation tour to CAL; Data collection and compilation Q4: Draft manuscript for 120 taxa to be completed. **Total: 1 HCT**

SOUTHERN REGIONAL CENTRE, COIMBATORE

Sl. No.	Name of The Project	Period	Quantifiable deliverables for 2019-20
36..	Flora of Kodaikanal Wildlife Sanctuary, Tamil Nadu Area: 736.9 km² Dr. K. ALTHAF AHAMED KABEER, Scientist-D & Mr. A. Ravi Kiran, Bot. Asst.	2015– 2019	Q1: Identification and documentation of specimens collected earlier. One field survey. Q2: Identification and documentation of specimens collected earlier. One field survey. Q3: Identification and documentation of specimens collected earlier. One field survey Q4: One field survey to Kanyakumari WLS area tentatively in first week of February 2020. Identification and documentation of specimens collected. **Total:3 Field Tours**
37.	Flora of Kanniyakumari Wildlife Sanctuary, Tamil Nadu (ca. 402.39 sq.km). Dr.Sujana. K.A., Scientist D & Shri. Rakesh G Vadhyar, Bot. Asst.	2016 - 2020	Q1: Identification and documentation of specimens collected earlier. Q2: One field survey to area tentatively in first week of July 2019. Identification and documentation of specimens collected. Q3: One field survey to the area tentatively in first week of November 2019. Identification and documentation of specimens collected. Q4: One field survey to the area tentatively in first week of February 2020. Identification and documentation of specimens collected. **Total:3 Field Tours**

38.	Floristic Assessment of Megamalai Wildlife Sanctuary; Tamil Nadu. (269 sq.km.) Dr. C. Murugan, Scientist E & Dr. S. Arumugam Bot. Asst.	2016 - 2020	Q1: Identification and documentation of earlier collection. One survey to unexplored area (May, 2019). Q2: Identification and documentation of earlier collection. One survey to unexplored area (July, 2019). Q3: Identification and documentation of earlier collection. One survey to unexplored area (October, 2019). Q4: Identification and documentation of earlier collection. Compilation and submission of report. **Total:3 Field Tours**
39.	Cyperaceae of Tamil Nadu Dr. C. MURUGAN, Scientist-D, Dr. J. V. SUDHAKAR, Bot. Asst. & Dr. S. ARUMUGAM, Bot. Asst.	2015 – 2019	Q1: Identification and documentation of earlier collection. Q2: Identification and documentation of earlier collection. Q3: Identification and documentation of earlier collection. One survey to unexplored area (September, 2019). Q4: Identification and documentation of earlier collection. Compilation and submission of report **Total:1 Field Tour**
40.	Assessment of Plant diversity in Cauvery North Wildlife Sanctuary; Tamil Nadu (ca 504.33 sq.km.) Dr. R. Manikandan, Scientist D & Smt. Mehala Devi, R., Sr. Pres. Asst.	2017 - 2021	Q1: Identification and documentation of earlier collection. One survey to unexplored area (May, 2019). Q2: Identification and documentation of earlier collection. One survey to unexplored area (July – August 2019). Q3: Identification and documentation of earlier collection. One survey to unexplored area (November - December, 2019). Q4: Identification and documentation of earlier collection. One survey to unexplored area (February - March, 2020). **Total:4 Field Tours**
41.	Ex-situ conservation of endemic endangered and threatened plants of the region and recording of phenology of flowering and fruiting of species in the garden Dr. S. Kaliamoorthy & Dr. T. S. Saravanan,	*On going*	Q1: multiplication and maintenance of existing collections Q2: one field survey ton Wayanad district, Kerala. Q3: one field survey to Wayanad district, Kerala. Q4: multiplication and maintenance of existing collections.

