

Annual Scientific Meet 2017

**Dr. P. Lakshminarasimhan
Scientist 'E' & HoO
Botanical Survey of India
Western Regional Centre
Pune – 411 001**

Ph.D.

Title of Ph.D. thesis: Flora of Nasik District

Designation: Research Fellow of BSI, WC, Pune
(1982-1987)

Degree awarded: October 1987 by the University of
Pune under the guidance of Dr. B.D. Sharma

The thesis was modified for publication in book
form and the same was published by BSI in 1991
(P. Lakshminarasimhan & B.D. Sharma)

In this work 943 species, 2 subspecies & 7 varieties
of Angiosperms belonging to 514 genera under
108 families was treated.

ANNUAL ACTION PLAN PROJECTS

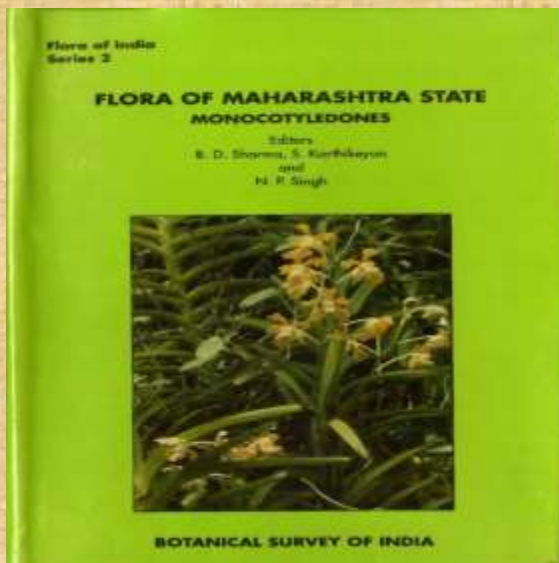
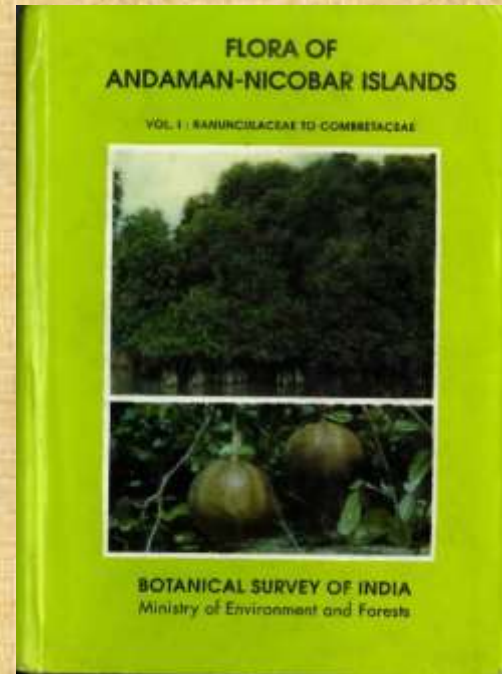
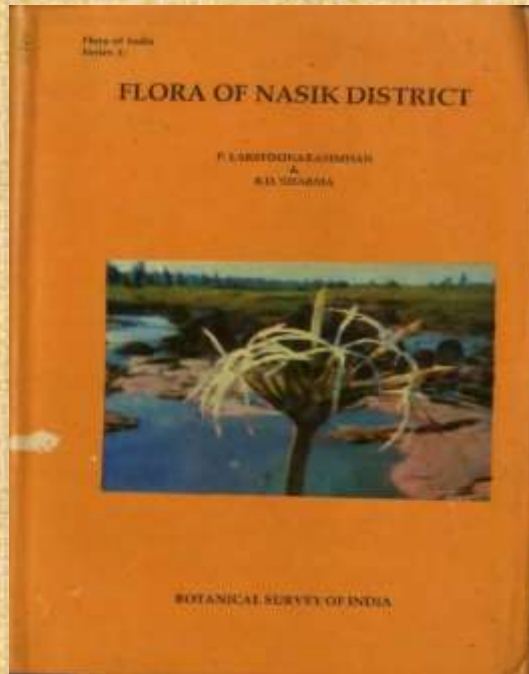
At BSI, A & N Circle, Port Blair (1989-1993):

- Flora of Andaman – Nicobar Islands: Submitted the manuscript of 17 families from Dichapetalaceae to Mimosaceae & Arecaceae comprising 332 species belonging to 146 genera. The Flora of Andaman-Nicobar Islands vol. 1 was published by BSI in 1999 (P.K. Hajra & al.). In this volume families from Dichapetalaceae to Mimosaceae was included.
- Completed the project on Flora of Interview Island, North Andamans which included 149 species, 1 subspecies, 1 variety & 1 forma of angiosperms belonging to 117 genera under 57 families; besides 2 Pteridophytes and 1 gymnosperm was collected. This was published as a Checklist in 1996.

At BSI, W Circle, Pune (1993-2002)

- **Flora of Maharashtra State-Monocotyledones:** Contributed to writing accounts of 34 families comprising 904 species, 2 subspecies, 39 varieties, 1 subvariety & 1 forma belonging to 256 genera in wild. Besides it also included 143 cultivated species. This was published by BSI in 1996 (B.D. Sharma & al.).
- **Flora of Maharashtra State-Dicotyledones volume 1** (Ranunculaceae-Rhizophoraceae): Contributed to writing introductory chapters and accounts of five families. Also involved in editing of this volume which included updating of all the manuscripts submitted by various researchers. This volume comprising 856 species, 10 subspecies & 53 varieties in wild belonging to 314 genera under 70 families was published by BSI in 2000 (N.P. Singh & S. Karthikeyan with assistance from P. Lakshminarasimhan & P.V. Prasanna). It also included 262 cultivated species.
- **Flora of Maharashtra State-Dicotyledones volume 2** (Combretaceae-Ceratophyllaceae): Contributed to writing accounts of 14 families. Also involved in editing of this volume which included updating of all the manuscripts submitted by various researchers. This volume comprised 1319 species, 13 subspecies, 67 varieties & 4 formas in wild belonging to 527 genera under 91 families. Besides it also contained 437 cultivated species. This volume was published by BSI in 2001 (N.P. Singh, P. Lakshminarasimhan, S. Karthikeyan & P.V. Prasanna)
- **Flora of Karnataka – Monocotyledons:** Submitted the final typescripts of 15 families (Agavaceae, Amaryllidaceae, Araceae, Burmanniaceae, Commelinaceae, Dioscoreaceae, Flagellariaceae, Hydatellaceae, Liliaceae, Pandanaceae, Smilacaceae, Taccaceae, Typhaceae, Xyridaceae & Zingiberaceae) comprising 218 species & 7 varieties in wild belonging to 62 genera; besides 27 cultivated species was also treated.

