

National Mission on Himalayan Studies (NMHS)

HIMALAYAN RESEARCH FELLOWSHIP

(FORMAT FOR THE HALF YEARLY PROGRESS REPORT)

[Reporting Period: from 1 January 2018 to 30 June 2018]

Name of the Institution/ University:	Wildlife Institute of India
No. of Himalayan Research/Project Associate:	Three
No. of Himalayan Junior Research/Project Fellows:	Ten

Himalayan Research/Associate

H-RAs Profile Description:

S. No.	Name of RA	Date of Joining	Name of the PI	Qualification
1.	Dr. Anjali Uniyal	04 July 2016	Dr. G.S. Rawat	P.hD
2.	Dr. Nehru Prabakaran	27 June 2016	Dr. G.S. Rawat	P.hD
3.	Dr. Rishi Kumar	01 July 2016	Dr. G.S. Rawat	P.hD

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

RA No.	Research Objectives	Achievements	Addressed Deliverables	Location of Field Site with Details, if any
1.	<ul style="list-style-type: none">Assess ecosystem services concept in natural resource managementTo identify different ecosystem types and services provided by them in the study areaTo identify different stakeholders and their roles in the management of different ecosystemsTo document use of	<ul style="list-style-type: none">Identified most important ESS in the areaAffect of natural resource management on flow of ESSDegraded areas identified for restorationAwareness generation regarding environmental issues in association with other local institutions	<ul style="list-style-type: none">Presented findings of the previous year in "Himalayan Researchers Consortium" in April 2018 at UCOST Dehradun and got best presentation award.Valuation of key provisioning servicesManagement issues addressed through publications.Awareness program & drawing competition for school children on 5th June 2018 on the occasion of World Environment Day # Beat Plastic PollutionAwareness program with villagers on bio-amelioration of	Dhauladhar mountain range of Himachal Pradesh

	<p>ESS in the study area and their quantification</p> <ul style="list-style-type: none"> To quantify vegetation and soil parameters of the forest ecosystem 		<p>the invasive species</p> <ul style="list-style-type: none"> Popular article: 1-(published), 1(accepted), Scientific paper 1-published, 2- (<i>communicated</i>) 	
2	<ul style="list-style-type: none"> Conservation of genetic resources of RET species including agro-biodiversity (on- and off-farm best practices) Agriculture vulnerability across the study area 	<ul style="list-style-type: none"> Survey of 87 villages across eight administrative blocks is completed More than 100 landraces were recorded for among the major crops (paddy, finger millet, wheat) Best oral presentation award in the Himalayan Researchers Consortium – 2018 	<ul style="list-style-type: none"> Documentation of traditional crop varieties & landraces Data collection on factors contributing to agriculture vulnerability 	Pithoragarh district, Uttarakhand
3.	<ul style="list-style-type: none"> To develop a comprehensive environmental monitoring protocol for the state of Sikkim To suggest institutional mechanism for mainstreaming of long-term monitoring of key environmental parameters and build scientific evidence base across key sectors To generate baseline data on key environmental parameters along altitudinal and anthropogenic pressure gradients 	<ul style="list-style-type: none"> Monitoring protocol for vegetation is finalized. Monitoring protocol for fauna is also identified An institutional mechanism has been developed and it is being discussed with various institutions for implementation after the project. Baseline data is being collected on vegetation via vegetation plots, fauna via transects and climate via data-loggers. 	<ul style="list-style-type: none"> Monitoring protocol developed for vegetation and its being implemented in field Work initiated with the involvement of state Forest Department, a discussion initiated with Sikkim University and GBPNIHED, Sikkim Unit Baseline data collected on nearly 85 plots of 20m x 20m for trees, nested plots of 5 m x 5m for shrubs and 1m x 1m for herbs. Transect data collected on 50 trails Climatic data collected in collaboration with NMSHE project 	A total 24 identified Field sites are located in 13 PA and RFs ie. Kitam Bird Sanctuary, Majhitar RF, Saombok RF, Maenam WLS, Dalley RF, Yangyang RF, Rangpo RFs, Namthang RF, Tendong RF, Singba Rhododendron Sanctuary, Yumthang, Fambong Lho WLS, Kanchendzonga National Park