	(the IUCN red list criteria for (2019-20) Number of saplings to be raised		**Total:2 Field Tours**
42.	Ex-situ conservation of Endemic tree species of the region Dr. M.Y. Kamble & Shri. B. S. Elango, (Target tree species should be mentioned followed by shrubs and herbs)	*On going*	Q1: multiplication and maintenance of existing collections Q2: one field survey to Agasthiamalai Biosphere Reserve and one herbarium consultation to TBGRI, Thiruvanthapuram. Q3: one field survey to Agasthiamalai Biosphere Reserve Tamil nadu & Kerala Wayanad district, Kerala. Q4: multiplication and maintenance of existing collections. **Total:2 Field Tours and 1 HCT**
43.	**Study of Pollinia of South Indian orchids using SEM: Phase II**. Dr. S. Kaliamoorthy and Dr. T. S. Saravanan	2017-2020	Q1: Collection and preservation of pollinia from NOEG and SEM study of 5 orchid species. Q2: Collection and preservation of pollinia from NOEG and SEM study of 5 orchid species. Q3: Collection and preservation of pollinia from NOEG and SEM study of 5 orchid species. Q4: Collection and preservation of pollinia from NOEG and SEM study of 5 orchid species. Compilation and submission of report

ANDAMAN & NICOBAR REGIONAL CENTRE, PORT BLAIR

Sl. No.	Name of The Project	Period	Remarks/ RAMC members	Quantifiable deliverables for 2019-20
44..	Phenological survey of tree Species of Dhanikhari Experimental Garden-cum-Arboretum, Nayashahar. Dr. Lal Ji Singh *(Priority should be given to campus tree)*	On going	Recording of flowering and fruiting of tree species of Dhanikhari Experimental Garden (DEGCA), Nayashahar, South Andaman.	
45.	***Ex-situ* conservation of RET species (Bamboos, Palms, Zingibers, endemic tree species) of Andaman & Nicobar Islands at Dhanikhari Exp. Garden cum Arboretum and raise nursery.** Dr.Chandan Singh Purohit, Scientist- C Dr.Vivek C. P., Botanical Assistant	2019- 2022	**Q1.** Literature survey, Herbarium Consultation. Multiplication and maintenance of previous collections. **Q2.** One field tour to be conducted at North Andaman. Multiplication and maintenance of previous collections. **Q3**. Literature survey, Herbarium Consultation. Multiplication and maintenance of previous collections. **Q4.** One field tour to be conducted at Great Nicobar	

			Island. Multiplication and maintenance of previous collections. **Total:2 Field Tours**
46.	**Revision of the Lichen family Pyrenulaceae in India** Dr. T.A.M. Jagadesh Ram **(**Lichens of A & N Islands in priority basis)	2017 – 2022	**Q1.–Q3. : M**orphological, anatomical, chemical characterization and identification of earlier collections. **Q4 :One field tour** to Kerala and Tamil Nadu. **Total:1 Field Tour**
47.	**Revision of the family Cycadaceae in Andaman and Nicobar Islands** Dr. Lal Ji Singh (Work to be Revised: **Revision of Gymnosperms of Andaman & Nicobar Islands)**	2018 – March, 2020	**Q1.** Literature survey and consultation of herbarium at PBL. **One field tour** to be undertaken to South Andaman Islands. **Q2. One field tour** to be undertaken to Middle Andaman Islands. **Q3. One herbarium and library consultation tour** to be undertaken at CNH, Howrah. **Q4. Finalization and submission of** manuscript **Total:2 Field Tours and 1 HCT**

AJC BOSE INDIAN BOTANIC GARDEN, HOWRAH

Sl. No.	Name of The Project	Period	Quantifiable deliverables for 2019-20
48.	Development, Introduction and multiplication & raised seed lings and monitoring of Indigenous plants of India at AJCBIBG Dr M. U. Sharif & all scientists of AJCBIBG	2019-2020	All the scientist involved to developed the Garden and all section beautifully.
49.	GIS phyto-mapping & digitization of shrubs and trees in AJC Bose Indian Botanic Garden Dr. M.U. Sharief, Dr. C. M. Sabhapathy, & Dr. B. K. Singh,	(On going)	Finalised the Report