FLORA



**As Indian Botanical Liaison Officer at Royal Botanic
Gardens, Kew (from 8.5.2002 to 7.11.2004)**

accomplished the following works

- Sent photocopies of **5015** pages of botanical literature, original reprints of 21 papers comprising 480 pages, 12 colour slides and 13 digital images of protologues to various institutes in India.
- Sent **3532** images of botanical specimens from India deposited at BM, CGE, E, K, LD OXF and P to various institutes in India.
- Identified **109** specimens, 6 fruits, 4 photographs and 5 scanned images sent by various Institutes in India.
- Answered more than **30** queries from Indian Botanists
- Revised the family **Loganiaceae** comprising 7 genera & 28 species under the '**Flora of India Project**' and submitted the manuscript [includes 55 colour photos & 12 line drawings].

At Central National Herbarium, BSI, Howrah (from December,2004 to July, 2015)

- Published the '**Flora of Anshi National Park, Western Ghats-Karnataka**' [S.A. Punekar & P. Lakshminarasimhan, 2012 (2011)] comprising 923 species, 3 subspecies & 5 varieties belonging to 570 genera under 127 families of flowering plants [includes 6 maps & 990 colour photos in 132 photo plates]. The highlights of this work are nine new taxa have been described including two new in this work; six new records to Karnataka and 260 species which are endemic to India have been recorded from this area.
- Submitted manuscript of '**Flora of Rajiv Gandhi National Park, Karnataka**' [R. Manikandan & P. Lakshminarasimhan] comprising 1339 species, 16 subspecies & 31 varieties belonging to 757 genera under 152 families of angiosperms; besides 30 species of Pteridophytes and 3 species of Gymnosperms have also been recorded [includes six maps and 129 colour photos in 16 photo plates]. The highlights of this work are 19 new records to Karnataka; 124 new records to Mysore district; 115 new records to Kodagu district and 106 species which are endemic to India have been recorded from this area. [**published in 2013**]

- Submitted manuscript of '**Flora of Bhagwan Mahavir (Molem) National Park and adjoining, Goa**' [M.N. Datar & P. Lakshminarasimhan, 2008] comprising 722 species of flowering plants in wild belonging to 492 genera under 122 families and 40 cultivated species; besides 37 species of Pteridophytes have been listed with their habitat specificity [includes 6 maps and 220 colour photos in 27 photo plates]. The highlights of this work are 24 new records to Goa state and 128 species which are endemic to India have been recorded from this area. [**published in 2013**]
- Completed writing of manuscript of '**Flora of Dalma Wildlife Sanctuary, Jharkhand**' (P. Lakshminarasimhan, C.R. Magesh & P. Chakraborty) comprising 403 species belonging to 325 genera under 91 families of angiosperms. In addition 8 species of Pteridophytes belonging to 7 genera under 7 families have also been treated in this work. [**manuscript submitted** for publication in book form in 2012]
- Editing of **Flora of West Bengal volume 4** [Convolvulaceae-Ceratophyllaceae] – Most of the manuscripts submitted by various scientists had become out dated (submitted before 2000) and were either hand written or manual typed. My work involved getting the manuscripts typed / retyped, followed by checking and correcting them which included updating nomenclature, distribution data, standardization of author names, book & journal titles, etc. I have **completed thorough editing of volume 4 comprising 1068 species belonging to 345 genera under 45 families**. [**edited manuscript submitted** for publication in book form in 2012]

- **Editing of Flora of Karnataka: Monocotyledons** – Thorough editing of the manuscript comprising 1065 species belonging to 310 genera under 35 families submitted by various scientists **was completed and submitted to BSI**. It included updating nomenclature, distribution data, standardization of author names, book & journal titles, etc.
- Completed thorough **editing of manuscript of 'Flora of India Vol. 23** (Loranthaceae – Daphniphyllaceae)' comprising 507 species belonging to 93 genera under 6 families (Edited by N.P. Balakrishanan, T. Chakrabarty, M. Sanjappa, **P. Lakshminarasimhan** & P. Singh). **[published in 2012]**

- Submitted the manuscript of '**Flora of Koderma Wildlife Sanctuary, Jharkhand**' comprising 429 taxa (including 426 species & 3 varieties) belonging to 322 genera under 98 families of angiosperms and 8 species of pteridophytes along with 3 maps and 46 color photo plates (**P. Lakshminarasimhan** & S. Biswa).
- Submitted the manuscript of '**Flora of Palkot Wildlife Sanctuary, Jharkhand**' comprising 462 taxa (including 456 species, 3 subspecies & 3 varieties) belonging to 319 genera under 93 families of angiosperms and 11 species & 1 subspecies of pteridophytes along with 4 maps and 55 color photo plates (**P. Lakshminarasimhan** & V.K. Mastakar).

- **Flora of West Bengal Volume – II (Leguminosae – Aizoaceae)** by T.K. Paul, **P. Lakshminarasimhan**, H.J. Chowdhery, S.S. Dash & P. Singh (Eds.) published by Botanical Survey of India in 2015.
- **Endemic Vascular Plants of India** by P. Singh, K. Karthigeyan, **P. Lakshminarasimhan** & S.S. Dash published by Botanical Survey of India in 2015.
- **Kedarnath Natural Disaster - Impact on Flora** by P. Singh, P.K. Pusalkar, S.K. Srivastava, **P. Lakshminarasimhan** & Brijesh Kumar published by Botanical Survey India in 2015.
- **Flora of West Bengal Volume – III (Apiaceae – Boraginaceae)** by Vinay Ranjan, **P. Lakshminarasimhan**, S.S. Dash & H.J. Chowdhery (Eds.) published by Botanical Survey of India in 2016.

Edited/Reviewed the manuscripts of following floras

- 'Flora of Mahatma Gandhi National Park, Wandoor, South Andamans' by K. Karthigeyan comprising 539 species belonging to 403 genera under 111 families.
- 'Floristic Diversity of Matheran' by S.C. Majumdar, S.G. Pradhan & S.K. Das Das comprising 653 species, 10 subspecies and 24 varieties of Angiosperms belonging to 462 genera under 122 families and 1 species of Gymnosperm and 25 species of Pteridophytes.
- 'Floristic Diversity of Kurung Kumey District, Arunachal Pradesh' by S.S. Dash comprising 1391 species belonging to 580 genera under 152 families.
- 'Flora of Mizoram: Monocots Volume III (Hydrocharitaceae – Poaceae)' by S.J. Phukan, B.K. Sinha, G.P. Sinha & B.K. Shukla comprising 548 species belonging to 239 genera under 28 families and submitted to Director, Botanical Survey of India.
- 'Phytodiversity of Chilika Lake, Odisha' by Anirban Roy, L.K. Banerjee & P.K. Mukherjee comprising 546 species of Angiosperms belonging to 379 genera under 107 families; besides 100 phytoplankton's and 20 species of Pteridophytes.

