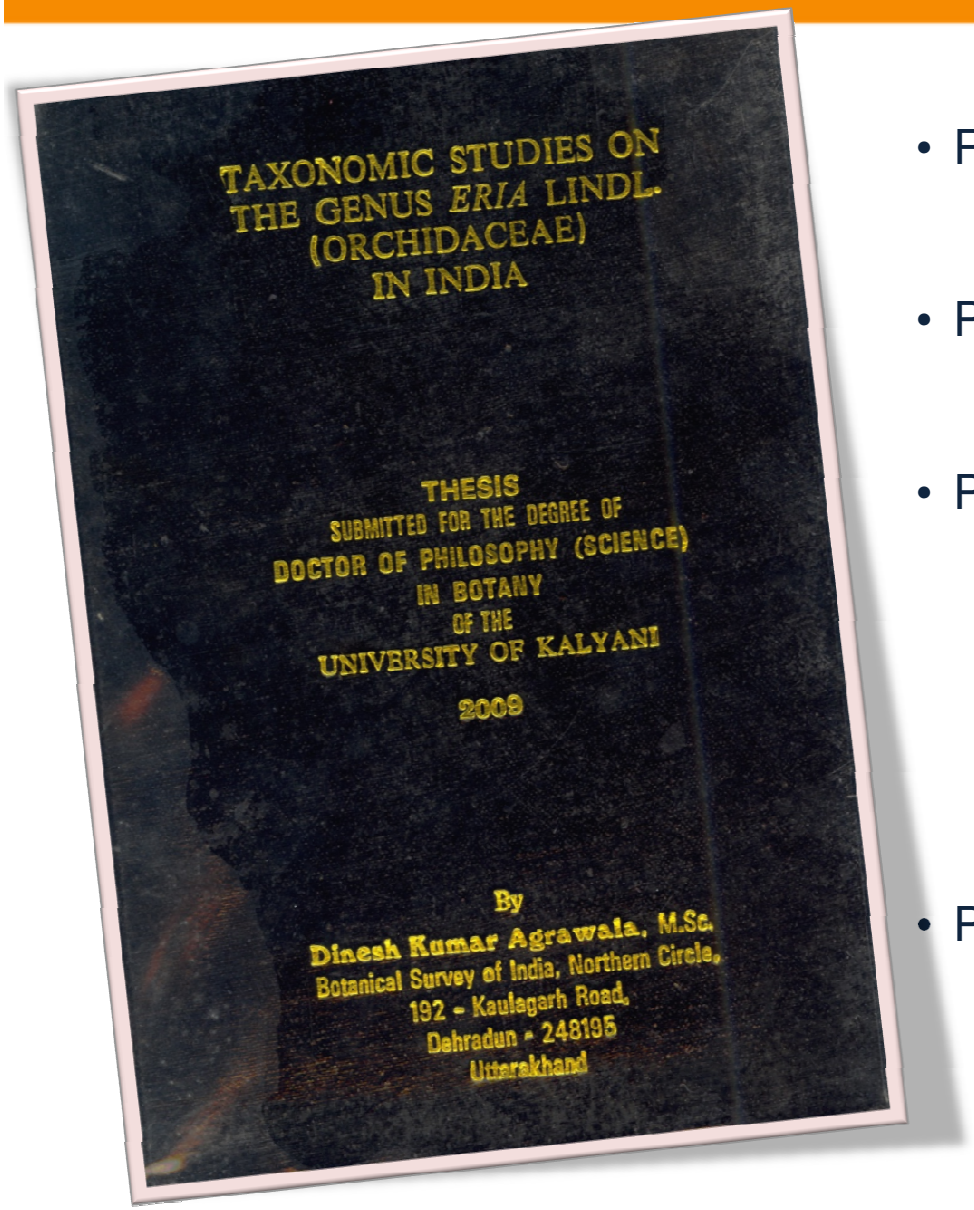
ANNUAL SCIENTIFIC MEET 2017

Dinesh Kumar Agrawala, Scientist-C and Head of Office
Botanical Survey of India, Sikkim Himalayan Regional Centre
Gangtok, Sikkim. E-mail: drdkbsi@gmail.com

