

**RESEARCH AND ANNUAL ACTION
PLAN PROJECTS
(ACHIEVEMENTS)
(Since Ph.D. – Till Date)**

Dr. S.K. Srivastava

Scientist E & HOO

**Botanical Survey of India
Northern Regional Centre
Dehradun**

Project Name /Work Place	Position Held	Duration
Flora of India Project (BSI Research Scholar)		
Taxonomic Revision of Indian Oleaceae (10 genera, 94 taxa)	JRF/SRF	1979 - 1983
National Botanical Research Institute, Lucknow		
Ph.D. Thesis submitted to University of Lucknow. Ms. submitted to BSI for Flora of India.		
EC Orchid Project		
Multiplication and Preserve. of Orchids of N.E. India	SRF	1984 (1 yr.)
Botanical Survey of India, Shillong		
Man and Biosphere Project		
Ecological Impact of Beas-Sutlej Link Project in H.P.	Res. Assoc.	1984-1986
Botanical Survey of India, Dehradun		
Biological Screening of wild plant species		
Survey and collection of Wild Plants for Biological screening from Arunachal Pradesh	Res. Assoc.	1986-1989
Central Drug Research Institute		

JOINED BOTANICAL SURVEY OF INDIA IN 1989

Botanical Survey of India, Port Blair

Position held Duration

Project Completed Individually

Survey, exploration of Great Nicobar Islands; Writing of Flora of Andaman/Nicobar Islands	Botanist	1989-1994
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State Flora

- i. Flora of Andaman & Nicobar Islands Vol. II (Manuscript Submitted)
- ii. Flora of Andaman & Nicobar Islands Vol. III (Manuscript Submitted)
[Contributed Taxonomic Treatment of ca 170 species]
- iii. Flora of Kerala State Vol. 1 (Family: Bombacaceae) Published with K. Vivekananthan)

Botanical Survey of India, Allahabad (Botanist) (1994-2000)

Flora of India (Individual Project)

Revision of Genus *Ischaemum* L. (Tribe: Andropogoneae) Poaceae
(55 spp.-Published with Dr. V. J. Nair)

Protected Area (Individual Project)

Flora of Bandhavgarh National Park, Madhya Pradesh

(529 spp; Project completed/Published under Tiger Reserve of India)

State Flora (Individual Project)

1. Flora of Madhya Pradesh, Vol. II

(Fam. Polygonaceae, Oleaceae, Podostemaceae)

2. Flora of Madhya Pradesh, Vol. III

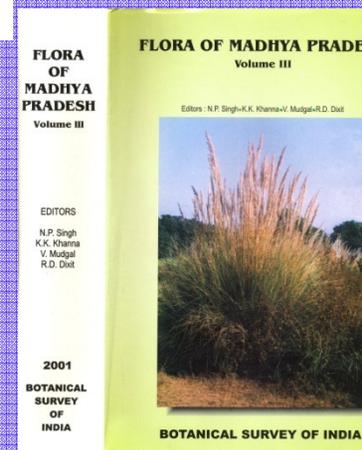
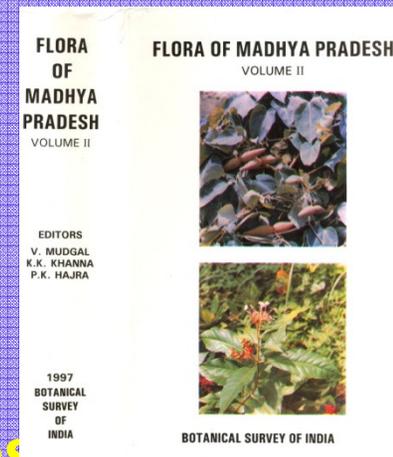
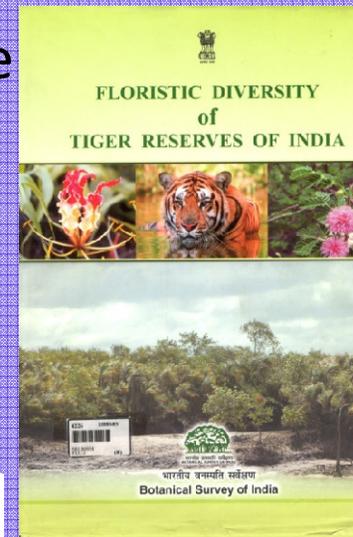
(Fam. : Hydrocharitaceae, Typhaceae, Najadaceae,
Aponogetonaceae, Alismataceae, Potamogetonaceae)