- ‘A Survey Report in the Flora of North Andaman Islands, India’ by M.Y. Kamble (comprising 352 species belonging to 271 genera under 103 families)
- ‘Flora of Tawang District’ by H.S. Mahapatra (comprising 767 species belonging to 580 genera under 100 families)
- ‘Checklist of Flora of Meghalaya’ by A.A. Mao, B.K. Sinha, Durgesh Verma and Nandita Sarma (comprising 4863 taxa belonging to 1609 genera under 256 families)

Project Reports Submitted:

- Final Report on “Revision of the Tribes Acantheae, Nelsonieae and Thunbergieae (Acanthaceae)” – a study accomplished by Ms. Debatri Panja, **a Research Fellow under my supervision** during 2003 – 2008, under Flora of India Project has been submitted to the Director, Botanical Survey of India.
- Project Report entitled “Studies on the effect of climate change on the phenology of some plant species of Acharya Jagadish Chandra Bose Indian Botanic Garden (AJCBIBG), Howrah” submitted to Indian Academy of Sciences, Bangalore by Ms. Shruti Hegde, Summer Research Fellow, **executed her studies under my guidance** from 23. 6. 2010 to 31. 8. 2010.

- “Inventorisation and documentation of the Wild Edible plants of Pandalur Taluk, Nilgiris District, Tamil Nadu” – A project report submitted to the Indian Academy of Science, Bangalore by Ms. C. Udhayavani, Summer Research Fellow (Ph.D. Scholar, Bharathiar University, Coimbatore) **under my supervision** from 1. 5. 2012 to 30. 6. 2012 at Central National Herbarium, Howrah.
- Submitted Project Report entitled “Centre for Advanced Research in DNA Finger-Printing and Diagnostics of Medicinal Potential in Plants from Eastern and North-east India” to ICMR, New Delhi (Botanical Survey of India, Kolkata in collaboration with Bose Institute, Kolkata). The work was done by Dr Avishek Bhattacharjee, RA **under my supervision**.

BIBLIOGRAPHY AND ABSTRACTS



BIBLIOGRAPHY AND ABSTRACTS OF PAPERS ON FLORA OF WEST BENGAL - II



ENVIS Centre on Floral Diversity
2010



Botanical Survey of India
Ministry of Environment & Forests



United Nations Decade on Biodiversity

BIBLIOGRAPHY AND ABSTRACTS OF PAPERS ON FLORA OF ANDAMAN AND NICOBAR ISLANDS



ENVIS Centre on Floral Diversity
2011



BOTANICAL SURVEY OF INDIA
MINISTRY OF ENVIRONMENT & FORESTS



United Nations Decade on Biodiversity

BIBLIOGRAPHY AND ABSTRACTS OF PAPERS ON FLORA OF MAHARASHTRA



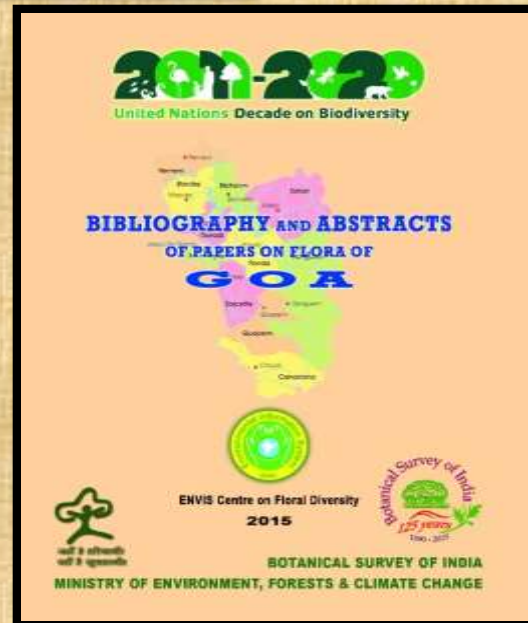
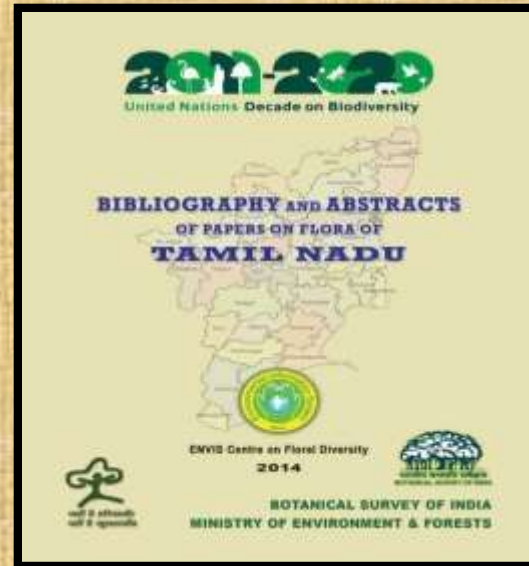
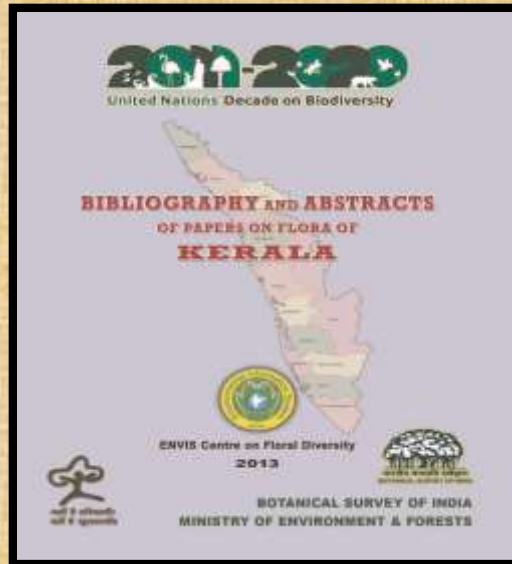
ENVIS Centre on Floral Diversity
2012



