

ANNUAL SCIENTIFIC MEET AND REVIEW OF ANNUAL PROGRESS REPORT 2020-21



Manas Bhaumik
Scientist E & HoO
INDUSTRIAL SECTION INDIAN MUSEUM

Annual Research Programme: 1

Project: Collection of algae specimens deposited at ISIM

Executing Officials: Dr. Kangkan Pagag, Botanist, Dr. Sudeshna Dutta and Dr M. Bhaumik, Scientist E

Period: 2020 – 2021

Tentative estimated work: Catalogue of around 2000 marine algae available in Industrial Section, Indian Museum.

Q3 1000 sheets to be documented.

Q4 1000 sheets to be documented

Finally preparation and submission of report

Background of the Project

- Botanical collections are crucial tool in the field of biodiversity studies, environment impact assessment and genetic as well as taxonomic research. They provide the base for identification as well as evaluation of species conservation status.
- The National Centre for Seaweed Herbarium at Marine Algal Research Station (MARS) at Mandapam, Tamil Nadu is an internationally acclaimed center with about 5,000 specimens of more than 280 seaweed species and the only internationally recognized center having a diverse collection of seaweeds from across the country, predominantly from Tamil Nadu and Gujarat, and designated as a reference repository at the national level (Walter Scott, 2015).
- Thus there is a need for development of herbaria of marine algae of India and providing a source of authentic identification that can be used to further the taxonomic study of algae in India and research information can communicate to the public, government and Industry.

Summary of the work done during 2020-21

The herbarium of Industrial Section Indian Museum, Botanical Survey of India (BSIS) currently house 5081 marine algae specimens belonging to c. 56 families and c. 112 genera. The specimens are from different coastal areas of India with a large collection from different islands of Andaman and Nicobar archipelago. The collections were all made by Dr. K.S. Srinivasan during the period of 1944 to 1955. Few collections were made by an anonymous collector during the period of 1914 to 1917 as a part of study economic plants for British India. There is also a minor representation of marine algae from California by Elmer Yale Dawson and Queensland, Australia by A.B. Cribb, as a part of marine algae herbarium of BSIS.

- While preparing the database all specimens were cleaned, dusted and loose or unmounted specimens are mounted on herbarium sheets where it is necessary. All specimens studied, detail metadata prepared and nomenclature updated with the help of www.algaebase.org (Guiry & Guiry 2020). This specimen database prepared here consists of the label data of all collections. The data include the scientific name, collection date, collector's name and collection number (where ever present) and place of collection.

Achievements/Outcomes

- A database of c. 5081 sheets was prepared,
- 300 loose sheets were mounted.
- **Final Report (132 pages + 10 pages colour illustrations) submitted to HQRS in hardbound and softcopy.**
- A dedicated almirah procured and all specimens kept in the almirah.
- The family, genera and taxa are arranged alphabetically as per hierarchy.



Annual Research Programme: 2

Project: Documentation of exhibits and materials of Botanical Gallery in Industrial Section, Indian Museum.

Executing officials: Dr. S. Dutta, Dr. K. Pagag, Botanist and Dr M. Bhaumik, Scientist E

Duration: 2020 – 2022

Catalogue of exhibits and materials of Botanical Gallery in Industrial Section, Indian Museum.

Background of the Project

- The Industrial Section, Indian Museum was established on 1st April, 1887 and became a part of Botanical Survey of India since January, 1911.
- The Gallery provides information on both wild and cultivated economical plants commonly used in India.
- The Botanical Gallery houses different artifacts that date back to 1890 collected by different collectors working under the Reporter of Economic Products.
- **A comprehensive catalogue of the exhibits of this gallery is therefore essential.**

Gum & Resin Section

- Documented **458** specimens in Gum & Resin section
- List has been updated with current nomenclature
- Data has been verified with the old catalogue available

Highlights of the study

- The earliest collection dates back to 1891, gum samples of *Acacia leucophloea* and *A. farnesia* collected by different office holders
- Place of collection (outside India) included Burma, Karachi and Beluchistan