Environmental Impact Assessment Studies (Floristic Evaluation) (Individual Project)

i) Mongra Dam Project, Rajnandgaon, MP (1995)

ii) Mara Pump Storage Scheme, Sidhi, MP (1997)

iii) Bansagar Canal Project, MP & UP (1999)



Botanical Survey of India, Dehradun (2000-2005)

Flora of India

Family Ceratophyllaceae (3 spp. & 3 vars.) with B.P. Uniyal (2002)

Fragile Ecosystem (Individual Project)

Floristic Diversity of Wetlands of Himachal Pradesh (Ramsar sites) : 2000-2003

- ❖ Renuka Lake (Sirmaur)
- ❖ Pong Dam (Maharana Pratap Sagar Dam, Kangra)
- ❖ Chandra Tal (Lahaul Spiti)

Flora of Cold Desert Vol. II (Dicot) Completed 400 spp. (2001-2004)

Protected Area Network (PAN) Project

Pin Valley National Park, Himachal Pradesh (with K. Chandrasekar)

State Flora

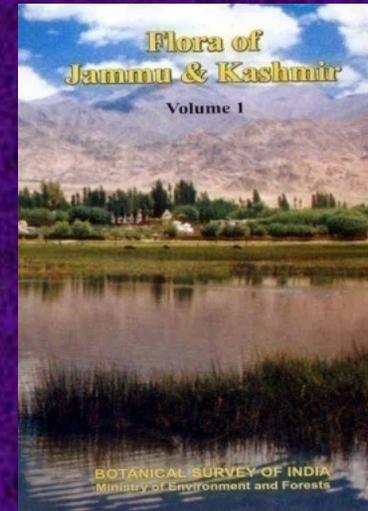
Flora of Jammu & Kashmir Vol. II – Genus *Astragalus* L. (with L.B. Chaudhary)

National Biodiversity Strategy Action Plan (NBSAP) (Individual Project)

- ❖ Uttarakhand State (Contributed Floristic Component)
- ❖ Uttar Pradesh State (Contributed Floristic Component)

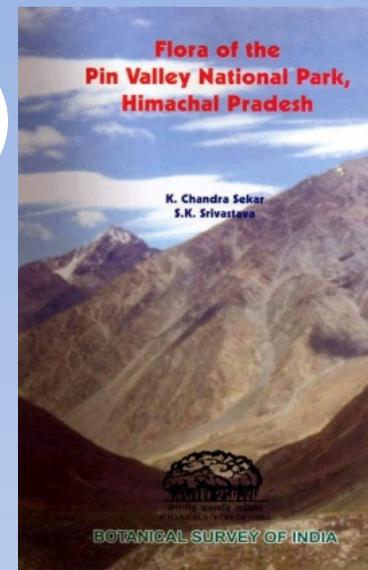
Environmental Impact Assessment (Floristic Evaluation)

- ❖ Floristic Diversity of Dhauliganga Hydroelectric Project, Stage IIIA (NHPC)
- ❖ Floristic Diversity of Gauriganga Hydroelectric Project, Stage IIIA (NHPC)



Protected Area Network (PAN Project) (2002-2005)

Flora of Pin Valley National Park, Himachal Pradesh (with Dr. K. Chandrasekar)



GROUP	FAMILIES	GENERA	TAXA
PTERIDOPHYTES	02	04	05
GYMNOSPERMS	02	02	03
ANGIOSPERMS			
Dicotyledons	49	191	398
Monocotyledons	11	46	96
TOTAL	64	243	502



Mud Village



Corydalis crassifolia Royle

Findings:

New Species-2

New records for India-6

New record for Himalaya-4

New report for Himachal-24



Sagnam Village

WETLANDS

The studies on the wetlands of Ramsar sites in Himachal Pradesh were completed.

- Renuka Lake (Sirmaur)
- Pong Dam (Maharana Pratap Sagar Dam) Kangra
- Chandra Tal (Lahaul Spiti)

The floristic studies of these three wetlands have been completed in detail.



Chandra Tal Wetland



Renuka Lake



Pong Dam

Indian Botanical Liaison Officer (IBLO) at Royal Botanic Garden, Kew, London (2005-2007)

Flora of India Project :

Revision of genus *Ranunculus* L. (42 spp., 4 var.)