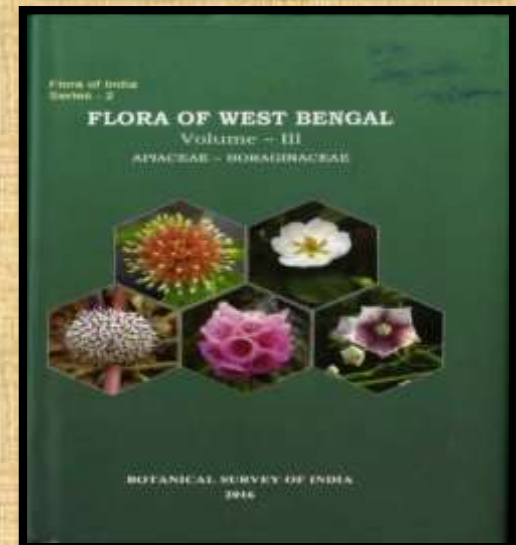
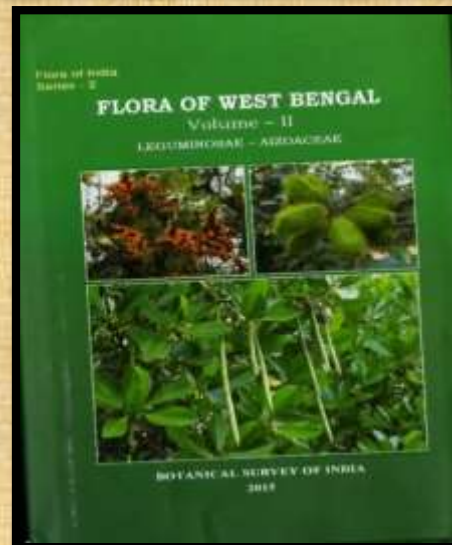
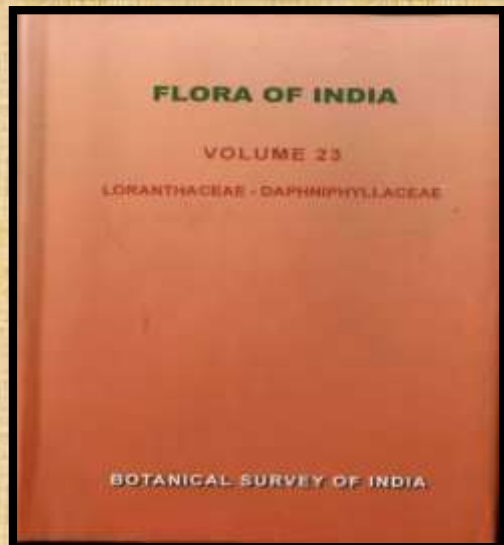
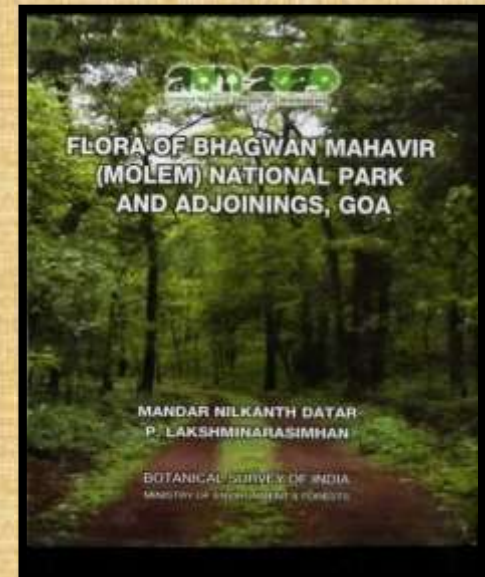
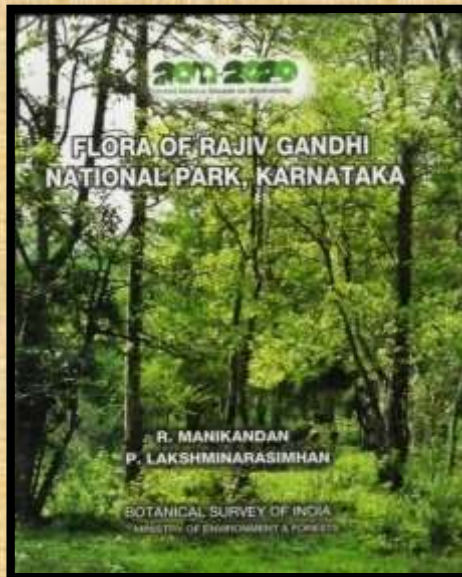
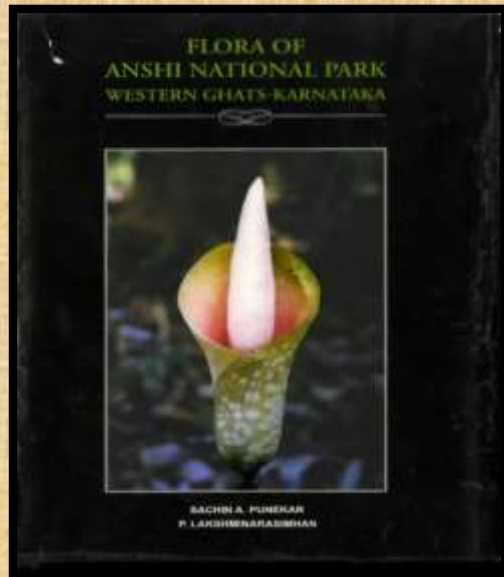
BOTANICAL SURVEY OF INDIA
MINISTRY OF ENVIRONMENT & FORESTS