Ph.D. Thesis: Taxonomic studies on the genus *Eria* Lindl. (Orchidaceae) in India



- Research Scholar in BSI

  28.05.2001 – 19.12.2009

- Ph.D. awarded from

  University of Kalyani

- Project-1:

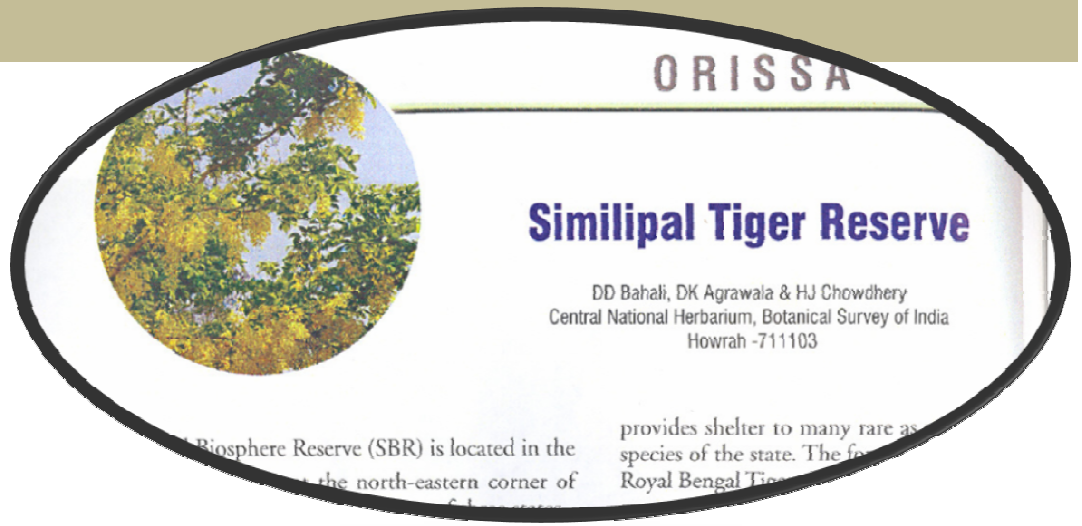
  Assessment of Floristic Diversity in Protected Areas of India, Phase-I: Biosphere Reserves and National Parks

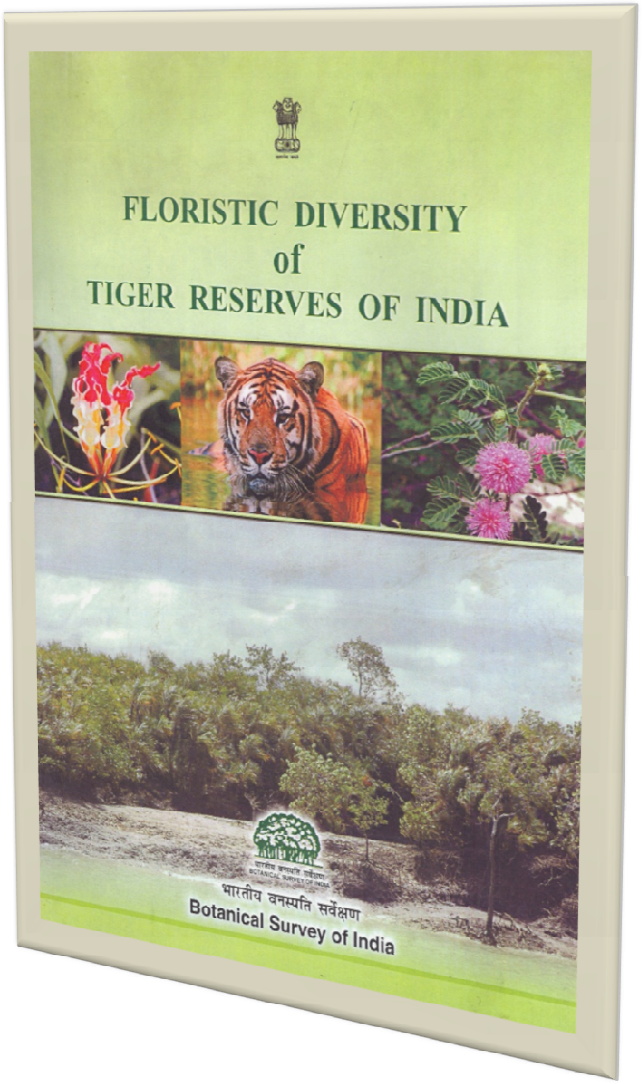
- Project-2:

  AICOPTAX Project on Orchidaceae

Project-1: Assessment of Floristic Diversity in Protected Areas of India, Phase-I: Biosphere Reserves and National Parks

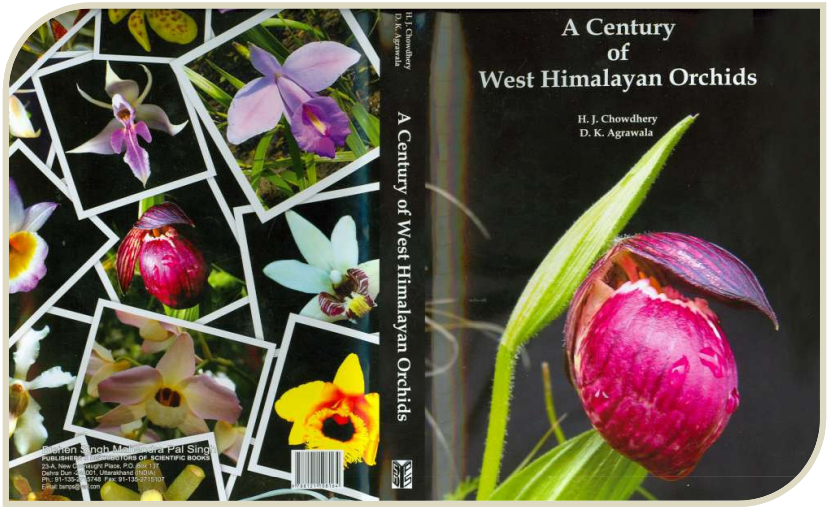
- Worked as Research Scholar 28.05.2001 to 28.02.2003
- Conducted floristic survey at Similipal Biosphere Reserve; Buxa National Park and Gorumara National Park.
- Submitted report on floristic account of Similipal Biosphere Reserve and Buxa National Park jointly with other fellow scholars.