Submitted/Published

- ii. Digitization and Scanning of Type specimens** ca 800 type specimens (as per request from BSI and other Institutes/Universities)
- iii. Identification of the plant specimens** received from India and Indian subcontinent
- iv. Supply of literature** Protologues and Type images
- v. Attended queries** on distribution, nomenclature and typification

Central National Herbarium, Howrah (2007-2010)

Protected Area

1. Flora of Buxa National Park, West Bengal

Two Field tours conducted (with Gopal Krishna)

2. Digitization and Scanning of type specimens, Wallichian specimens

Patanjali Yogpeeth Project

Project on Digitization, Scanning of Medicinal Plant Herbarium (with Er. A.K.Pathak and P.Lakshminarasimhan)

- Supervised the compilation of about 2780 medicinal species listed from Glossary of Indian Medicinal Plants by Chopra *et al.*

Botanical Survey of India, Dehradun (2010-2017)

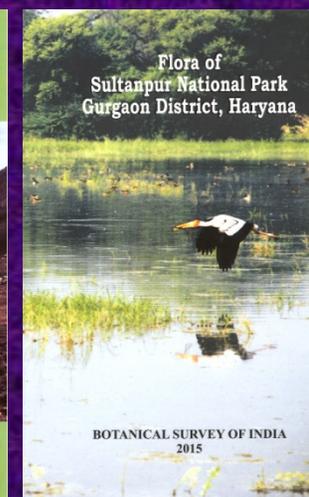
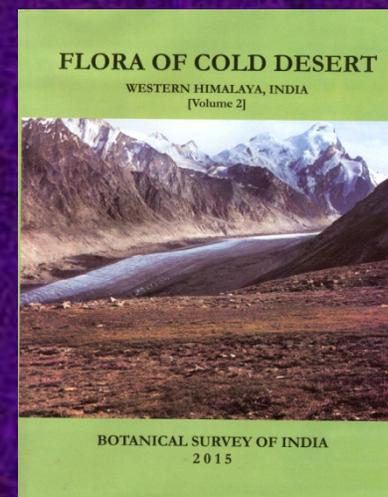
1. Flora of India

Revision of family Bignoniaceae (2011-2016)
(with V.K. Madhukar) (Ms. Submitted)



2. Fragile Ecosystem

Flora of Cold Desert of Western Himalaya Vol. II
(Dicot) 1268 spp. (with A.N. Shukla) Published

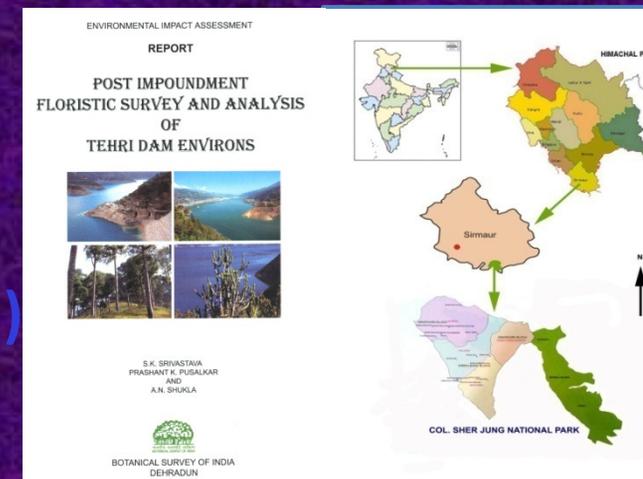


3. Protected Areas

- ❖ Flora of Sultanpur National park, Gurgaon, Haryana [2011-13] (with M.R. Debta) Published
- ❖ Flora of Kalesar National Park, Haryana [2014-16] (with A.N. Shukla, Durgesh Verma) Ms. Submitted
- ❖ Flora of Sher Jung [Simbalbara] National Park, Haryana 2015-17 (with M.R. Debta)

Environmental Impact Assessment (Floristic Evaluation)

- ❖ Post Impoundment Floristic Survey and Analysis of Tehri Dam Environs (with Prashant Pusalkar & A.N. Shukla)



Name of the Project : Flora of Cold Desert of Western Himalaya, Vol. -2

Duration : 2010 to 2014

Name of Executive scientists:

1. Dr. S.K. Srivastava, Sci. E & Head of Office

2. Dr. A.N. Shukla, Sci. B

Research Centre: Botanical Survey of India, NRC, Dehradun

Achievements:

Tours conducted:

04

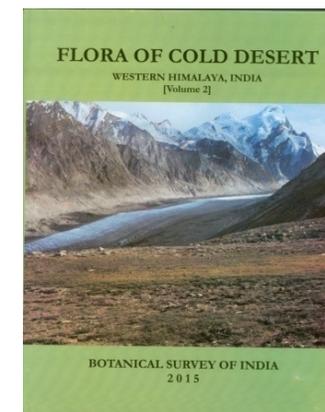
No. of specimens collected:

2500

No. of taxa described:

1268

Flora Published



Name of the Project: Post Impoundment Floristic Studies of Tehri Dam and its Environments, funded by THDC, Tehri (EIA Project)

Duration: 2009 to 2011

Name of Executive scientists:

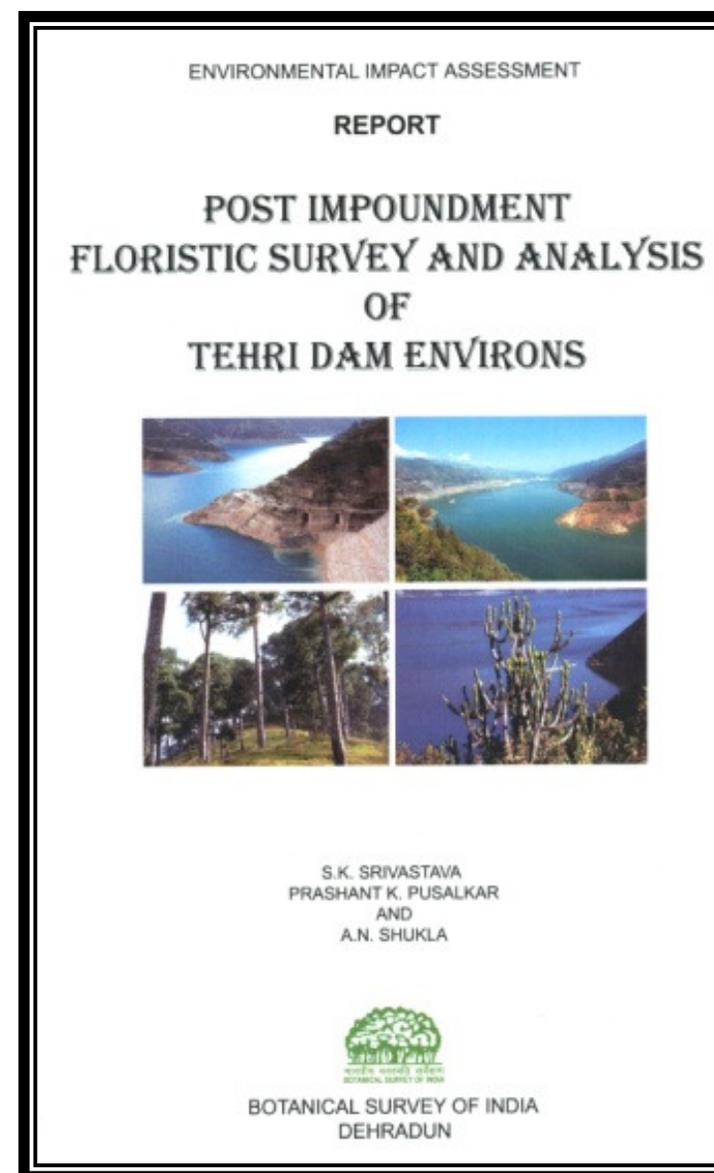
1. Dr. S.K. Srivastava, Sci. E & Head of Office
2. Dr. P.K. Pusalkar, Sci. D
3. Dr. A.N. Shukla, Sci. B

Achievements:

Tours conducted: 03

No. of taxa described: 666

Final Report Submitted



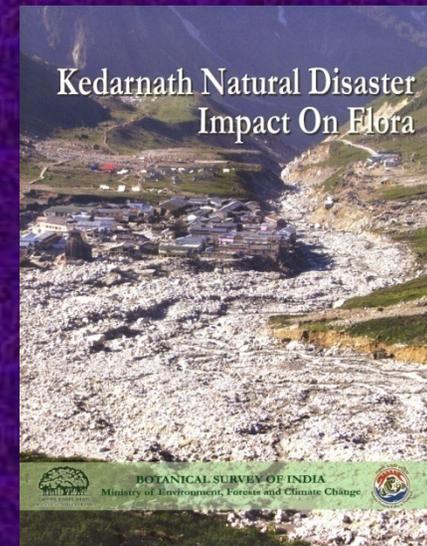
State Flora

- ❖ Flora of Uttarakhand Vol. I (with P.K. Pusalkar) Ms. Submitted
- ❖ Flora of Uttarakhand Vol. II (5 fam., 50 gen, 338 sp.) Ms. Submitted
- ❖ Flora of Uttarakhand Vol. IV (11 fam., 38 gen, 78 sp.) Ms. Submitted