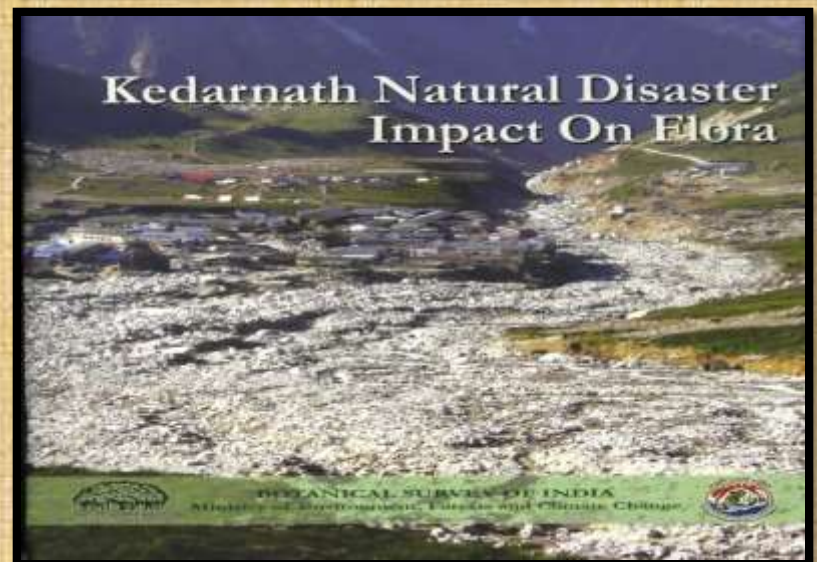
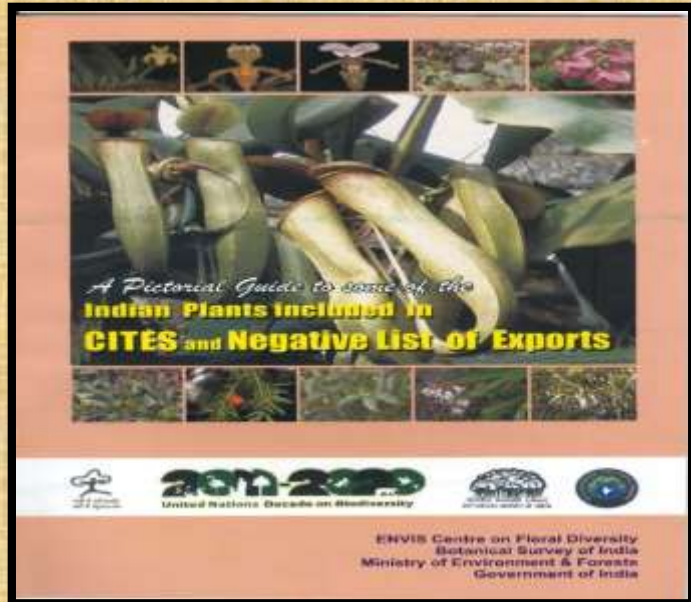
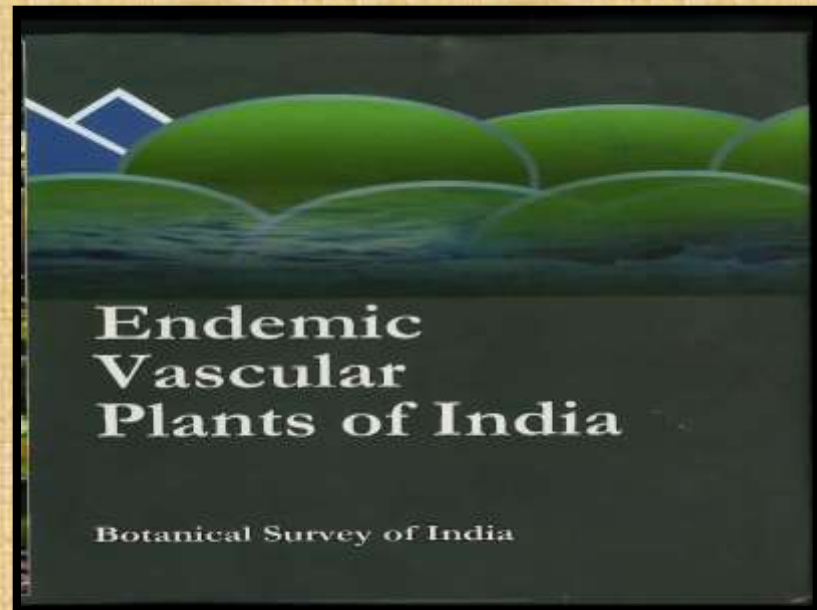
BIBLIOGRAPHY AND ABSTRACTS



FLORA



BOOKS



Awards Received

- Awarded **Dr. M.B. Raizada Medal** (2010) by the Association for Plant Taxonomy, for significant contributions in the field of Taxonomy of Angiosperms on 2. 11. 2010 at National Botanical Research Institute (NBRI), Lucknow.
- Awarded the **Prof. V.V. Sivarajan Medal** (2010) by the Indian Association for Angiosperm Taxonomy, for contributions in the field of Angiosperm Taxonomy during the XX IAAT Conference held at Bharathiar University, Coimbatore on 26.11.2010.

Ph. D. guidance

Successfully guided the following four students for their Ph.D. degree in Botany

- An Assessment of Floristic Diversity of Molem National Park, Goa by M.N. Datar (degree awarded in 2007 by the University of Pune)
- An Assessment of Floristic Diversity of Anshi National Park, Karnataka by S.A. Punekar (degree awarded in 2008 by the University of Pune)
- An Assessment of Floristic Diversity of Rajiv Gandhi National Park, Karnataka by R. Manikandan (degree awarded in 2008 by the University of Pune)
- Studies on Taxonomy of the Tribes Acantheae, Nelsonieae and Thunbergieae (Acanthaceae) in India' by Debatri Panja (Kundu) (degree awarded 2016 by Visva-Bharati University, Santiniketan, West Bengal) **as co-guide**

Besides five students have registered for their Ph.D. degree as given below:

- Sameer Patil registered for Ph.D. degree in Savitribai Phule Pune University on the topic 'Flora of Pushpagiri Wildlife Sanctuary, Karnataka' **as guide**
- Akramul Hoque registered for Ph.D. degree in the Calcutta University on the topic 'Taxonomic Revision of the family Dioscoreaceae of India' **as guide**
- Bandana Bhattacharjee registered for Ph.D. degree in the University of Kalyani on the topic 'Revision of the tribe Vernonieae Cass. (Asteraceae) in India' **as co-guide**
- Shyam Biswa registered for Ph.D. degree in Visva-Bharati University, Santiniketan, West Bengal on the topic 'Floristic Diversity of Koderma Wildlife Sanctuary, Jharkhand' India' **as co-guide**
- Vijay Kumar Mastakar registered for Ph.D. degree in Barkatullah University, Bhopal, Madhya Pradesh on the topic 'Floristic Diversity of Palkot Wildlife Sanctuary, Jharkhand' India' **as co-guide**

Courses/Seminar organized

- Convener of '**Botanical Latin Course**' organised by Botanical Survey of India in Coimbatore, herein, Dr. Thomas Jacobs, Professor of Botany (Retd. UNISA), Professor of Philosophy, Latin and Greek, Theological Institute, Pretoria, South Africa from 17. 1. 2011 to 24. 1. 2011 was the Course Director & Dr. G.V.S. Murthy, Scientist 'F', BSI was the Course Coordinator. Scientists and Research Fellows of BSI and other Research Institutes, Professors and Research Fellows from various Universities and Colleges from all over India attended.
- As the In-Charge of ENVIS Centre on Floral Diversity of BSI organised '**Capacity Building Training Course in Plant Taxonomy**' on 21. 04. 2012 and 22. 04. 2012 at Central National Herbarium, Howrah for M.Sc. Botany students and Research Fellows belonging to various Universities of West Bengal and also to BSI Research Fellows.
- Course Coordinator for the '**Botanical Nomenclature Course**' jointly organised by Botanical Survey of India and ENVIS Centre on Floral Diversity in Kolkata from 11.1.2013 to 13.1.2013, wherein, Dr. Kanchi N. Gandhi, Senior Nomenclature Registrar, Harvard University Herbaria, USA was the Course Director and Dr. Paramjit Singh, Director, BSI was the Course Convener. Scientists and Research Fellows of BSI and other Research Institutes, Lecturers, Professors and Research Fellows from various Universities and Colleges from all over India attended.

