



भाकृअनुप-राष्ट्रीय आर्किड्स अनुसंधान केन्द्र
ICAR - National Research Centre for Orchids
पाक्योंग - ७३७१०६, सिक्किम, भारत
Pakyong - 737 106, Sikkim, India



Phone (Off.): +91 3592 257954
(Resi.): +91 3592 202939
Telefax: +91 3592 257282
Mobile: +91 9434264404; +91 8348238334

Email: Director.nrc@icar.gov.in
nrcorchids@rediffmail.com
drsinghort66@gmail.com
Web Site: <http://www.nrcorchids.nic.in>

डॉ. डी. आर. सिंह/ Dr. D.R. Singh
निदेशक / Director

F.No.NRCO/NMHS/2016-17/
Date:22.10.2016

To,
The Nodal Officer,
NMHS-PMU,
G.B. Pant National Institute of Himalayan Environment and Sustainable Development,
Kosi-Katarmal, Almora, Uttarakhand
Pin-263 643.

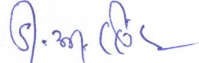
Sub: Submission of Half yearly progress report of NMHS of ICAR-NRCO - reg.

Sir,

Kindly find enclosed here with the Half yearly progress report of Himalayan research fellowships from 30-03-16 to 30-09-16 from our institute.

Thanking you,

Yours faithfully,


(D.R. Singh)

Enclosure:

1. One copy of Half yearly progress report.
2. Two (02) copies of Technical bulletin on DNA Barcoding of orchids.

National Mission on Himalayan Studies (NMHS)
HIMALAYAN RESEARCH FELLOWSHIP
HALF YEARLY PROGRESS REPORT
[Reporting Period: from 30/03/2016 to 30/09/2016]

Name of the Institution/ University:	ICAR-National Research Centre for Orchids, Pakyong, Sikkim
No. of Himalayan Research/Project Associate:	Two (02)
No. of Himalayan Junior Research/Project Fellows:	Five (05)

Himalayan Research/Associate

H-RAs Profile Description:

S. No.	Name of RA	Date of Joining	Name of the PI	Qualification
1.	Dr. Pradosh Mahadani	01.08.2016	Raj Kumar	Ph.D.
2.	Dr. Shankharoop Ghosal	27.07.2016	Dr. Ram Pal	Ph.D.

Progress Report: To be filled for each HRA in separate row:

R A. N o.	Title of Research Work	Research Objectives	Achievements	Addressed Deliverables	Location of Field Site with Details, If any
H R A 0 0 1	Conservation, sustainable use of orchids resources of Sikkim Himalayan region	[a] To develop effective <i>in-situ</i> conservation and management interventions for the selected orchids in Sikkim Himalayan region. [b] To determine the appropriate condition for <i>in vitro</i> mass propagation of selected Orchid species. [c] Development of DNA Bank and study the genetic diversity of wild Orchid species.	1. Established an information baseline for in situ conservation for orchids. 2. Completed priority setting for target species. 3. Prepared Technical Bulletin on “DNA bar coding of Indian Orchids” . 4. Initiated the standardization of mass multiplication protocol of rare orchid species.	Nil	Sikkim Himalayan region

R A. N o.	Title of Research Work	Research Objectives	Achievements	Addressed Deliverables	Location of Field Site with Details, If any
H R A 0 0 2	Long-term Ecological/Environmental monitoring of orchids & assessment of threats to biodiversity and Extent of IKP documentation & strengthened	[a] Identification of sites for long-term environmental monitoring; [b] Mainstreaming of long-term monitoring and building scientific evidence across key sectors achieved [c] Indigenous Knowledge and Practices (IKP) systematically documented and linked to scientific evidence base.	Identification of sites for long-term environmental monitoring in progress. Currently collecting herbarium data of orchids of West Bengal and Sikkim so as to find out locations of species described as threatened and endemic. Associated vegetation of <i>Diplomeris hirsuta</i> and <i>Satyrium</i> sp. has been achieved and the soil pH and moisture levels of those sites have been measured. Visited the Bagora forest range and noted the presence of many epiphytic orchids. The ecology of <i>Cymbidium devonianum</i> might be studied. Currently also formulating the methods to be employed for long-term monitoring.	Addressing of deliverable [a] in progress.	Baghpool, Siliguri for <i>Diplomeris hirsuta</i> and Tiger Hill, Darjeeling for <i>Satyrium</i> species are finalized and other sites under consideration.

Note: Data, table and figures may be attached as separate source file (.docx, .xls, .jpg, .jpeg, .png, .shp, etc.).

Himalayan Junior Research/Project Fellows

H-JRFs Profile Description:

S. No.	Name of JRF	Date of Joining	Name of the PI	Qualification
1.	Srayasi Mallick	01.09.2016	Dr. D. Barman	M. Sc. in Applied Geography
2	Kalyan Ghosh	23.05.2016	Raj Kumar	M. Tech. in Computer Science
3.	Deepak Rai	31.05.2016	P. Ravi Kishore	M. Sc. Horticulture
4.	Nima Tshering Bhutia	16.05.2016	Dr. N. Sailo	M. Sc. Agriculture
5.	Ankita Singh	04.06.2016	Raj Kumar	M. Sc. Food Science & Tech.

Progress Report: To be filled for each JRF in separate row.