CENTRAL BOTANICAL LABORATORY, HOWRAH

Sl. No.	Name of The Project	Period	Quantifiable deliverables for 2019-20
50.	**Ethnobotanical study of some tribal populated districts of Bihar** **Team I** Dr. Harish Singh, Dr. Monika Mishra & Dr. P. A. Dhole, Botanical Assistant Team II Dr. K. Althaf Kabeer, Sri A.C.Halder, & Sri R. Saravanan,	2015 – 2020	**Q1:** Processing of herbarium specimens, identification, documentation and compilation of data collected in previous quarters. One field tour to Aurangabad (Area: 3305 Sq Km; Tribal Population: 1,640) and Nawada (Area: 2494 Sq Km; Tribal Population 2,158) by Team II. **Q2 :** Processing of herbarium specimens, identification, documentation and compilation of data collected in previous quarters. One field tour to Kishanganj (Area: 1884 Sq Km;

			Tribal Population 47,116) andAraria (Area: 2830 Sq Km; TribalPopulation 29,423) byTeam-I. **Q3:** Processing of herbarium specimens, identification, documentation and compilation of data collected in previous quarters. One field tour to Purnia (Area: 3229 Sq Km; Tribal Population 1, 11,197) and Kathiar (Area: 3009 Sq Km; TribalPopulation 1, 40,418) by Team-II. **Q4:** Processing of herbarium specimens, identification, documentation and compilation of data collected in previous quarters. One field tour to Gaya (Area: 4976 Sq Km; TribalPopulation 2,945) andNalanda (Area: 2367 Sq Km; Tribal Population 970) byTeam-I. **Total:4 Field Tours**
51.	**Chromosome count of Genus *Impatiens* of Sikkim/Darjeeling (Dr. Monika Mishra**, Botanical Assistant)**)**	2018 – 2021	**Q1.**Chromosome count of 3 species will be done **Q2**. Chromosome count of 2 species will be done **Q3**Chromosome count of 2 species will be done **Q4**. Chromosome count of 2 species will be done **Total Target:**9 species

INDUSTRIAL SECTION INDIA MUSEUM, KOLKATA

Sl. No.	Name of The Project	Period	Quantifiable deliverables for 2019-20
52.	**Collection of Economic Plant materials for enrichment & replacement of the Botanical Gallery** Dr M. Bhaumik Dr. A.K. Sahoo, Dr. Geeta Chaudhury, Sri B.C. Dey, & Sri S.K. Sharma)	2019-2020	One tour to Dinhata, Coochbihar West Bengal/ Rajamundi, Andhra Pradesh for collecting Tobacco samples and others in Q4 **Total:1 Field Tour**
53.	**Interpretation of Roxburgh Icones**: Family: Orchidaceae Dr. M. Bhaumik, & Dr. (Ms.) Kangan Pagag,	2018 – 2019	Updating of Nomenclature. Description to be completed and Final manuscript to be submitted in Dec 2019
54.	**Listing and Identification of Dicot herbarium specimens at BSIS** Dr. Geeta Chaudhury, Sri B.C. Dey, & Sri S.K. Sharma, Note: **Total herbarium species available in BSISI is 8000**	on going	Documentation work Work completed. Final manuscript to be submitted in June 2019.

BOTANIC GARDEN OF INDIAN REPUBLIC, NOIDA

Sl. No.	Name of The Project	Period	Quantifiable deliverables for 2019-20
55..	**Collection of Tree and shrubs Plants from different region for Introduction in BGIR**	on going	Two field tours proposed to lower elevation of Uttrakhand by Dr Manish in Q1 and Q2 for live plant collection