- As the In-Charge of ENVIS Centre on Floral Diversity of BSI organised '**Capacity Building Training Course in Plant Taxonomy**' on 22.03.2014 and 23.03.2014 at Central National Herbarium, Howrah for M.Sc. Botany students and Research Fellows belonging to various Universities of West Bengal and also to BSI Research Fellows.
- Was the Coordinator for the seminar "**EXCITEMENTS IN TAXONOMY AND ETHNOBOTANY FOR YOUNG RESEARCHERS**" organized by Botanical Survey of India at Asutosh Birth Centenary Hall, Indian Museum, Kolkata on 19th June, 2014
- Was the Convener of National Level Workshop on "**Capacity Building training course in Plant Taxonomy**" organized by T.N.B. College, Bhagalpur & University Department of Botany, T.M.Bhagalpur University in collaboration with BSI and ENVIS Centre on Floral Diversity of BSI at T.N.B. College, Bhagalpur from 20.02.15 – 27.02.15.
- Was one the Conveners of **National Dialogue on Plant Taxonomy in India cum Exhibition** on 13-2 & 14-2-15 at Ashutosh Birth Centenary Hall, Indian Museum, Kolkata (organized by BSI in association with Indian Museum).
- As Co-ordinator made all arrangements in organising collaborative workshop "**Interactive talks and Workshop on Essentials in Plant Revisionary studies and Flora writing**" at BSI, WRC, Pune from 1-12-16 to 3-12-16 (Naoroji Godrej Centre for Plant Research, Shirwal and Botanical Survey of India). There were 58 candidates from all parts of India.
- Course Coordinator for the '**Botanical Nomenclature Course**' organised by Botanical Survey of India from 9.2.2017 to 12.2.2017, wherein Dr. Kanchi N. Gandhi, Senior Nomenclature Registrar, Harvard University Herbaria, USA was the Course Director and Dr. Paramjit Singh, Director, BSI was the Course Convener. Scientists and Research Fellows of BSI and other Research Institutes, Lecturers, Professors and Research Fellows from various Universities and Colleges from all over India attended; besides there was one candidate from University of Peradeniya, Sri Lanka. In all there were 118 participants.

Botanical Nomenclature Course - 2013



Interactive talks and Workshop on Essentials in Plant Revisionary studies and Flora writing



Botanical Nomenclature Course - 2017



Important Workshops attended (recent ones)

- Attended the **CITES Regional Workshop** on ensuring that trade in medicinal plants is legal, sustainable and traceable in **Thimpu, Bhutan** from 24.5.2012 to 26.5.2012 (**was deputed by BSI, MoEF**). As a resource person made a power point presentation on CITES and Plants from India with emphasis on 10 medicinal plants on 24.5.2012. Also chaired full day session on 25.5.2012
- Attended the workshop on **synergies among biodiversity related MEAs** in New Delhi on 3-4 October 2016 organised by the CEBPOL, NBA.

Initiatives taken

- Participated in the campaign on '**Plastic Waste- Free Pune**' launched on 13th February, 2016 by Shri Prakash Javadekar, the Honorable Union Minister of State (I/C) for Environment, Forest & Climate Change, Government of India at DES's New English School, Ramanbagh School, Pune (along with six other scientists of BSI, WRC, Pune). As Head of Office, Botanical Survey of India, Western Regional Centre, Pune took initiative in creating awareness about 'Plastic Waste Free Pune' campaign by printing banners and posters for displaying in BSI, WRC office campus and experimental garden at Mundhwa of BSI and also Plastic Waste-free pamphlets for distribution to the schools and colleges.
- Took initiative in organising cleaning drive at Bhimashankar Wildlife Sanctuary, Pune by Botanical Survey of India, Western Regional Centre, Pune team under the **Swachh Bharat Mission** launched by Government of India in line with the World Environment Day (5th June) under the theme "**All Popular Forest Sanctuaries/Reserved Forest Areas/Parks And Animal Wee Establishments**" with suggested activities "**Sensitization Drives Against Littering In Sanctuaries And Forest Areas/ Cleaning Drives in parks and recreational places**". In this connection BSI, WRC, Pune team of officials visited the Sanctuary from 6-6 to 8-6-16; 14-6 to 15-6-16 and 22-6-16. I personally undertook the cleaning drive at the Sanctuary on 14-6 & 15-6-16 as a part of BSI, WRC team.

Initiatives taken (Contd...)

- Participated in the National Celebration of International Day for Biological Diversity at Yashwantrao Chavan Auditorium, Mumbai on 22-5-2016 organised by The National Biodiversity Authority and Ministry of Environment, Forest & Climate Change in association with the Maharashtra State Biodiversity Board. This function was attended by Shri C. Vidyasagar Rao, Hon'ble Governor Maharashtra State, Shri Prakash Javadekar Hon'ble Union Minister for State for Environment, Forest & Climate Change (I/c), Dr. M. M. Kutti, Additional Secretary, MoEF & CC, Dr. B. Meenakumari, Chairperson, National Biodiversity Authority, Prof. R. Sukumar, Centre for Ecological Sciences, Institute of Science, Bengaluru, Dr. Vilas Bardekar, Chairman, Maharashtra State Biodiversity Board, Dr. Sujata Aurora, Adviser, MoEF & CC, Mr. T. Rabikumar, Secretary, NBA, Mr Dilip Singh, Member Secretary, Maharashtra State Biodiversity Board and others. On behalf of Botanical Survey of India, officials from BSI, WRC, Pune viz., Dr. P. Lakshminarasimhan, Scientist 'E' & HoO, Dr. Priyanka Ingle, Scientist 'B', Ms. Prachiti Mule, Bot. Asstt., Mr. Amit Pandey, Sr. Pres. Asstt. and Mr. D.S. Thakar, Fieldman of BSI, WRC, Pune arranged one stall at Yashwantrao Chavan Auditorium, Mumbai and also attended the programme. In this stall, a total of 19 posters, recent BSI publications and few Endemic Plants were displayed. The stall was well appreciated.