Source wikipedia

Gutta percha sample
exhibited at Calcutta
Exhibition (1882)



Summary of the work done

- A detail record of each exhibit is being prepared with its collection details.
- Few collections by **eminent collectors like Sir G. Watt and D. Hooper** were also recorded who have played a significant role in the layout of the botanical museum present today.
- The collections are not only important in understanding the uses of the plant world but also **provide an insight of the further exploration in the field of economic botany.**
- There have been several collections outside India from Afghanistan, Burma and Bangladesh which is important in **understanding the different uses of the plants across the country.**



Achievements

- The **catalogue of Gum & Resin section** has been completed with **489 specimens**.
The most important collection is a Gutta-percha sample which was exhibited in Calcutta exhibition in 1883-84.
- The **catalogue of Oil & Oil seeds section is being prepared** (with 650 specimens listed), for fiber section (c. 200 specimens are listed) with details.
- Fibre samples of *Pandanas furcatus* Exb. No. 32023, *Furcraea foetida* and *Fucraea* sp. were identified which were **exhibited at the Calcutta International Exhibition in 1880s**.

Proposed Annual Research Programme 2021-22

Sl. No.	Name of the project	Tenure	Quantifiable deliverables2021-22
1	Documentation of exhibits and materials of Botanical Gallery in Industrial Section, Indian Museum. Executing officials: Dr. S. Dutta, Dr. K. Pagag, Botanist and Dr M. Bhaumik, Scientist E	Duration: 2020 – 2022	Cataloguing of remaining exhibits and materials of Botanical Gallery in Industrial Section, Indian Museum.
2.	Assessment of Apiaceae Collections In Botanical Gallery BSI,ISIM, supported with field exploration work in Eastern Himalaya Executing officials: Dr M. Bhaumik, Scientist E Ms. Sushreya Pal, Botanical Asstt. Shri Abinash Pradhan Botanical Asstt.	Duration: 2021 – 2025	Q1. Assessment of Apiaceae in Botanical gallery Q2. One field exploration tour Q3. One field exploration tour Q4. Processing and identification of specimen and assessment of apiaceae in Botanical gallery New Proposal
3.	Updating and editing of Flora of Dihang Dibang Biosphere Reserve Dr. Manas Bhaumik, Scientist E	Duration: 2021 – 2022	Submission of Complete Mss in all respect in March 2022. New Proposal

Publications

During this period 2020-21 four research papers four book chapters and one article in Hindi published

- **Paper published: Four (4)**

1. Sarvanan, R., Kannan, D., Panda, S.P., Datta, S. (2020). Traditionally used wild edibles plants of Kluldiha Wildlife Sanctuary, Odisha, India. *Journal of Pharmacognosy & Phytochemistry* 6: 482-488.
2. Datta, S. & T. Seal (2020) Effect of solvent extraction in antioxidant activity and RP-HPLC based study of phenolic acids and flavonoids in *Cayratia trioloia* (L.) Domin. *Journal of Pharmacognosy and Phytochemistry*.; 9(6): 896-900.
3. Pagag, K and S.K. Borthakur. Macrophytes of the wetlands of Lakhimpur district, Assam (2020). *International J. of Bot. and Res.* 10(2): 65-72. Doi: 10.24247ijbrdec20208
4. Pagag K., Vijayan Deepu & A. A. Mao (2020). Phytochemical studies of leaves and roots (*in vitro*) of endemic orchid *Arachnis senapatiana* (Phukan & A.A. Mao) Kocyan & Scuiteman. *Journal of Pharmacognosy and Phytochemistry* 9(6). 9-6-1465-1467. Doi:10.22271/phyto.2020.v9.i6u.13155.