	Dr. Sandeep Chauhan, & Dr Manish Kandwal,		Two field tours proposed to lower elevation of Himachal Pradesh by Dr Sandeep in Q1 and Q2 for live plant collection **Total:4 Field Tours**
56.	**Development of Data base of introduced plants (Trees) of BGIR, Noida** Dr Manish Kandwal	on going	Collection and incorporation of the data in the database on tree species introduced in the Garden
57.	**Documentation of phonological data of flowering and fruiting of the species growing in BGIR** Dr Sandeep Chauhan & Dr Manish Kandwal	on going	Documentation of phonological data of the species growing in the Botanic Garden of Indian Republic, Noida
58.	**Propagation and multiplication of RET plants collected from various Lead Botanic Garden under ABG Scheme** Dr. Sandeep Chauhan, Scientist D & Dr Manish Kandwal, Scientist D	Ongoing Project	Colection, introduction and multiplication of Endemic, Threatened and endangered plants from various Lead Botanic Garden and same will be introduced in the Botanic Garden of Indian Republic, Noida Two field tours each in Q3 and Q4 proposed **Total:4 Field Tours**

CENTRAL NATIONAL HERBARIUM, HOWRAH

Sl. No.	Name of The Project	Period	Quantifiable deliverables for 2019-20
59.	**Angiospermic flora of Neora Valley National Park, Darjeeling, WB.** (Area 159 Sq Km) Dr. Vinay Ranjan, , Dr. Gopal Krishna & Dr. Anant Kumar	2017 – Completed in Dec-2020	**Field tours-4 (Q1-1;Q2-1;Q3-1;Q4-1)** **Identification of remaining specimens** **Total:4 Field Tours**
60.	**Revision of the genus *Gastrochilus* (Orchidaceae) in India** Dr. Avishek Bhattacharjee, Note: It should be extended one year (2019- December 2020). Because the officials are engaged NDRF studies **of** *Dalbergia* species in 2017 as on priority basis (December 2018)	2018 – 2021	Literature consulted and prepared a list Field tours proposed 2 (Q2-1;Q3-1) **Total:2 Field Tours**

CRYPTOGAMIC DIVISION, HEAD QUARTERS

Sl. No.	Name of The Project	Period	Quantifiable deliverables for 2019-20
61.	**Studies on algal diversity in Hot Spring of Rajgir and Munger, Bihar** By Dr. R.K. Gupta,	2017 – 2020	Two field tour in Q2 and Q3 Mss. Will be submitted in March 2020. **Total:2 Field Tours**
62.	**Liverworts and Hornworts Flora of Darjeeling District, West Bengal.** Dr. Monalisa Dey,	2016 – 2021	Q1. Identification, illustration, micro-photography of previously collected specimens. Q2. Continuation of study, identification, illustration, microphotography and description of

			previously collected specimens. Q3. One field tour will be undertaken to Darjeeling district, West Bengal. Processing, preservation of collected specimens Q4. Continuation of study, identification, illustration, microphotography and description of previously collected specimens. One field tour will be undertaken to Darjeeling district, West Bengal. **Total:2 Field Tour**
63.	**Bryo-flora of Jharkhand** By Dr. D. Singh	2018 – 2022	Q1.Identification, camera lucida illustrations, microphotography of the earlier collected specimens. Q2.Identification, camera lucida illustrations, microphotography of the earlier collected specimens. Q3. One field tour to Godda, Sahibganj, Dumka districts including Rajmahal Hills (ca. 400 sq. km) and study of the collected specimens. Q4. One field tour to Palamu, Lohardaga, Gumla districts including Palamu, Mahauaduar and Palkot WLS (ca. 600 sq. km) and study of the collected specimens. **Total:2 Field Tours**
64.	**Wood rotting fungi of Valmiki National Park** Sri Manoj Hembrom	2018 – 2021	**Survey & Collection**: Three field tours to Valmiki National Park, West Champaran, Bihar, duration of each field trip will be of 10 days. Near about 150 specimens will be collected and will be air-dried and preserved for microscopic characterization. July 2019 (Mid July) August-September 2019 (Mid of both month) October-November 2019 (Last) **Macroscopic characterization:** 150 specimens **Microscopic characterization:** 50 species. **Description, Drawings and Photoplates**: 36 species **Arc GIS distribution map:** as per the species occurrence **Phylogenetic analysis:** Blast search, FASTA File preparation by sampling of genes from public domain like NCBI, UNITE and DDBJ etc. phylogenetic tree preparation and estimation**.** **Herbarium consultation tour:** February 2020: Herbarium consultation tour to Punjabi University Patiala (PUN for 5 days) 20 days and Forest Research Institute Dehradun (DD for 15 days) **Total:3 Field Tours 2 HCT**