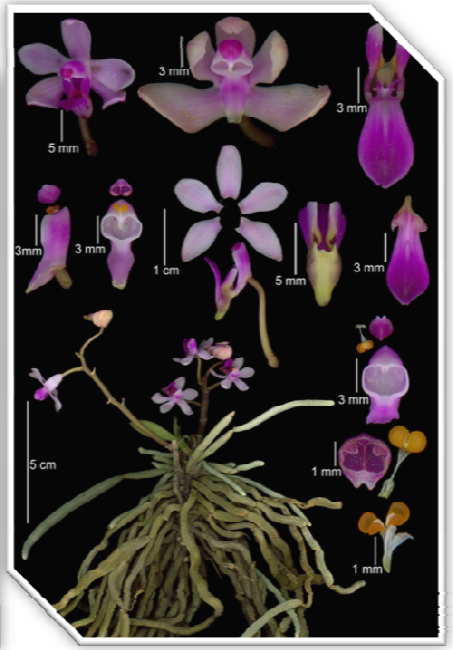




Project-2: AICOPTAX Project on Orchidaceae

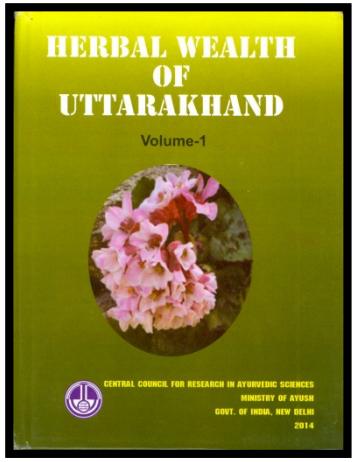
- As Research Scholar 01.03.2003 – 19.12.2009.
- Worked on Systematics and conservation of Orchids in E. Himalaya, N.E. India and N.W. Himalaya.
- Completed Ph.D. work on “Taxonomic studies on the genus Eria Lindl. (Orchidaceae) in India.
- Conducted orchid exploration tours to various states like Arunachal Pradesh, Meghalaya, Sikkim, Assam, West Bengal (Darjeeling), Uttarakhand, Himachal Pradesh, Kerala, Tamil Nadu, Maharashtra and Orissa.
- Morphological characterization of many Indian Orchids completed; their taxonomy and nomenclature solved.

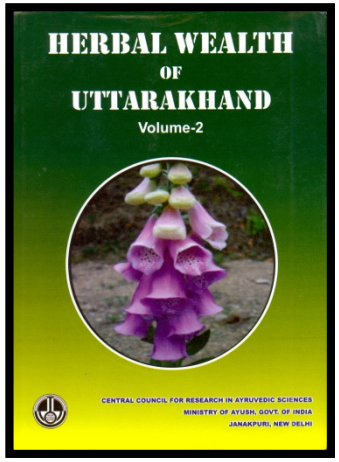


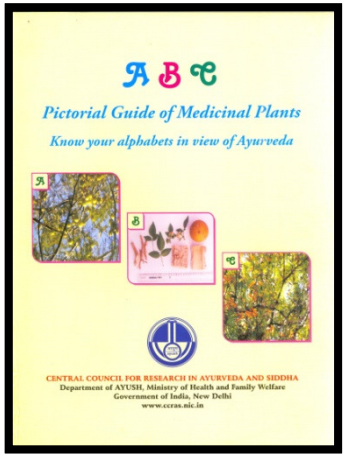


Medico Ethno-botanical Survey and Bio-prospection of medicinal plants at CCRAS, Ministry of AYUSH

- Worked as Research Officer at CCRAS during 21.12.2009 – 12.09.2012
- Involved in co-ordination and management of Medicinal Plant Research Programme; Editing of CCRAS publications and Extension activities.
- Completed a project on “Comprehensive database on 16 medicinal plants having high trade value.
- Contributed and edited for the book “Herbal Wealth of Uttarakhand”