JRH. No.	Title of Research Work	Research Objectives	Achievements	Addressed Deliverables	Location of Field Site with Details, If any
JRF-001	To carry out survey, GIS Mapping and collection of orchid populations of Sikkim Himalayas	1) Spatial Data base creation 2) Mapping with available datasets 3) Satellite data and product identification for Orchid research 4) Species distribution modelling	ÉPrepared Synopsis ÉPreparing datasets of orchids available in Sikkim	Nil	Sikkim Himalayan region
JRF-002	Orchid biodiversity database of Darjeeling and Sikkim Himalayas	1) Creation Database of Orchids of Sikkim and Darjeeling Himalayas. 2) Implementation of GIS map in Database.	ÉReview previous literature about database. ÉPrepared synopsis and present the synopsis. ÉCompleted Orchids Species List from Sikkim And Darjeeling Himalaya. ÉSelected Parameter for database. ÉInitiated the development of Database Using MySQL.	Nil	Sikkim and Darjeeling Himalayan region
JRF-003	Assessment of Natural resources accounting methods and Field Testing.	1) To study the orchids population in natural habitats throughout Sikkim Himalayan range. 2) To study flowering time, distribution pattern and phyto-geographic affinities among orchids species of Sikkim Himalayan region. 3) To evaluate the status of endemic and national endemic orchid species in Sikkim Himalaya.	ÉStudy of literature and compilation of review of literature. ÉSubmitted final Synopsis. ÉPlanning and selection of sites for Survey and record the distribution of selected Orchids species. ÉPrepared the flowering calendar of 150 orchid species of Sikkim Himalaya.	Nil	Sikkim Himalayan region

JRH. No.	Title of Research Work	Research Objectives	Achievements	Addressed Deliverables	Location of Field Site with Details, If any
JRF-004	To predict impact of climate change and increase in temperature on natural survival and pollination of orchids.	<p>1) Documentation of distribution of selected orchid species as per altitude gradient in past and present.</p> <p>2) To simulate the habitat of orchids and study the effect of increasing temperature on its growth and phenology.</p> <p>3) Studies on seed setting by artificial pollination and seed germination under different temperature.</p> <p>4) Effect of different temperature regimes on pollen viability.</p>	<p>ÉStudy of literature and compilation of review of literature.</p> <p>ÉPreparation and submission of Synopsis.</p> <p>ÉSurvey and record the distribution of selected Orchids species.</p> <p>É Ex-vivo conservation of selected Orchids species under semi controlled environment by simulation of its natural habitat</p>	Reconstruction of rare and endangered species localization map and its in situ - conservation thereof.	Sikkim Himalayan region
JRF-005	Chemical profiling of medicinally important orchids, in-vitro multiplication and re-introduction of selected rare orchid species of Sikkim Himalayas In their Natural Habitat	<p>1) Qualitative screening of Phytochemicals from selected orchids.</p> <p>2) Identification, Qualitative and Quantitative estimation of Phytochemicals.</p> <p>3) In-vitro multiplication of some selected medicinal orchids.</p> <p>4) Re-introduction of in-vitro multiplied selected medicinal orchids in their natural habitat.</p>	<p>ÉConsulted review of literature for medicinal orchids, micropropagation techniques and phytochemical analysis.</p> <p>ÉPrepared the Synopsis and submitted.</p> <p>ÉPrepared the <i>Dendrobium nobile</i> plant samples (Root, Stem, Leaf) for its phytochemical analysis.</p> <p>ÉInitiated the standardization of micropropagation protocols for medicinal orchids.</p>	Nil	Sikkim Himalayan region

Note: Data, table and figures may be attached as separate source file(.docx, .xls, .jpg, .jpeg, .png, .shp, etc.)

***Overall Achievements:**

1. Launched the Himalayan Fellowship program by Hon'ble Governor of Sikkim.

The fellowship of NMHS was Launched by Hon'ble Governor, S.D. Patil , IAS on the event of 4th Stake holder meeting held on 23/04/2016. S.D. Patil, IAS inaugurated the event and appreciated the programme scheme. In this programme, Dr. K.V. Peter, Dr. B. Singh and Dr. D.R. Singh, Director, ICAR-NRCO, Pakyong, Sikkim were participated.



The fellowship of NMHS was Launched by Hon'ble Governor S.D. Patil, IAS, on 23/04/2016.

2. Released the technical bulletin on 'DNA Barcoding of Indian Orchids'.

The Scientists and Research Associate of the scheme compiled a technical bulletin on 'DNA Barcoding of Indian Orchids' and released by Padma Sree Dr. K.L. Chadha, (Ex-DDG), Horticulture on the event of 20th foundation day of ICAR, NRCO, Pakyong, Sikkim. In the programme, Dr. T. Janakiram, (ADG), Horticulture and Dr. D.R. Singh, Director, ICAR-NRCO, Pakyong, Sikkim were participated.



Released the Technical bulletin on DNA Barcoding of Indian orchids by PadmaSree Dr. K.L. Chadha, Dr. T. Janakiram, ADG (Horticulture), Dr. D.R. Singh, Director, ICAR-NRCO on 5/10/2016.

3. Awareness programme on conservation of orchid biodiversity among orchid growers

The fellows of NMHS were created the **awareness programme on Conservation of orchid biodiversity** among the orchid growers at Yaktan village (East Sikkim Dt.), Sikkim under the leadership of Dr. D.R. Singh, Director, ICAR-NRCO, Pakyong, Sikkim on the event of Swatch Bharat pakwada held on 19-10-16. The fellows were actively done voluntarily job and created the awareness regarding conservation and protection of orchid biodiversity.



Awareness programme on Conservation of Orchid biodiversity by the fellows of NMHS at Yaktan village (East Sikkim) on 19-10-16.

(D. R. Singh)

Director
ICAR-NRC for Orchids
Pakyong, Sikkim