[Contributed with M R Debta]

Kedarnath Natural Disaster

Impact on Flora (with P.K. Pusalkar, P. Lakshminarasimhan & Paramjit Singh) Published



Current Projects

Assessment of RET species in Western Himalaya
(with Prashant K. Pusalkar – 2016-2017)

Tree Flora of Dehradun and its environs
(with Virendra K. Madhukar – 2016-2019)



Trees of Dehradun city and its vicinity (April 2016-March 2019)

- **Progress made so far: (April 2016 -January, 2017)**
- Listed about 100 tree species growing in Dehradun from literature and herbarium (Estt. Spp. 275 tree spp.).
- Identification, updated nomenclature, description, phenology and images of *ca* 80 tree species from different localities of the Dehradun city have been completed.



1. *Erythrina blakei* R.Parker



2. *Peltophorum pterocarpum* DC.



3. *Prunus cerasoides* Buch.-Ham.

ASSESSMENT AND STATUS REPORT ON THREATENED PLANTS OF WESTERN IMALAYA

[With Prashant K. Pusalkar, Sc-D]
(April 2016-March 2017)



FIELD AND HERBARIUM STUDIES

- Survey and population assessment tour: **3**
- Area surveyed: Garhwal and Kumaun Himalaya
- No. of Species collected: **522**
- Threatened/Endemic species located: **50**
- Herbarium consultation tour: **1** (National Botanical Research Institute, Lucknow (LWG) and Central Drug Research Institute, Lucknow (CDRI).
- Herbarium data recorded: **150** species (**350 specimens**)
- Herbarium specimens studied: **1340**

NOTEWORTHY FINDINGS

- * New Genus (Resurrected): *Schizotechium* (Fenzl) Rchb. emend. Pusalkar & S.K. Srivast. (Caryophyllaceae)
- * New Name: *Stellaria popovii* Pusalkar (Caryophyllaceae)
- * New Records for India: 1. *Ranunculus hirtellus* var. *humilis* W.T. Wang (Ranunculaceae)
2. *Gentianopsis paludosa* var. *alpina* T.N. Ho [Gentianaceae]
- * New Record for Western Himalaya: *Saussurea hieracioides* Hook.f. [Asteraceae]
- * New records for states : 10 [Himachal Pradesh: 4
Jammu & Kashmir: 3; Uttarakhand: 3



ASSESSMENT

- Species Assessment : 123
(estt. sp. 150)
- Species rediscovered : 5
- Rare species recollected : 13
- Point endemics assessed : 22
- Endemics assessed : 62
- Status/rank assessment : 15
[including new synonyms]
- Reinstatement/combinations : 13
- Location confirmation for Threatened/endemic species : 85
- New localities for endemic/ threatened species : 35
- New hot-spots for threatened /endemic species : 20
: 20

REDISCOVERY and RECOLLECTIONS

- * *Impatiens reidii* Hook.f. [Balsaminaceae]: Rediscovered after 115 years after the type collection in 1900.
- * *Impatiens kaliensis* Grey-Wilson [Balsaminaceae]: Rediscovered after 125 years after 1890.
- * *Impatiens podocarpa* Hook.f. [Balsaminaceae]: Rediscovered after 115 years since 1890
- * *Sedum magae* R. Ham. [Crassulaceae]: Rediscovered after 75 years since the type

Preventing Extinction and Improving Conservation Status of Threatened Plants through Application of Biotechnological Tools

Sri Amber Srivastava, SRF & Dr. S.K. Srivastava, PI
[April 2013-March 2017]

ET Species and their propagation : 6 (*Pittosporum eriocarpum*, *Malaxis acuminata*, *Skimmia*, *Monnina*, *Monnina*, *Ephedra gerardiana* & *Lilium polyphyllum*)

Area of Distribution : Western Himalaya (Jammu & Kashmir, Himachal Pradesh and Uttarakhand).