Red listing of Orchids of Eastern Himalaya as per IUCN Criteria

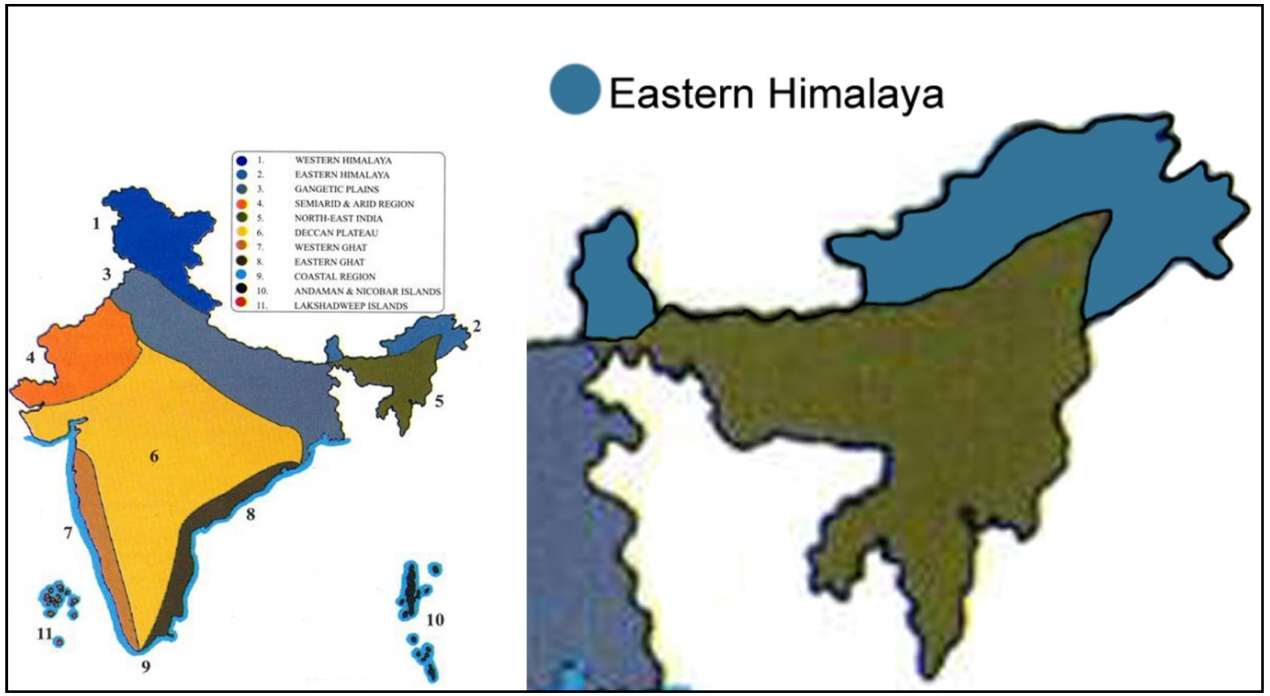
Project tenure: April 2013 – March 2018

Executing Official(s): 1. Dr. Dinesh Kumar Agrawala, Scientist C, BSI, SHRC, Gangtok

2. Dr. Krishna Chowlu, Scientist B, BSI, APRC, Itanagar (joined in 2015 to provide input of species from Arunachal Pradesh).

Expected number of species: 766 (±20)

Study Area



Map according to Chowdhery & Murty (2000).

Illustration copyright Bob Diven

Red listing of Orchids of Eastern Himalaya as per IUCN Criteria

Background:

- All orchids are covered under various legislations irrespective of their qualification.
- Many of them do not have immediate conservation need and/or benefit.
- Many orchid taxa are actually extremely rare, but their conservation status still not known.
- No comprehensive assessment document available on Indian orchids based on widely accepted system/ methodology.

Objective:

- To prepare a list of orchid species from the study area.
- Categorize them into Endemics, near endemics, High value, and others.
- Collect data on their population size, reduction, distribution, exploitation/ harvest and associated threats for application of right IUCN Criteria.
- Prepare the data sheets for assessment by using proper tools.
- Assess the species with proper justification.
- Prepare a “National Red Data Book of Indian Orchids”

Components of a Red List assessment

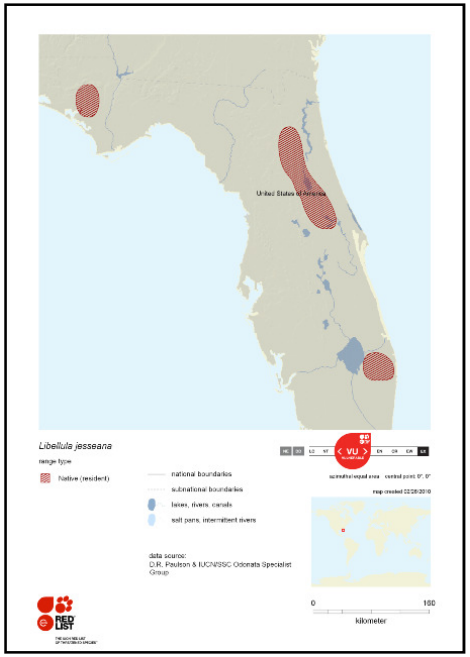
1. Red List category and criteria

- *Oreorchis patens* (Lindl.) Lindl. (Orchidaceae)
- Critically Endangered
  [CR B1B2ab(iii); D]

