

## National Mission on Himalayan Studies (NMHS)

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### NMHS Annual Progress Report – Pro forma

Kindly fill the NMHS Annual Progress Report segregated into the following 11 segments, as applicable to your project nature and outcomes.

1. Project Information
2. Project Site Details
3. Project Activities Chart w.r.t. Timeframe [Gantt or PERT]
4. Financial and Resource Information
5. Equipment and Asset Information
6. Expenditure Statement and Utilization Certificate (UC)
7. Project Beneficiary Groups
8. Project Progress Summary (as applicable to the project)
9. Project Linkages (with nearby Institutions/ State Agencies)
10. Additional (publication, recommendations, etc.)
11. Project Concluding Remark

Please let us know in case of any query at: [nmhspmu2016@gmail.com](mailto:nmhspmu2016@gmail.com)

# NMHS Progress Report

(Period from 2017 to 2018)

## 1. Project Information

Project ID – P0165	Sanction Date – 31-03-2016
Project Title	Understanding the degradation and loss of primary forest in the Teesta valley of the Sikkim Himalaya: a framework for recovery and management of biodiversity and bioresources
BTG	Conservation & sustainable use of biodiversity and Sustainable management of land and water resources
PI and Affiliation (Institution):	Dr. Robert John Chandran, Department of Biological Sciences, IISER Kolkata
Name & Address of the Co-PI, if any:	-
Structured Abstract - detailing the current year progress [Word Limit 250 words]:	From our previously installed vegetation plots in the secondary forests of Sikkim, we continued to survey for potential locations in the first half of the year 2018. This year we were able to install and collect data from 10 plots in the primary and secondary forests of the East and West district of Sikkim. During these installations we also sampled for the presence/absence of important bioresources and medicinal plants which are extracted and used by the local communities. We also finalized the draft questionnaire for a socio economic survey and successfully recorded the responses from 11 different villages in our study area. The survey focussed on economy, resource use, governance and attitudes of people who live near reserve forests in our study area.

Project Partner Name	Affiliations	Role & Responsibilities
Partner 1	Kanchendzonga Conservation Committee	To provide guidance and assistance in carrying out effective socioeconomic surveys by interacting with local people of Sikkim.

## 2. Project Site Details

Project Site – Multiple sites in Sikkim

IHR States Covered – Sikkim

Long. & Lat. - 88.02°E to 88.82°E Longitude and 27.12°N to 27.72°N Latitude

Site maps – See Annexure I

Site Photographs - See Annexure II

### 3. Project Activities Chart w.r.t. Timeframe [Gantt or PERT]

Work Undertaken (of the Reporting Period ONLY) Year 2018					
Project Activities	Quarter 1	Quarter 2	Quarter 3	Quarter 4	OUTPUT
Project Activity 1	Preparation of list of potential vegetation plots in the primary forests of Sikkim.	Installation and measurement of vegetation plots in primary forests of East Sikkim.			A successful collection and compilation of data from 3 plot locations.
Project Activity 2	Preparation of list of potential vegetation plots in the secondary forests of Sikkim.	Installation and measurement of vegetation plots in secondary forests of North, West and South Sikkim districts.			A successful collection and compilation of data from 7 plot locations.
Project Activity 3	Finalization of questionnaire to carry out a socio-economic survey to map land ownership details in the study area.	Collection of individual household and community data on various socio-economic aspects using the finalized questionnaire.			A total of 11 villages were covered from the four districts of Sikkim which included 55 household surveys and 11 community surveys.
Project Activity 4	Finalization of questionnaire for usage of bio resources within the socio economic survey	Collection of responses about usage of bio resources along within the socio-economic survey			A total collection of 55 individual responses regarding medicinal plants and other bioresources
Project Activity 5		Planning for procurement of satellite imagery (IRS-LISS IV)			Satellite imagery will be obtained by the next quarter.

## 4. Financial and Resource Information

*Note:* A separate bank account is expected to be opened for NMHS Project as per the provision of Direct Beneficiary Account (DBA) as laid out by the Govt. of India and also facilitate the audit of accounts. The interest earned out of the NMHS project funds should be reported clearly in the utilization certificate.