- **Book chapter published: Four (4)**

1. Malick, K. C. & M. Bhaumik (2019). 'Scrophulariaceae' in *Fl. West Bengal* vol. 4. P. Lakshminarasimhan et al (eds) pp. 96-136. BSI. Kolkata.
2. Mandal, S.K. & M. Bhaumik (2019). 'Lentibulariaceae' in *Fl. West Bengal* vol. 4. P. Lakshminarasimhan et al (eds) pp. 140-147. BSI. Kolkata.
3. Bhaumik, M. (2019). 'Plantaginaceae' in *Fl. West Bengal* vol. 4. P. Lakshminarasimhan et al (eds) pp. 360-361. BSI. Kolkata.
4. Murmu, S. & M. Bhaumik (2019). 'Polygonaceae' in *Fl. West Bengal* vol. 4. P. Lakshminarasimhan et al (eds) pp. 396-416. BSI. Kolkata.

- **In Hindi: One (1)**

1. नन्दिता शर्मा, कांगकान पृगाग एवं सुरेन्द्र कुमार शर्मा, 2020. असम के लोगों द्वारा त्वचा की देखभाल और सैंदर्यीकरण के लिए पौधों का पारंपरिक उपयोग. वनस्पति वाणी।

Maintenance of Herbarium BSIS

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| 1. No. of Specimens mounted | : 170 |
| 2. No. of Herbarium sheets dusted/fumigated | : 1765 |
| 3 No. of specimens poisoned | : 1730 |
| 4. No. of Genus cover/species cover changed | : 108 |
| 5. No. of Specimens incorporated | : 145 |

Library ISIM

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|--|--------------------------------|
| 1. Indian journals incorporated | : 31 |
| 2. Number of Reports, Newsletters, Brochures incorporated | |
| | Departmental : 3 |
| | Other Institutional : 2 |
| 3. Number of books incorporated | : 68 |

Identification of NDPS sample and revenue earned

1. During this period (2020-21) 77 NDPS sample received from different police stations and out of them 49 reports has been issued.
 2. One banana sample has been identified and reported for the student of Department of Food, Science and technology, I.K. Gujral Punjab Technological University Punjab. On 20.01.2021.
- Revenue earned: Rs.38800/- for 77 samples.

Lecture delivered (2020-2021)

1. Participated in a discussion as a panelist on Greening Avenue: Choices post Amphan” organized by HIDCO Govt. of West Bengal on 04.06.2020.
2. Delivered a lecture on World Environment day 2020 uploaded to youtube organized by Indian Museum, Ministry of Culture, Govt. of India.
3. Deliver a talk as Resource person in a webinar entitled “Role of Museum for conservation of Biodiversity” on 16.01.2021 organized by Dr. D. Das HOD Botany GGDC College Lalgah, Dr. P. Ghosh HOD Botany Seva Bharati Mahavidhyalay, Kapgari, West Bengal & Flora & fauna Asia Group.

Review of Scientific papers

- Five research article has been reviewed for Nelumbo (two), Indian Forester (two) and Nordic Journal of Botany(one). The details are

1. An article ‘ New variety of *Celosia argentea* L. (Amaranthaceae) from Assam, India’ by B. Das et al. for Nelumbo.
2. One Mss. (*Meeboldia linearis* sp. nov. (Apiaceae) from Xizang, China) Reviewed for Nordic Journal of Botany
3. One Article reviewed "Taxonomic Revision of Genus *Alternanthera* (Amaranthaceae) in the Indian Himalayan State of Jammu and Kashmir" for Nelumbo.
4. One paper reviewed “ A taxonomical note from Parappool: A lesser Known Lateritic Plateau in Kerala” for Indian Forester.
5. One paper "Ornamental potential of *Gentiana Kurroo* could be a boon for its survival: a critically endangered species’ is reviewed for Indian Forester