2. Documentation supporting the category and criteria

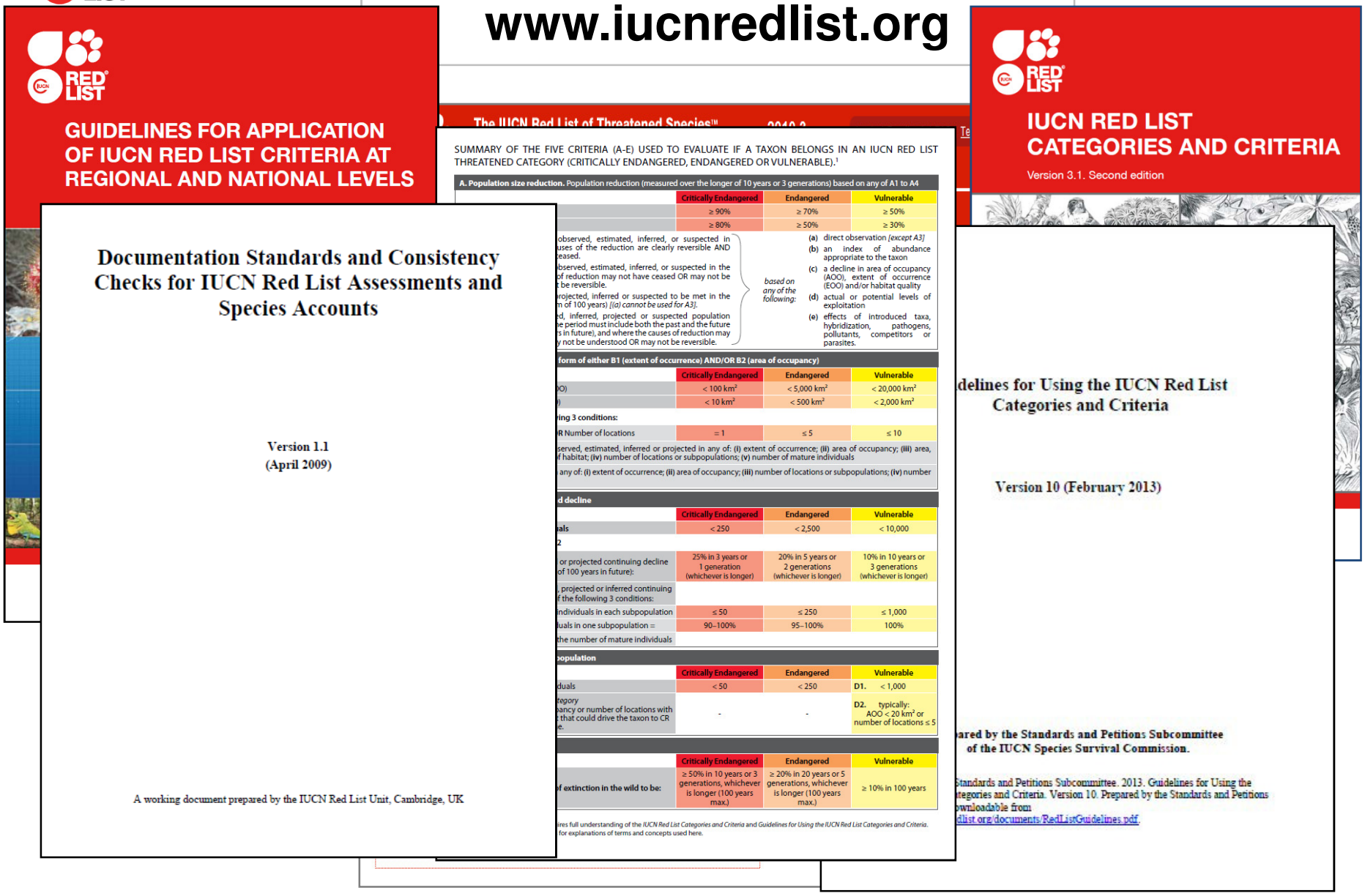
- Population size, trend and status; range; threats; conservation measures; etc.