Total Grant:	Rs. 23,11,200/-	Grant Received Date:	Rs. 8,31,500/-
Project Partner(s)	Affiliations/ Institution	Budget Allocated to	Work Done
Partner 1			

### Project Staff Information:

S. No.	Name	Qualification	Designation	Fellowship/ Wages paid	Remarks
1.	Netra Bhandari	M.Sc	JRF	25,000/month	
2.	Chatur Singh Limboo		Field Assistant	10,000/month	

## 5. Equipment and Asset Information

S. No.	Equipment Name (Qty)	Details (Make/ Model)	Cost	Date of Installation	Photographs of Equipment	Lowest Quotation, IF NOT purchased
1.	Equipment 1				[Attach]	
2.	Equipment 2				[Attach]	
3.	Equipment 3				[Attach]	
[Add]	[Add]				[Attach]	

## 6. Expenditure Statement and Utilization Certificate

Please update the annual Expenditure Statement and Utilization Certificate (UC) periodically.

Expenditure Information:

S. No.	Financial Position/Budget Head	Funds Sanctioned	Expenditure	% of Total cost
I	Salaries/Manpower cost	2,14,661	3,28,397	153
II	Travel	3,33,352	1,97,237	59
III	Expendables & Consumables		1,50,037	
IV	Contingencies	7000	0	0
V	Activities & Other Project cost			
VI	Institutional Charges	0	0	0
VII	Equipments	500	0	0
	Total	5,98,798	6,75,671	113%
	Interest earned			
	Grand Total			

Period	Expenditure Statement	Utilization Certificate (UC)
Annual	[Attach]	[Attach]

## 7. Project Beneficiary Groups

Beneficiary Groups [Capacity Building]	Target	Achieved
No. of Beneficiaries with income generation:	Nil	
No. of stakeholders trained, particularly women:	Nil	
No. of capacity building Workshops/trainings:	Nil	
No. of Awareness & outreach programmes:	Nil	
No. of Research/ Manpower developed:	2	2

## 8. Project Progress Summary (as applicable to the project)

Description	Total (Numeric)	Description
IHR States Covered	1	Sikkim

<i>Project Site/ Field Stations Developed:</i>	52 plots in Sikkim	
<i>No. of Patents filed (Description):</i>	Nil	
<i>Article/ Review/ Research Paper/ Publication:</i>	Nil	
<i>New Methods/ Modellings Developed (description in 250 words):</i>	Nil	
<i>No. of Trainings (No. of Beneficiaries):</i>	Nil	
<i>Workshop:</i>	Nil	
<i>Demonstration Models (Site):</i>	<i>Annexure II</i>	
<i>Livelihood Options:</i>	Nil	
<i>Training Manuals:</i>	Nil	
<i>Processing Units:</i>	Nil	
<i>Species Collection:</i>	Nil	
<i>Species identified:</i>	126 woody plants and herbaceous species	List of trees and herbaceous species in Annexure II
<i>Database/ Images/ GIS Maps:</i>		Map in Annexure II

Note: Photos/ maps should be attached in high quality in compatible formats viz., JPEG, .JPG, .PNG, .SHP, etc. along with a suitable figure legend/ caption.

## 9. Project Linkages (with nearby Institutions/ State Agencies)

S. No.	Institute/ Organization	Type of Linkages	Brief Description
	Nil		

## 10. Additional (publication, recommendations, etc.)

Time Period	Publications (Research Papers, Information Material, Policy drafts, Patents, etc.)
Annual [Year ..... ]	Nil

## 11. Project Concluding Remark

Kindly update the following Progress Parameters for the Reporting Period:

Objectives #	Outputs / Outcomes against Objective	Monitoring Indicators (as specified in Sanction Letter)	Measurable Deliverables (as specified in Sanction Letter)
Objective 1	Data for analysis of		

	species diversity, distributions and community structure of primary forests that occurs in the study area.		
Objective 2	Data for analysis of species diversity, distributions and community structure of secondary vegetation formations that occurs in the study area.		
Objective 3	Data from socio-economic survey of 11 villages selected from the study area.		
Objective 4	Data from 55 households regarding the usage of the bio resources in our proposed study area.		
Objective 5	Procurement of satellite imagery is in process.		