Plastic Waste- Free Pune



Cleaning drive at Bhimashankar Wildlife Sanctuary



International Day for Biological Diversity at Yashwantrao Chavan Auditorium, Mumbai



Administrative works

- Was Drawing & Disbursing Officer, BSI, WC, Pune from June 1995 to September 2001
- Was Head of Office, BSI, WC, Pune from 1.8.2001 to 6-2-2002
- Was Head of Office, Central National Herbarium, BSI, Howrah from 1.1.2010 to 23-5-2010 **and** from 16-3-2013 to 17-7-2015
- Was In-charge of ENVIS Centre on Floral Diversity of BSI at Howrah from 1.1.2010 to 25-5-2015
- **Head of Office, BSI, WRC, Pune from 20-7-2015 till date**

SUMMARY

- **No. of Projects carried out – 34**
- **No. of Books – 22**
- **No. of papers – 150**
- **No. of new taxa – 23** (*Dicliptera nasikensis*, *Rotala andamanensis*, *Eriocaulon balakrishnanii*, *Eriocaulon apetalum*, *Eriocaulon cookei*, *Eriocaulon koynense*, *Eriocaulon maharashtrense*, *Eriocaulon sahyadricum*, *Eriocaulon anshiense*, *Eriocaulon kanarense*, *Eriocaulon konkanense*, *Eriocaulon peninsulare*, *Arisaema murrayi* var. *sonubeniae*, *Silene gangotriana*, *Cyperus karthikeyanii*, *Fimbristylis naikii*, *Chirita sahyadriensis*, *Stylidium darwinii*, *Eleocharis zatei*, *Amorphophallus commutatus* var. *anshiensis*, *Ledebouria karnatakesis*, *Ceropegia karulensis* and *Ceropegia maharashtrensis*)
- **No. of new names - 2**
- **No. of new combinations - 4**
- **No. of new records to India – 15**
- **No. of new records to Andaman & Nicobar Islands (40); Karnataka (30); Goa (26) and Jharkhand (3)**

Future plan of Research

To complete the editing of **volume 20 of Flora of India** and publish the same through BSI.

Flora of India Volume 20

GESNERIACEAE



**25 Genera 120 species
5 varieties**



| Sl. No. | Name of Genus | Number of species/vars. | Status | Remarks |
|---------|--|-------------------------|-----------------------|--------------------|
| 1. | Aeschynanthus Jack | 20 spp. and 02 vars. | Completed | |
| 2. | Beccarinda Kuntze | 01 sp. | Completed | |
| 3. | Boea Comm. ex Lam. | 01 sp. | Completed | |
| 4. | Boeica C.B. Clarke | 05 spp. | Completed | |
| 5. | Briggsia Craib | 01 sp. | Completed | |
| 6. | Corallodiscus Batalin | 01 sp. | Completed | |
| 7. | Cyrtandra J.R. Forst. & G. Forst. | 02 spp. | Completed | |
| 8. | Cyrtandromoea Zoll. | 01 sp. | Completed | |
| 9. | Didymocarpus Wall. | 23 spp. and 02 vars. | completed | |
| 10. | Epithema Blume | 01 sp. | Completed | |
| 11. | Henckelia Spreng. | 31 spp. | Description completed | Key to be prepared |

| Sl. No. | Name of Genus | Number of species/vars. | Status | Remarks |
|---------|---|-------------------------|-----------------------|--------------------|
| 12. | Jerdonia Wight | 01 species | Completed | |
| 13. | Leptobocea Benth. | 02 species | Completed | |
| 14. | Kaisupeea B.L. Burtt | 01 species | Completed | |
| 15. | Loxostigma C.B. Clarke | 01 Species | Completed | |
| 16. | Lysionotus D. Don | 07 species | Description completed | Key to be prepared |
| 17. | Microchirita (C.B. Clarke) Yin Z. Wang | 02 species | Completed | |
| 18. | Oreocharis Benth. | 01 species | Completed | |
| 19. | Parabocea (C.B. Clarke) Ridl. | 01 species | Completed | |
| 20. | Petrocosmea Oliv. | 01 species | Completed | |
| 21. | Platystemma Wall. | 01 species | Completed | |
| 22. | Rhynchoglossum Blume | 04 species | Completed | |
| 23. | Rhynchotechum Blume | 08 species | Completed | |
| 24. | Stauranthera Benth. | 02 species | Completed | |
| 25. | Tetraphyllum Griff. ex C.B. Clarke | 01 species | Completed | |

Leptoboea Benth.

Erect shrubs with prominent nodes and internodes, nodes almost overlapping in lateral branches, younger parts adpressed pubescent. Stems terete, branched. **Leaves opposite, those of a pair equal or subequal, usually clustered on branches;** petioles short; **lamina ovate, apex acute, base broadly cuneate,** Inflorescence lax in **3-5-flowered,** sub-umbellate cymes; **peduncles and pedicels filiform;** bracts small, linear, persistent, Calyx small, **5-partite, equal, lobed, almost upto** base. Corolla white, **shallowly** campanulate; tube short gently gibbous below, limb obscurely 2-lipped, **5-lobed,** lobes short, spreading, subequal, rounded at apex. Stamens 4, perfect, included, **filaments short, incurved, inserted near base;** anthers large basifixed, **thecae subparallel, apically confluent, dehiscent pericardially, Nectary absent,** Ovary ellipsoid, sessile; style slender, persistent in fruit; stigma small, sub-capitate, Capsules linear or **linear-oblong** with persistent calyx at base, valves entire; seeds minute, ovoid smooth.

♂ 3 species, South & South East Asia (Mabberly, 2008) and 2 species in India.

Literature: Wang & al. in Wu & Raven (eds.), Fl. China 18: 286-287.1998; Hilliard in Grierson & Long, Fl. Bhutan 2(3): 1323-1324, 2001; Burt, Thailand: **Δ**notated checklist of Gesneriaceae Thai Forest Bull. (Botany) 29: 81-109, 2001.

Key to the species

1a. Leaves ovate, **petiole subsessile,** glabrous; peduncles longer than leaves;

ovary glabrous.....1. **L. glabra**

1b Leaves elliptic to ovate-lanceolate, petiolate, pubescent; peduncles several,

equaling or shorter than leaves; ovary glandular pubescent.....2. **L. multiflora**

1. **Leptoboea glabra** C.B. Clarke in Monogr. Phan. [A.D.C. & C.D.C.] 5(1): 165, 1883; C.B. Clarke in Hook.f., Fl. Brit. India 4: 368, 1884.