3. Map of species' distribution



Essential tools for Red List assessments

www.iucnredlist.org



Red List Documentation

- All species in the Red List have supporting documentation.
- Justifies the selected category and criteria.
- Allows analysis of Red List data (information coded using standard Classification Schemes).

- Taxonomy including authority details.
- Common names
- Red List Category and Criteria
- Countries of occurrence
- Map of distribution
- Rationale for the assessment (supporting the criteria used)
- Habitat preferences (text & codes)
- Major Threats (text and codes)
- Conservation Measures in place & needed (text and codes)
- Citations list
- Reasons for any category changes
- Names of assessors

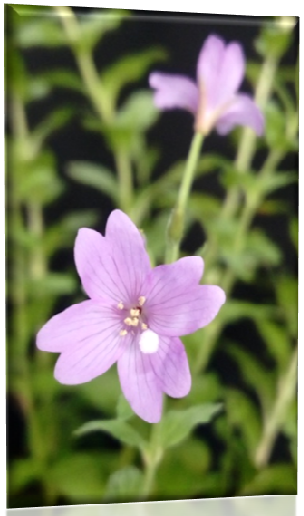
Work done so far…

- List of 766 taxa compiled from study area and their distribution data collected from available literature.
- Label data of more than 15000 specimens housed at various herbaria has been collected for assigning geo-coordinates.
- These specimens are being checked for their identity and several unidentified/ wrongly identified specimens were determined correctly.
- Field survey at different areas of Sikkim, Arunachal Pradesh and Darjeeling district of West Bengal conducted for analyzing population and associated threat factors of available orchids.
- Taxon datasheets are being prepared for documentation.

Compliance to Annual Action Plan 2016-2017

Target	Achievements	Remarks
Compilation of data collected during previous year. 500 herbarium specimens will be studied in respect of their identity, geo-coordinates will be assigned and data to be entered in spread sheet. 500 herbarium specimens will be studied in respect of their identity, geo-coordinates will be assigned and data to be entered in spread sheet. Data sheets of 100 species to be prepared. Data sheets of 100 species to be prepared. Training on GIS mapping at NRSA Hyderabad or IIRS D'dun	• 800 specimens were finalized in respect of their identity, geo-coordinates and entry in the excel sheet. In this process, several unidentified and wrongly identified specimens were determined with correct identity. • Literature on 766 taxa of Orchidaceae listed from study area was consulted in respect of their distribution and threat factors. • 105 taxa were identified from study 140 live as well as herbarium materials. • 27 taxa were illustrated by using digital macro-microscopic images of live specimens. • Two local tours conducted at Dickling and Kalimpong, collected 21 field numbers and studied population of 40 taxa. • Introduced 39 taxa of Orchids and medicinal plants for ex-situ conservation and further studies.	Shortfall in progress due to other official assignments and technical works