PLANT CHEMISTRY DIVISION, HEAD QUARTERS

Sl. No.	Name of The Project	Period	Quantifiable deliverables for 2019-20
65.	**Anti-nutritional Properties (oxalate, phytate, saponin and tannin content), Genotoxicity, DNA damage Preventive Activity, HPLC Studies for Vitamin and Phenolic**	2018 – 2022	45 Wild Edible Plant of NE India to be studied One field tour in Q4 undertaken to N.E. India

	Content of Wild Edible Plant of NE India Dr. Tapan Seal		**Total:1 Field Tour**

PUBLICATION DIVISION, HEADQUARTERS

Sl. No.	Name of The Project	Period	Quantifiable deliverables for 2019-20
66.	Nomenclature updation of Roxburgh Icons in respect to current nomenclature: Families Bignoniaceae and Clusiaceae Dr. Debasmita Dutta Pramanik, & Dr. S. S. Dash	2018 – 2020	50 entries to be interpreted *Finalisation of manuscript*
67.	Flora of Eagle Nest Wild Life Sanctuary and its adjacent regions, West Kameng District, Arunachal Pradesh Sri Sanjay Kumar & Dr. S. S. Dash,	2018 – 2022	Q1: Processing and identification of Herbarium specimens collected earlier Q2: One field tour to the west Kameng district for 20-25 days for collection of plant materials Q3: One field tour to the west Kameng district for 20-25 days for collection of plant materials Q4: Processing and identification of Herbarium specimens collected earlier **Total:2 Field Tours**

Annexure-III

NEW RESEARCH PROGRAMME (PROPOSED) 2019-2020: Total 09 New Projects

Sl. No	Project	Year	Comments RAMC Chairman	Proposed Work
1.	Materials of the Flora of Arunachal Pradesh Vol-5 (New)	2019-2020	Approved	Work based on Documentation of specimens available in ARUN Herbarium
2.	Identification and Incorporation of Backlong Herbarium : Monocots & Pteridophytes (New Project)	2019-onward	Not included in the Annual Action Plan	To identify and incorporate 3000 specimens every year per Botanical Assistant.
3	Molecular systematics of genus *Potentilla* L. (Rosaceae) in Eastern Himalaya and NE India	2019-2022	Not Approved	Preparation of the list of *Potentilla* spp. based on herbarium and literature study 3 HCT proposed
4.	Cytotaxonomical studies in *Solanum nigrum* L. complex and selected cryptic taxa of non-tuberous Solsnum L. (New Proposal)	2019-23		2 Field Tours proposed
5.	Marine Macro Algal flora of India (New Proposal)		Approved	Proposed2 Field Tours
6.	Seed Morphology of *Biophytum* of Tamil Nadu using SEM	2019-20	Not Approved	12 species to be studied; Submission of Project report
7	Studies on natural Dye from some selected plants of West Bengal for dyeing cotton fabrics	2019-20	Approved with some modification	5 plants to be to be worked out with 4 mordents
8	Study of Microalgae and monitoring of water quality of all lakes of AJCBIBG	2019-2020	Approved only for one year	4-5 samples to be collected of each lake; To study periodicity succession, distribution and monitoring of microalgae.
9	**Revised Proposal:** **Exploration of caterpilar fungi in himalaya: morphotaxonomy, molecular phylogeny, chemical and nutraceutical properties**	2019-2021	Revised proposal approved only for two years	Proposed: 2 tours in 2019-20 (1st tour in June 2019 to Kumaon Himalaya (last district of India: Pithoragarh) & move to Sikkim for the same. Season will be over by July) And 2 tours in 2020-21 (During Q2 - Q3).