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.	Ms. Shagun Thakur	15.09.2016	Dr. K. Ramesh	M.Sc
2.	Ms. Alka Chaudhary	15.09.2016	Dr. G. S. Rawat	M.Sc
3.	Ms. Meghna Bandyopadhyay	08.06.2016	Dr. K. Ramesh	M.Sc
4.	Mr. Hussain Saifee Reshmwala	10.06.2016	Dr. Bilal Habib	M.Sc
5.	Ms. Chirag Giridhar	22.11.2017	Dr. G. S. Rawat	M.Tech
6.	Ms. Priyanka Kashyap	08.06.2016	Dr. V. P. Uniyal	M.Sc
7.	Mr. Shuvendu Das	10.06.2016	Dr. V.P. Uniyal	M.Sc
8.	Ms. Ankita Sinha	08.06.2016	Dr. K. Ramesh	M.Sc
9.	Mr. Suresh Kumar	15.09.2016	Dr. G. S. Rawat	P.hD
10.	Ms. Anjani Rawat	20.06.2016	Dr. V.P. Uniyal	M.Sc


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

JRF No	Research Objectives	Achievements	Addressed Deliverable	Location of Demonstration / Study Site with Details
1.	<ul style="list-style-type: none"> To assess the distribution of large mammals (carnivores) in the Great Himalayan National Park (H.P.) To model occupancy of large carnivores in the context of anthropogenic pressures 	<ul style="list-style-type: none"> Overall proportion of sites utilized by Himalayan brown bear, leopard and black bear were estimated as follows: $\psi 0.43 \pm 0.10$, $\psi 0.42 \pm 0.10$, $\psi 0.45 \pm 0.06$ respectively Proportions of site utilization was directly associated with anthropogenic activities in case of black bear and leopard. In case of Himalayan brown bear, there was a negative association with livestock. 	<ul style="list-style-type: none"> Impacts of anthropogenic pressures on mammals and their habitats 	<ul style="list-style-type: none"> Great Himalayan National Park, Himachal Pradesh
2.	<ul style="list-style-type: none"> To model spatial distribution of selected plant invasive species using distribution modeling technique To access the impacts of AIP on native flora and relationship with habitat parameters, To analyze peoples' perception towards spread of AIPs in Kailash Sacred Landscape – India, and Experimental trials on eco-restoration of habitats and prediction of future spread for better management 	<ul style="list-style-type: none"> Potential habitat maps have been prepared of two major alien invasive plants in the entire KSL-Indian landscape can be used by risk managers for management of AIPS from Sacred landscape. 	<ul style="list-style-type: none"> Distribution of two major alien invasive species Lantana and Eupatorium has been done in KSL-India using habitat suitability model. Vegetation plots have been laid in different sites for monitoring the impact of AIPS on native flora. Data entry and data analysis under process. 	<ul style="list-style-type: none"> The present investigation was conducted in Kailash Sacred Landscape-Uttarakhand, which is located at the tri-junction of India, Nepal and Tibet autonomous region (TAR) of China.
3.	<ul style="list-style-type: none"> Good practices tested on scientific evidence base Small carnivore habitat interactions with anthropogenic pressures and climate change in 	<ul style="list-style-type: none"> Response of small carnivore to changing habitat with respect to elevation. Association to river has 	<ul style="list-style-type: none"> A manual on good practices of natural resources management in the region. Impacts of anthropogenic pressures and climate change on small 	<ul style="list-style-type: none"> Great Himalayan National Park (GHNP), Himachal Pradesh, Western Himalaya