Plants introduced in wild: *Lilium polyphyllum* (100), *Pittosporum eriocarpum* (250), *Ephedra gerardiana* (100)

Other Ex-situ conservation works: *Ex-situ* conservation and propagation of *Nepenthes khasiana*, *Incarvillea emodi*, *Catamixis baccharoides*, *Selaginella adunca*, *Eremostachyis superba*, *Jasminum parkeri*, *Indopiptadenia oudhensis*, etc.

Achievements from 2013-2017

No. of field tours: 36
No. of specimens examined: 120
Field numbers collected: c 150
Number of photographs: 1000

Achievements [April 2016-February, 2017]

No. of field tours: 16
No. of specimens examined: 30
Field numbers collected: 50
Number of photographs: 400



Crepedium acuminatum



Skimmia anquetilia

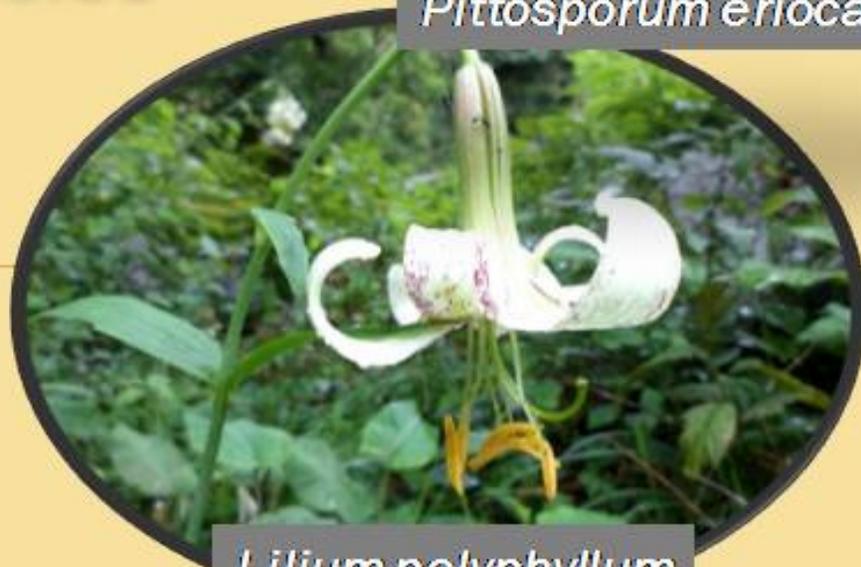


Pittosporum eriocarpum

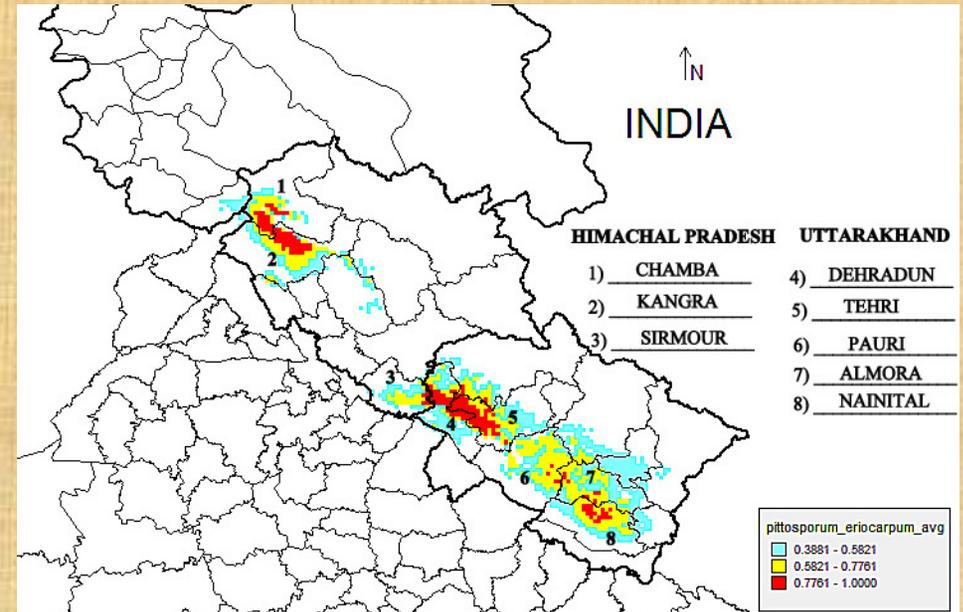
Selected species



Ephedra gerardiana



Lilium polyphyllum



Mass scale propagation of *Pittosporum eriocarpum* and habitat suitability modeling through ENM for reintroduction