Webinar and offline lecture attended

1. Participated webinar on 20.05.2020 organized by R.D & S.H. National College and SWA Science College Mumbai.
2. Attend a webinar on “Himalayan Mountain Biodiversity–Threats & Solutions’ organized by BSI BSISHRC Gangtok on 10.12.2020.
3. One webinar on ‘Revising the generic limits of Coleus and Plectranthus (Lamiaceae) by Allen Paton, RBG Kew. On 12.03.2021
4. Attend a Webinar on International Code of nomenclature (ICN) for plants organised by BSI, SRC on 06.01.2021.
5. Attend Nathaniel Wallich memorial lecture on Foundation day of Indian Museum 02.02.2021

Misc information and 19 reports generated

1. Monthly, quarterly and annual technical reports send to hqrs regularly
2. Report on RTI send to hqrs timely.
3. Information regarding details of Capital Assets of ISIM provided to HQRS on 14.10.2020.
4. ACR/APAR report of all ISIM officials reviewed and send to hqrs.
5. Information provided to hqrs as per attached format enquired from PMO.
6. Furnishing information regarding no. of employees opting for LTC cash voucher scheme and Festival advance scheme on 4.11.2020 to HQRS
7. Assisted four member team of Auditors, Director General Audit, Environment and Scientific department, Kolkata Branch during their Audit w.e.f. 13.11.2020-20.11.2020. Inspection Report received from Audit, scientific dept., necessary steps taken and compliance report send to Audit office as well as hqrs for information.
8. Expression of Interest pertaining to MOU between CAFRI & BSI replied.
9. Information on ISIM building data provided to HQRS.
10. One botanical sample reported to HQRS vide D/BSI letter No. BSI-295/1/2019/Misc.-Tech/185 dated 12.02.2021
11. Information provided to Hqrs regarding digital public session by Honr. Minister MoEFCC on 03.03.2021.
12. Web page of BSI,ISIM updated with Hindi version (at bsi.gov.in) and uploaded on 21.12.2020.
13. Write up of Economic Botany herbarium prepared and send to Dr. Avinash Bharati to upload on 23.12.2020
14. Two quarries for internal audit complied for hqrs on 15.02.2021
15. Direct recruitment of 8 MTS post processed, permission obtained from hqrs, NOC obtained from redeployment cell, proforma duly filled up submitted to Staff Selection Commission and the post has been advertised in February 2021
16. Comply reply to Asstt. Election commission of India Kolkata South On 15.12.2020
17. Revised datasheet of Herbarium image house at ISIM sent to Digital Herbarium to CNH and onward transmission to NIC Ministry.
18. Participating a survey of Natural History Museum UK about improving visitor's interest
19. State floral diversity data send for Finalization of formats for compilation of Biodiversity Accounts by Statistical Ministry.

Other administrative work

1. Two service book updated Ms. Anantha Lakshmi and Mr. Rahapal on 2.10.2020
2. 7 ACR reviewed on 02 & 03rd December 2020
3. One Packet species cover (500 sheets) issued to CNH on loan basis.
4. Application for Botanist forwarded to D/BSI.
5. Miscellaneous PAO work done.
6. Duely filled proforma for direct recruitment of 8 post of MTS deposited to Staff Selection Commission(ER), Kolkata on 04.01.2021
7. **Vigilance awareness week 2020 observed on 27.10.2020.** All officials participated whole heartedly
8. 34 type images and metadata of ISIM herbarium send for BSI e-archive web portal. On 09.2.2021
9. Arrange to install one 55” signage at Botanical Gallery on 09.2.2021.



Mrs. Geeta Chaudhury, Botanist

1. Family 'Amaranthaceae" updated and finalized for Flora of India Vol. 22 and submitted to teal leader.
2. Perform responsibilities as regular DDO and attend Audit party during their work at ISIM.
3. Identified & prepared and delivered NDPS reports.
4. Reviewing & Reporting of APAR of ISIM officials 4 & 2, respectively.
5. Superannuated on January 2021