Erect sparingly branched glabrous shrub, c. 2-2.5 m high, younger shoots and short axillary spurs densely rusty villous; stems terete. Leaves opposite; lamina broadly elliptic-ovate, 4-6 × 3-4 cm, acuminate at apex, rounded to shortly narrowed at base, margins nearly entire in

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lower half, subsessile to gently toothed in upper half, glabrous; petioles **subsessile.** Peduncles glabrous, axillary, filiform, 6-8 cm, mostly longer than leaf, cymes often 3-flowered; pedicels 3-4 cm, capillary, glabrous; bracts minute, linear c. 2 mm, caducous. Calyx c. 2 mm; lobes linear, glabrous, persistent. Corolla white with purple lip, c. 6 mm long, **campanulate,** shortly 3-lobed above, glabrous; tube short, gently gibbous. Stamens 4, included; filaments short incurved; anthers broadly ovate, rounded at tip, base divergent, lobes dehiscent introrsely. Ovary ovoid, c. 2 mm, glabrous; style slightly longer than ovary, persistent and elongating in fruit. Capsule broadly oblong, sub-obtuse, dehiscent early from top into 4 blunt valves.

fl. & fr.: August-November

Distrib.: India: Arunachal Pradesh **Δ**ndemic to Mishmee hills; **rare**

2. **Leptoboea multiflora** (C.B. Clarke) Benth. ex Gamble, Man. Ind. Timb.: 274, 1881. *Leptoboea multiflora* (C.B. Clarke) C.B. Clarke in A.D.C. & C. DC., Monogr. Phan. 5: 165, 1883; C.B. Clarke in Hook.f., Fl. Brit. India 4: 368, 1884; Hara in Fl. E. Himal.: 298, 1966; Hara & al. in Enum. Fl. Pl. Nepal 3: 125, 1962; Wang & al. in Edinb. J. Bot. 49(1): 27, 1992 (nomen nud. cit.). *Leptoboea multiflora* Gamble, List Trees Darjeeling Dist. 59, 1878; non, inval. *Chaptalia multiflora* C.B. Clarke, Comm. & Cyrt. Beng.: 99 t. 68, 1874.

Erect shrub, 0.6-3 m high; stems terete with profuse short lateral branches, pubescent at early stage, ultimately glabrous, nodes and internodes many, conspicuous; nodes swollen; young shoots scaly, ending in tufts of brown hairs. Leaves opposite, crowded at tips of short lateral branches; lamina elliptic to ovate-lanceolate, 4-12 × 2-6 cm, acuminate at both ends, mostly asymmetrical in outline, margin subserrate to finely crenulate, densely sub-strigose, pubescent on upper surface, lower surface sparsely hairy, densely hairy on veins; secondary veins 9-12 pairs, sub-parallel; petioles 1-2 cm, pubescent. Peduncles 0.8-2.8 mm, often many, fascicled on short, lateral branches, cymes 3-5-flowered, sub-umbellate; pedicels filiform 0.5-2.5 cm, pubescent; bracts linear, 2-3 mm, persistent. Calyx 1.5-2 mm, 5-lobed, lobes free upto base; lobes linear, equal, persistent. Corolla white, 6-8 mm, glabrous, campanulate, limb gently 2-lipped, 5-lobed; lobes sub-equal, fused; tube short, slightly gibbous. Stamens 4, epipetalous near base, free and included within tube; filaments short, c.

2 mm, curved, glabrous; anthers pale yellow, c. 1.8 mm, cells elliptic, divergent at base continuous at tip, dehiscent introrsely. Ovary sessile, ellipsoid, c. 2.5 mm, minutely glandular pubescent; style filiform c. 5 mm, projecting beyond mouth, glabrous, acroscerot; stigma sub-capitate. Capsule linear, 1.5-2 cm long, tip acute, beaked by rigid persistent style, valves 2, mostly remaining attached at tip, finally splitting into 4 partite; seeds brown, ovoid, c. 1 mm long with sub-tumid tips.

fl. & fr.: August-November

Distrib.: India: Arunachal Pradesh, Meghalaya, Nagaland, Sikkim, West Bengal (Darjeeling)

Bhutan, Nepal, Thailand.

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ACANTHACEAE

| Sl. No. | Tribes/subtribes | Genera | Species | Subspecies | Varieties |
|--------------|----------------------------|-----------|------------|------------|-----------|
| 1. | Tribe: Justiceae | | | | |
| | i. Justcinae | 13 | 121 | - | 15 |
| | ii. Andrographideae | 05 | 48 | - | 05 |
| | iii. Barlerieae | 03 | 30 | 01 | 01 |
| | iv. Asystasieae | 04 | 13 | 01 | - |
| 2. | Tribe: Acantheae | 03 | 12 | - | - |
| 3. | Tribe: Nelsonieae | 03 | 12 | - | 1 |
| 4. | Tribe: Thunbergieae | 02 | 13 | - | 02 |
| Total | | 33 | 249 | 02 | 24 |

Subtribe Justicinae

| Sl. No. | Name of Genera | No. of Taxa | Additions | Remarks |
|---------|----------------------|------------------|-----------|---------------------------|
| 1. | Dicliptera | 11 spp. | - | Completed |
| 2. | Ecbolium | 03 spp. | 02 vars. | Completed [change in key] |
| 3. | Graptophyllum | 01 sp. | - | Completed |
| 4. | Hypoestes | 05 spp. 01 var. | - | Completed |
| 5. | Isoglossa | 01 sp. | - | Completed |
| 6. | Justicia | 49 spp. 02 vars. | 03 spp. | Completed [change in key] |
| 7. | Lepidagathis | 20 spp. 07 vars. | - | Completed |
| 8. | Monechma | 01 sp. | - | Completed |
| 9. | Monotheicum | 01 sp. | - | Completed |
| 10. | Peristrophe | 09 spp. 02 vars. | - | Completed |
| 11. | Rhinacanthus | 03 spp. 01 var. | - | Completed |
| 12. | Rungia | 15 spp. | - | Completed |
| 13. | Sphinacanthus | 01 spp. | - | Completed |
| | | | | |

Subtribe Justicinae

Dicliptera bupleuroides



Justicia adhatoda



Lepidagathis incurva var. *mollis*



Rungia pectinata



Subtribes: Andrographideae, Barlerieae and Asystasiae

| Name of Subtribe | Name of Genera | No. of Taxa | Additions | Remarks |
|---------------------------|---------------------------|-------------------------------|-----------|-----------|
| I. Andrographideae | 1. Andrographis | 22 spp. and 4 vars. | 01 sp. | Completed |
| | 2. Diotacanthus | 04 spp. | - | Completed |
| | 3. Gymnostachyum | 10 spp. | 01 sp. | Completed |
| | 4. Haplanthodes | 02 spp. | - | Completed |
| | 5. Phlogacanthus | 10 spp. and 01 var. | - | Completed |
| II. Barlerieae | 1. Barleria | 26 spp. 01 subsp. and 01 var. | 01 sp. | Completed |
| | 2. Crossandra | 01 sp. | - | - |
| | 3. Neuracanthus | 03 spp. | - | - |
| III. Asystasiae | 1. Asystasia | 8 spp. and 01 subsp. | - | Completed |
| | 2. Codonacanthus | 02 spp. | 01 sp. | Completed |
| | 3. Mackaya | 01 sp. | - | Completed |
| | 4. Pseuderanthemum | 02 spp. | - | Completed |

Total: 12 Genera, 91 species 02 subspecies, 06 varieties (including additions of 02 spp. and 01 var.)

Subtribes: Andrographideae, Barlerieae and Asystasiae



THANK YOU