Methodology (in brief) :	<p>For Objective 1 and 2: Plots of 0.1 ha were installed in primary and secondary forest patches. In each plot, we identified, measured for stem diameter and enumerated all woody dicot plants of size 10 cm diameter at breast height (DBH) and above. In addition to this, we also installed three quadrats of size 5m x 5m in each 0.1 ha plot to identify, measure, and enumerate all woody plants of size &lt;10cm DBH but ≥ 1cm DBH.</p> <p>For Objective 3: We have finalized a questionnaire survey which includes both qualitative and quantitative questions regarding institutions and socioeconomic background that governs land use in our study site. The survey was carried out at two levels: at community level and at the individual household level in 11 villages of the study area.</p> <p>For Objective 4: A time constrained scan of 90-minute duration was carried out to identify and locate any important bio resources to ensure all the important plant species in the study area are sampled. Additionally, a questionnaire survey was carried out along with objective 3.</p> <p>For Objective 5: Procurement of ~5.6m IRS-LISS IV data for the study area to obtain a detailed classification that assigns standard (Champion and Seth 1968) vegetation types to the major vegetation formations in the study region.</p>
Major Research Achievements:	
Brief Conclusion - the current progress	<ul style="list-style-type: none"> <li>Installation of 10 vegetation plots in primary and secondary forests was carried out in order to obtain robust results for objective 1,2,4 and 5.</li> </ul>

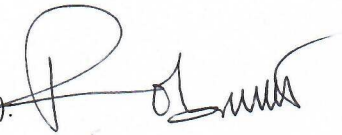
– for the reporting period ONLY (point-wise):	<ul style="list-style-type: none"> <li>• Final compilation of vegetation data for analysis has been completed.</li> <li>• The data obtained from 11 villages during the socio-economic survey needs to be compiled and assessed.</li> </ul>
Progress Achieved (%):	
Remaining work to be done:	<ul style="list-style-type: none"> <li>• Derivation of land cover map of our study area using IRS – LISS IV satellite imagery.</li> <li>• Analysis and reporting of the data obtained from all 5 objectives.</li> </ul>

Submitted to:

Nodal Officer, NMHS-PMU  
National Mission on Himalayan Studies (NMHS)  
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Almora 263643, Uttarakhand  
E-mail: [nmhspmu2016@gmail.com](mailto:nmhspmu2016@gmail.com)

Submitted by:

Project PI (Signature):  
Institution (Seal):  
Dated (dd/mm/yy):

  
26/8/18

**Robert John Chandran**  
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Indian Institute of Science Education and Research, Kolkata  
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Please fill the NMHS Progress Report pro forma as applicable with respect to time and other requirements and return via post/ e-mail. In case of any query, please contact at: [nmhspmu2016@gmail.com](mailto:nmhspmu2016@gmail.com)



Table 1. List of woody dicot and important bioresources sampled from vegetation plots.

COMMON.NAME	BOTANICAL.NAME
Aadu	<i>Prunus persica</i>
Aakhane	<i>Lithocarpus elegans</i>
Amboke	<i>Eugenia kurzii</i>
Angeri	<i>Lyonia ovalifolia</i>
Argali	<i>Edgeworthia gardneri</i>
Arkawlo	<i>Lithocarpus fenestratus</i>
Arupate	<i>Prunus bracteopadus</i>
Asaare	<i>Viburnum erubescens</i>
Autis	<i>Alnus nepalensis</i>
Badari	Identification under progress
Bahar	<i>Ficus elastica</i>
Bajranth	<i>Quercus lamellosa</i>
Bakey timbur	<i>Zanthoxylum acanthopodium</i>
Baklopate	Identification under progress
Bandare	<i>Gynocardia odorata</i>
Bangi	<i>Hovenia dulcis</i>
Banjarey	Identification under progress
Bante	<i>Lithocarpus pachyphyllus</i>
Batrase	<i>Elaeocarpus sikkimensis</i>
Bepari	<i>Ostodes panuculata</i>
Betula	<i>Betula alnoides</i>
Bhaise kowlo	<i>Machilus sp1</i>
Bhakimlo	<i>Rhus chinensis</i>
Bhalayo	<i>Toxicodendron griffithii</i>
Bhalu putta	Identification under progress
Bharad	Identification under progress
Bharua Argeli	<i>Daphne papyracea</i>
Bhori	<i>Parasassafras confertiflorum</i>
Bilauni	<i>Myrsine semiserrata</i>
Bodar	Identification under progress
Chandan	<i>Daphniphyllum himalayense</i>
Chilawney	<i>Schima wallichii</i>
Chinde	<i>Macropanax undulatus</i>
Chir timbur	Identification under progress
Dhabdabe	<i>Garuga pinnata</i>
Dhalney katus	<i>Castanopsis indica</i>
Dhobi kath	Identification under progress
Dhobi pate	Identification under progress
Dhokrey	Identification under progress
Dhupi	<i>Cryptomeria japonica</i>
Dhusurey	Identification under progress