Dr. (Mrs.) Kangkan Pagag, Botanist

1. Supervised cleaning and updating of Botanical Gallery.
2. Carried out the duties of Hindi Rajbhasa Adhikari or Hindi Officer.
3. Carried out duty of Purchase Committee Member.
4. Assisted in preparation of Increment Certificate.
5. Prepared a list of numbers of Angiosperms and Pteridophytes of states of India.
6. Prepared a list of no. of endemic and RET plants of states of India.
7. Attended a National Webinar on occasion of International Habitat Day on 5th October, 2020 in the topic Plant Diversity of Cold Desert of Western Himalaya and its conservation strategies presented by Dr S.K. Srivastava, former Joint Director & HOO, BSI, NRC, Dehra Dun, organized by BSI, HAWHRC, Solan, H.P.
8. Attended a National Webinar on 9th October, 2020 in the topic NISARG Bharat: Enhancing Peoples' participation in the e-PBR Framework organized by Biodiversity Collaborative supported by office of the Pincipal Scientific Advisor to the Govt. of India.
9. Organized Hindi Diwas and Karyashalaya.
10. Carried out the physical verification of consumable articles at store of the office and submitted report as Charman of the Committee.
11. Attended two webinar organized by BSI, Western Regional Centre, Pune and BSI, Deccan Regional Centre, Hyderabad.
12. Consulted herbarium specimens of Central National Herbarium (CNH).
13. Attend online Hindi workshop on ' Karyalayan patrachar ke vivid swaroop' organized by CBL and lecture presented by Smt. Amrita Veena Minj, Rajbhasa Bivhag Kolkata.

Dr. (Mrs.) Sudeshna Datta

- a) Assisted in disinfection of herbarium(BSIS) & new gallery.
- b) Assisted in identification and preparation of NDPS reports.
- c) Prepared data for representation in KIOSK.
- d) Collected seeds of [*Adenanthera pavonina* L.](#) for display in bead showcase.
- e) Prepared data for 17 vols. Of textile fabrics for digitization.
- f) Prepared metadata of Natural Dyes of Wardle for NIC.
- g) Identified Musa specimen for student.
- h) Assisted research scholar with J F Watson Fabrics of India book.
- i) Acted as a member of verification committee for consumable goods from 2011-2020. Prepared a list of consumable items and followed by physical verification of the same.
- j) Incorporated Algae specimens and prepared a separate algae section
- k) Incorporated Algae specimens and prepared a separate algae section.
- l) Visited CNH to consult *Pternopetalum* species (Apiaceae) for writing an article.

- **Ms. Sushreya Pal, Botanical Asstt.**

- a) Assisted in fumigation of herbarium & new gallery.
- b) Assisted visitors & staffs during gallery duty on weekends.
- c) Listing of Food samples in Botanical gallery for preparation of comprehensive database of gallery specimens.

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- **Shri Abinash Pradhan, Botanical Asstt.**

- a) Assisted in fumigation of herbarium and gallery.
- b) Assisted HOO as and when required.
- c) Assisted visitors and staffs during gallery duty on weekends
- d) Listing of wood samples in Botanical gallery for preparation of comprehensive database of gallery specimens

Miscellaneous

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- 1. Office premises totally sanitized thrice on 02.06.2020 and 19.06.2020, 17.07.2020 with ISIM authorized pest control Agency.
- 2. Sri U. S. Mitra, Stenographer, Gr.I, promoted and transferred to BSI, CRC Allahabad deployed at BSI,ISIM.
- 3. Smt. Ananthalkshmi, Botanical Asstt. Promoted and joined at BSI ISIM, deployed at BSI,SRC, Coimbatore.
- 4. Ms. Sushreya Pal joined as Botanical Assistant to this establishment on 05/10/2020.
- 5. Shri Surendra Kumar Mahato joined as Lib. & Inf. Asstt. to this establishment on 16/10/2020.
- 6. Shri Debasish Chowdhury, DCM, Grade-II, Hqrs., BSI joined in BSI, ISIM on 23rd November, on deputation.
- 7. Dr (Ms.) Kangkan Pagag, Botanist assumed charge as DDO after retirement of Mrs Geeta Chaudhury, Botanist.

Thank you