Reintroduction of propagated plants of *Pittosporum eriocarpum* and *Lilium polyphyllum* in wild

National Mission on Himalayan Studies [NMHS-MG]

(2016-2019)

Project Title: Multidisciplinary Studies in Floristic Assessment, Ecological Analysis, Ecosystem Services, Conservation and Sustainable Management of Selected National Parks in W. Himalaya (2016-2019) [GHNP, Himachal Pradesh; VoF, Uttarakhand]

PI: Dr ParamJit Singh; **Co PI:** Drs B K Sinha, S K Srivastava, Kumar Ambrish

Botanical Survey of India, NRC, Dehradun

Collaborating Institute: GBPHED, Almora ; **Co PI:** Dr K. Chandra Sekar

B OOOOOOOOOO

- **Exploration and inventorisation of floristic diversity**
- **Estimation of endemism, reassessment of RET species**
- **Documentation of economic/socioeconomic uses of plants occurring within the park area along with future potentials of medicinal plants in the socioeconomic local peoples.**
- **Study the change in vegetation & species population due to climatic change and natural hazards including the assessment and impact of invasive species on indigenous flora.**
- **To analyse the ecosystem services emanating from the National Park.**

i. Great Himalayan National Park Kullu, H.P.

ii. Valley Of Flowers, Uttarakhand

Progress of Work done

Preparation of plant database (Valley of Flowers National Park and Great Himalayan National Park : 40% completed (Ranunculaceae to Rubiaceae, Data recorded on 487 spp. from both the National Parks (VOF & GHNP)

Field tours Conducted : (Two) 1. Field tour to GHNP, Himachal was undertaken by Dr. Kumar Ambrish, Sci-D and party from BSI, Dehardun and 2. VOFNP, Uttarakhand by Dr. K. Chandrasekar, Sci-D, GBPHID, Almora for Floristic studies and Ecological assessment respectively. Collected angiosperm 430; Lichens 20; Soil samples for microfungi 11; Macro Fungi 13; Bryophytes 10; Pteridophytes 20. Identification of the species is in progress.



Area covered	Month	Field nos.	RET species collected
GHNP, H.P (178 km sq.)	November 2016	262	07 (<i>Incarvillea emodi</i> , <i>Berberis aristata</i> , <i>Taxus wallichiana</i> , <i>Zanthoxylum armatum</i> and <i>Dioscorea deltoidea</i>).
Valley of Flowers (120 km sq)	October 2016	78	05 (<i>Polygonatum verticillatum</i> , <i>Dactylorhiza hatagirea</i>), <i>Fritillaria roylei</i> , <i>Podophyllum hexandrum</i> and <i>Malaxis muscifera</i>)

SCIENTIFIC ACHIEVEMENTS

1. **Flora of India Project** : Revised family Oleaceae, Ceratophyllaceae;
genera : *Ischaemum*, *Ranunculus* and *Arnebia*
2. **New Species** : 19 (Nineteen)
3. **New record for India** : 26 (Twenty Six)
4. **New Name** : 2 (Two)
5. **New Combinations** : 12 (Twelve)
6. **New Additions to State** : 109
 - Andaman & Nicobar Islands : 27 (Twenty Seven)
 - West Bengal : 3 (Three)
 - Meghalaya : 1 (One)
 - Arunachal Pradesh : 1 (One)
 - Madhya Pradesh : 1 (One)
 - Uttarakhand : 21 (Twenty one)
 - Himachal Pradesh : 51 (Fifty one)
 - Jammu & Kashmir : 4 (Four)
7. **Typification** : Typified (10) names
8. **Rediscovery** : 2 (Two)
9. **Field Tours conducted** : 56

Supervised /Supervising students for Ph.D. Degree [Six students]