	riverine habitats	<p>positive effect on leopard cat and marten whereas it's not much clear in case of red fox. The river can act as an important aspect to the small carnivores as a corridor or for resources. More sampling in next two seasons can reveal the pattern.</p> <ul style="list-style-type: none"> • First authentic record of snow leopard at lowest elevation in GHNP • First record of stone marten in GHNP. 	carnivores in riverine habitats.	
4.	<ul style="list-style-type: none"> • Feeding ecology of red fox • Denning ecology of red fox • Diet of sympatric carnivores • Species response to changing LULC 	<ul style="list-style-type: none"> • Results published in Journal of Arid Environments • Results submitted to PLoS ONE journal • Analysis yet to be done 	<ul style="list-style-type: none"> ○ Denning and Feeding ecology of the Red Fox and its competition of food resources with sympatric carnivores like dogs and wolves. 	<ul style="list-style-type: none"> ○ The North-Western Trans-Himalayan region with Chiktan in Kargil district and Changthang of Leh district of Ladakh was chosen as the intensive site for field work.
5.	<ul style="list-style-type: none"> • To assess the lichen community assemblages and their spatial-temporal dynamics along environmental gradients, and following deglaciation. • To assess changes in lichen bio-chemical composition along the gradient of environmental conditions and in experimental warming. 	<ul style="list-style-type: none"> • Collected more than 1000 samples of lichens from the study area and 120 species were identified and quantification of heavy metals in the lichen species was also done. • Pristine alpine habitat selected for long-term monitoring and four Open top chambers (OTCs) were deployed this year for experimental warming studies. The further biochemical analysis will be done in future. 	<ul style="list-style-type: none"> • Our objectives will bridge the knowledge gap that exists about soil-dwelling lichens along environmental gradient and in glacier forelands which never gained proper attention from the ecologists in the Himalayan region. • The study will provide understanding about the response of the lichen communities, their functional roles in high altitudes and understanding colonization dynamics 	<ul style="list-style-type: none"> • Two sites were selected in the subalpine and alpine region of Gangotri National Park, Uttarkashi, Uttarakhand.
6.	<ul style="list-style-type: none"> • To assess the distribution and relative abundance of selected nematodes along the elevation gradient, edaphic factors and environmental variables in the selected sites in the IHR. • To assess the trophic relationships among soil-inhabiting nematodes in the selected sites in the IHR 	<ul style="list-style-type: none"> • Literature review –done • A soil physiochemical property of GNP has been done. • Soil nematode id is in progress 	<ul style="list-style-type: none"> • Thirty genus belonging to 14 families of 6 orders of soil nematode has been identified • Soil analysis for various parameter is done • Correlation of soil properties will be done after nematodes ID 	<ul style="list-style-type: none"> • Gangotri National Park, Uttarakhand
7.	<ul style="list-style-type: none"> • Status and abundance of Odonata assemblages in Bhagirathi river basin of Uttarakhand and Teesta 	<ul style="list-style-type: none"> • Stratified random sampling is ongoing in at least 10 plots at each 	<ul style="list-style-type: none"> • Listing of 17 species of Odonates belonging to 10 genera and 5 families in Bhagirathi river basin. 	<ul style="list-style-type: none"> • Teesta river basin, Sikkim.

	River Basin of Sikkim	250m elevation interval within a range of 500m-4000m(n=32).		
8.	<ul style="list-style-type: none"> Reconnaissance survey of riverine habitat and birds in Tirthan valley, GHNP 	<ul style="list-style-type: none"> Characterization of riverine habitat across fifteen 500 m river reaches ; Identification of 9 river bird species and breeding records of 6 of them 	<ul style="list-style-type: none"> River habitat survey of Tirthan river valley, GHNP Identification river bird community in the basin 	<ul style="list-style-type: none"> Tirthan valley, Greater Himalayan National Park, Himachal Pradesh
9.	<ul style="list-style-type: none"> To assess population status of high value threatened medicinal plants in Chenab valley J&K. 	<ul style="list-style-type: none"> Sampling of the 47 priority species for assessment of their population status in wild is under progress and will be completed during the next summer season. 	<ul style="list-style-type: none"> Priority species have been identified using PRA's and ethno botanical surveys. Field sampling for populations estimation of threatened species is under progress during two years in their specific habitats across different regions in Chenab valley J&K. Field sampling was conducted using total population count and density sampling during May-August in various parts of Chenab valley, J&K. 	<ul style="list-style-type: none"> Kishtwar and Doda districts in Jammu and Kashmir state. The region includes various catchment areas of Chenab river. Elevation of the region ranges from 1500m to more than 6000m.
10.	<ul style="list-style-type: none"> To assess the health of environment by evaluating its physical, chemical and biological components and to create baseline data of the given environment. To assess the impact of changes in environment variables on the indicator species Awareness among locals regarding the environment 	<ul style="list-style-type: none"> Air, water and soil quality has been monitored for 2017 and 2018. Aquatic macroinvertebrates has been identified and identification of soil nematodes is under progress. Questionnaire survey is done in all the three selected sites and data is yet to be analyzed. 	<ul style="list-style-type: none"> Macroinvertebrates are very sensitive to slight changes in the water chemistry and our study has identified different stress zones in Mandakini river basin which needs to be look upon for restoration. Results from soil quality analysis from the selected sites revealed slightly higher nitrogen and zinc concentration. Identification of soil nematodes is still under process. Air quality is found to be in permissible limits as set by Central pollution control board for summer season. 	<ul style="list-style-type: none"> Mandakini River flowing in different populated towns of Chamoli has been selected for water quality characterization. Sonprayag, Ukhimath and Mandal agriculture fields has been selected for soil quality characterization. Air quality monitoring stations are at Rudraprayag, Mandal and Ukhimath.

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(Signature of Registrar/ Head of Department)

संकाय अध्यक्ष /Dean
भारतीय वन्यजीव संस्थान
Wildlife Institute of India
देहरादून / Dehradun

Report (hard copy) should be submitted to:

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

Report (soft copy) should be submitted to:

E-mail: nmhspmu2016@gmail.com