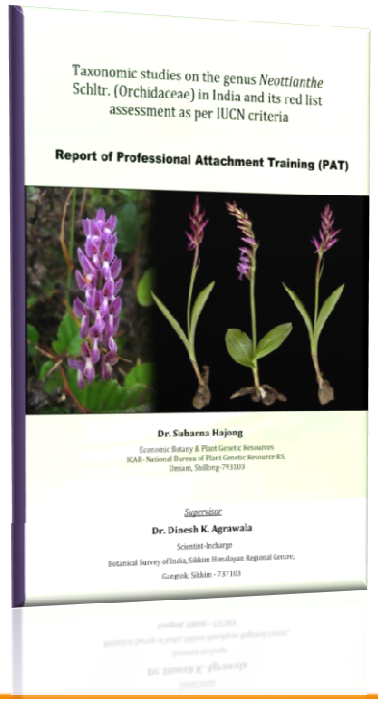
Other projects



Flora of Sikkim: Family Onagraceae

Jointly with Dr. David L. Biate, Scientist B

Study completed, manuscript under preparation



Taxonomic studies on the genus *Neottianthe* Schltr. (Orchidaceae) in India and its red list assessment as per IUCN criteria

Jointly with Dr. Subarna Hajong, ICAR- National Bureau of Plant Genetic Resource RS, as a part of three month Professional Attachment Training (PAT)

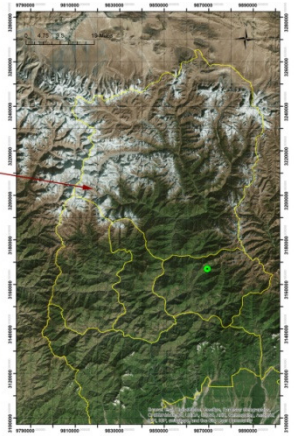
Study completed, manuscript submitted.

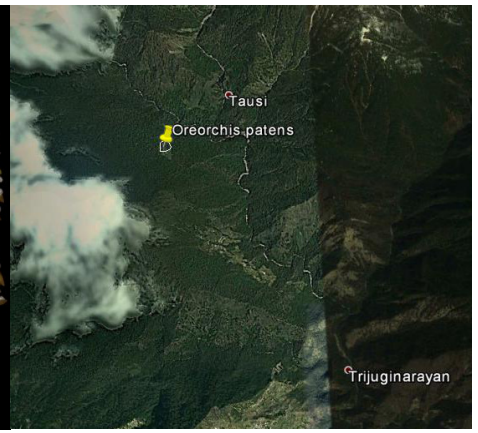
Administrative works

- Doing duties of Head of Office, SHRC since 01.11.2015-till date.
- Functioned as DDO, SHRC since October 2012 – October 2015 (majority of time)
- Conducted physical verification of library in October-November 2012
- Acted as “Rajbhasha Adhikari” during April 2014-October 2015 (looked after the implementation of Official Language policy).
- Acted as in-charge of Technical Section; Campus Garden and Estate Officer during April 2014 – October 2014.
- Representing BSI-SHRC in all local meetings, workshops, committees etc. since April 2014 till date.
- Looked after the day to day activities in the Library during October 2012 – October 2015, responsible for accessioning and incorporating books/ journals and attending visitors.

Summary

1.	Number of projects carried out individually as well as jointly	Seven
2.	Number of books written/ compiled/ edited individually as well as jointly	Six
3.	Number of papers published individually/ jointly	61
4.	Number of new taxa published	Five
5.	Number of new combinations/ names published	Seven
6.	Number of species reduced as synonym	Ten
7.	New records for India	Seven
8.	New records for states/ phyto-geographic regions	15





Future Research Plan

- Develop ‘National Red Data Book’ on Indian Orchids by considering distributed at other part as well.
- Fill the gap for the family treatment of Orchidaceae for Flora of India by conducting revisionary studies.
- Prepare an illustrative manual of Indian Orchids
- Involve in any possible collaborative study for solving species complex in Indian orchids through morpho-molecular tools.
- Work for ‘State Flora of Sikkim’


We are numerous,
Sustained the struggle for existence,
Evolutionarily superior than others,
-still under severe threat !!!
THANKS...