- Dr. K. Chandra Sekar [2001-2005] **Floristic Studies of Pin Valley National Park, Himachal Pradesh. HNB Garhwal University, Srinagar Garhwal. Degree Awarded.**
- Mr. Virendra Madhukar [2011-16] **Revision of family Bignoniaceae in India. Banaras Hindu University, Varanasi. Thesis submitted**
- Mr. Himanshu Dwivedi [2011-16] **Revision of genus *Athyrium* (Athyriaceae) in India. Kumaon University, Nainital. Thesis submitted**
- Mr. Vineet Kumar Singh [2014-2017] **Floristic Assessment and Phytosociological Study of Parvat - Aranga Wildlife Sanctuary and adjacent Tikri Forest Area in Terai Region, Gonda, Uttar Pradesh. Kumaon University, Nainital.**
- Mr. Purushottam Deroliya [2013-17] **Pteridophytic flora of Champawat district, Uttarakhand, Kumaon University, Nainital.**
- Mr. Amber Srivastava [2013-17] **Taxonomic studies and conservation approach of some threatened plants of Uttarakhand using ecological niche modeling (ENM) .HNB Garhwal University, Srinagar Garhwa**

Books Written/Compiled [Eight]

1. Polygonaceae, Podostemaceae in V. Mudgal, K.K.Khanna, & P.K. Hajra (Eds.) *Flora of Madhya Pradesh. Vol. II.* Srivastava, S.K. & O.P. Misra. BSI, Calcutta, 1997.
2. Hydrocharitaceae, Typhaceae, Najadaceae, Potamogetonaceae, Butomaceae, Aponogetonaceae, Alismataceae in N.P. Singh, K.K. Khanna, V.Mudgal & R.D. Dixit (Eds.) *Flora of Madhya Pradesh Vol. III.* Srivastava, S.K. & O.P. Misra. BSI, Calcutta, 2001.
3. Bombacaceae in P. Daniel (assistance with G.V.S. Murthy & P. Venu) (Eds.) *Flora of Kerala Vol. I.* Srivastava, S.K. & K. Vivekananthan. BSI, Kolkata, 2005.
4. *Glimpses of Plant Wealth of Uttaranchal.* Srivastava, S.K. & D.K. Singh. Bishen Singh Mahendra Pal Singh, Dehradun, 2005.
5. *Flora of Pin Valley National Park, Himachal Pradesh.* Chandra Sekar, K. and S. K. Srivastava. BSI, Kolkata, 2009.
6. *Flora of Sultanpur National Park, District Gurgaon, Haryana.* Manas Ranjan Debta and S. K. Srivastava. BSI, Kolkata, 2015.
7. *Flora of Cold Desert of Western Himalaya, Vol. 2.* Srivastava, S.K. and A.N.Shukla. BSI, Kolkata, 2015.
8. *Kedarnath Natural Disaster-Impact on Flora.* Paramjit Singh, Prashant K. Pusalkar, S.K.Srivastava, P. Lakshminarasimhan and Brijesh Kumar. BSI, Kolkata, 2015.

Papers Published

Total number of papers published: 207

Number of papers published individually: **26**

Number of papers published as co-author: **119**

Number of papers published as joint-author: **62**

**Hindi articles published in Vanaspati Vani/ Vigyan
Pragati**

Total Number: 59

Administrative and other duties performed in various positions at different centers of BSI

1. BSI, ANRC, Port Blair:

(1989-1994)

(Botanist)

- Drawing and Disbursing officer
- Garden In charge (for 1 ½ years)
- In charge Store
- Liasoning with CPWD for designing of Dhanikhari complex

2. BSI, CRC, Allahabad:

(1994-2000)

(Botanist)

- Drawing & Disbursing officer
- Technical Section
- Herbarium In charge
- Liasoning with CCU for designing the new building of CRC, Allahabad

3. BSI, NRC, Dehradun:

(2000-2005)

- Herbarium In charge
- Attended Technical Queries
- Drawing/Disbursing officer

Administrative and other duties performed in various positions at different centers of BSI

4. CNH, BSI, Howrah: (2007-2010)

- Attended Technical Queries received from Directorate
- In-charge Hall No. 4/Type Section (Dicot)

5. BSI, NRC, Dehradun: (2010-2017)

- Performed duties as HOO
- Annual Action Plan Projects
- Budget of NRC
- Member State Biodiversity Board [UK, HP]
- Member Research Advisory Council [ICFRE and FRI]
- Member Wildlife Board [UK, HP, J & K]

Total number of projects completed in BSI

Total number of projects (Annual Action Plan and
Funded Projects) : **37 (Thirty Seven)**

Project carried out Individually : **16 (Sixteen)**

Project carried out Jointly : **21 (Twenty One)**



Thanks