Annexure-IV

BOTANICAL SURVEY OF INDIA, KOLKATA

PROPOSED RESEARCH ROGRAMME: FLORA OF INDIA: PROJECT

2019-2020 and 2020-2021

Sl. No.	Name of The Project
1.	Flora of India Vol-8: (Family: Rosaceae): Target date: Dec 2020) Team Leader: By Dr S. S. Dash
2.	Flora of India Vol-10: (Families: Melastomataceae to Datiscaceae): Target date March 2020; Team Leader: by Dr B. K. Sinha, Dr. S. S. Dash & Priyanka Ingle (ca 14 Families, 80 Genera and 475 species)
3.	Flora of India Vol-11: (Families: Cactaceae to Adoxaceae): Target date: March 2020: by Team Leader: Dr. Murugan and Team
4.	Flora of India: Vol: 14 (Families: Rubiaceae, Valerianaceae & Dipsacaceae) Target date: March 2020: Team Leader: Dr M. Gangopadhyay
5.	Flora of India: Vol: 15: (Family: Stylidiaceae through Ericaceae, Primulaceae): Target June 2020; Team Leader Dr S.S. Dash
6.	Flora of India: Vol: 16: (Myrsinaceae to Apocynaceae) :Target date March 2020; Team Leader Dr W. Arisdasan
7.	Flora of India Vol: 17: (Families: Asclepiadaceae, Loganiaceae, Buddlejaceae, Gentianaceae, Menynthaceae, Menianthaceae): Target March 2020: Team Leader by Dr. J. Jayanthi & Ms Prachi
8.	Flora of India Vol: 18: (Family: Polemoniaceae, Hydrophyllaceae, Boraginaceae, Convolvulaceae, Cuscutaceae, Solanaceae): Target date: March 2020: By Team Leader: Dr. S. L. Meena
9.	Flora of India Vol-19: (Families: Scrophullariaceae to Lentibulariaceae): Target date March 2020 by Team Leader-Dr Arti Garg
10.	Flora of India Vol-20: (Families: Gesneriaceae to Acanthaceae): Target date: August 2019: Team Leader: Dr. Laxminarasingham
11.	Flora of India : Volume – 21: (Families Verbenaceae, Symphrometaceae, Avicenniaceae, Lamiaceae and Plantaginaceae): Target date June 2020: Team Leader: Dr V. Sampath Kumar
12.	Flora of India :Volume – 22 (Family Nyctaginaceae to Thymeliaceae) (ca. 128 genera 762 species, 32 subspecies, 128 varieties): Target date: March 2020: Team Leader: Dr Manas Bhaumik
13.	Flora of India : Volume – 24 (Families Urticaceae-Ceratophyllaceae): June: 2020: by Team Leader: Dr P.K. Pusalkar,

14. Flora of India : Volume – 25 and 26 (Family Hydrocharitaceae, Burmanniaceae, Orchidaceae): Target June 2020: Team Leader: Dr. D.K. Agrawala

15. Flora of India : Volume – 27 (Family: Bromeliaceae, Cannaceae, Menyanthaceae, Zingiberaceae, costaceae, Marantaceae, Musaceae, Cannaceae, Bromeliaceae, Iridaceae, Taccaceae, Dioscoreaceae, Stemoniaceae, Aloeacaceae, Agavaceae, Liliaceae, Asparagaceae, and Smilaceae): Target date: March 2020: Dr RajibGagoi

16. Flora of India : Volume – 28: (Families: Pontederiaceae- Juncaginaceae): Target date: March 2020 by Dr M.U. Sharief

17. Flora of India: Volume 29: Families: Eriocaulaceae- Cyperaceae: Target date: March 2020: Team Leader Dr V.P. Prasad

18. Flora of India: Vol.30: Family: Poaceae- tribe: Bambusoideae: Target date December 2019 by Dr. Puspa Kumari

19. Flora of India : Vol 30 & 31: Family: Poaceae: Target date: March 2021: Dr. P.V. Prasanna,