Doom	Identification under progress
Dudhilo	<i>Ficus neriifolia</i>
Ghohri	Identification under progress
Ghuialo	<i>Callicarpa arborea</i>
Ghuras	<i>Rhododendron arboreum</i>
Ghurpis	<i>Leucosceptrum canum</i>
Gidari	Identification under progress
Goghun	<i>Magnolia campbellii</i>
Guava	<i>Psidium guajava</i>
Haade	<i>Terminalia sp1</i>
hajansey	Identification under progress
Hashre	<i>Lithocarpus elegans</i>
Hathi paily	Identification under progress
Jamuna	<i>Syzygium cumini</i>
Jhakri Kowlo	Identification under progress
Jhinguni	<i>Eurya japonica</i>
Kainjaal	<i>Bischofia javanica</i>
Kamley ghaas	Identification under progress
Kapase	<i>Acer campbellii</i>
Kapde	Identification under progress
Kesari	<i>Mahonia napaulensis</i>
Khanakpa	<i>Evodia meliaefolia</i>
Kharaney	<i>Symplocos theifolia</i>
Kholme	<i>Symplocos taurina</i>
Khonyoo	<i>Ficus semicordata</i>
Khusrey	Identification under progress
Kimbu	<i>Morus sp</i>
Koiralo	<i>Bauhinia variegata</i>
Kowla	<i>Machilus sp</i>
Kowlo	<i>Machilus sp2</i>
Kutmero	<i>Litsea monopetala</i>
Laal Pate	Identification under progress
Lali	<i>Aglaia spectabilis</i>
Lampate	<i>Duabanga grandiflora</i>
Lapsi	<i>Choerospondias axillaris</i>
Lathi kath	<i>Glochidion acuminatum</i>
Lote	Identification under progress
Malagiri	<i>Cinnamomum glaucescens</i>
Maleto	<i>Macaranga sp2</i>
Man dhane	<i>Acrocarpus fraxinifolius</i>
Mauwa	<i>Engelhardtia spicata</i>
Maya goghun	Identification under progress
Meher	Identification under progress
Melang	Identification under progress

Michilingma	Identification under progress
Morange	Identification under progress
Mushre Katus	<i>Castanopsis tribuloides</i>
Nampaate	Identification under progress
Nibhara	<i>Ficus hookeriana</i>
Okhar	<i>Juglans regia</i>
Omfi	<i>Pyralia edulis</i>
Owle kowlo	Identification under progress
Pahele	<i>Litsea elongata</i>
Pangi	Identification under progress
Pani sans	<i>Terminalia myriocarpa</i>
Patle katus	<i>Castanopsis hystrix</i>
Patpate	<i>Meliosma simplicifolia</i>
Payu cherry	<i>Prunus cerasoides</i>
Phalamy	<i>Myrsine semiserrata</i>
Phalat	<i>Quercus glauca</i>
Phusray chanp	<i>Magnolia lanuginosa</i>
Piple	<i>Exbucklandia populnea</i>
Pokhar	Identification under progress
Puchre maletto	Identification under progress
Pumsi	<i>Machilus edulis</i>
Putta	<i>Brassaiopsis hispida</i>
R.grandi	<i>Rhododendron grande</i>
Rani chaap	<i>Magnolia doltsopa</i>
Rani kowlo	<i>Machilus dulthiei</i>
Rodingo	Identification under progress
Sakwa	<i>Shorea robusta</i>
Salgham	Identification under progress
Saulay Katus	<i>Castanopsis tribuloides</i>
Saur	<i>Betula sp2</i>
Sikrikey saur	Identification under progress
Sil timmur	<i>Litsea cubeba</i>
Simal	<i>Bombax ceiba</i>
Singkauli	<i>Cinnamomum tamala</i>
Siris	<i>Albizia lebbeck</i>
Sirisha	<i>Albizia sp</i>
Sisifal	<i>Lindera pulcherrima</i>
Tarsing	<i>Beilschmiedia sikkimensis</i>
Teak	<i>Tectona grandis</i>
Tooni	<i>Toona ciliata</i>

Table 2. Summary of data collected from secondary forest sites in 2017-18.

<b>Total no. of plots</b>	<b>52</b>
Total no. of individual woody plants (> 10 cm GBH) measured	4297
Total no. of individual woody plants (> 1 cm GBH) measured	1195
Plant species identified	90
Operational Taxonomic Units	35
Unidentified plant species	9
Matrices covered	Secondary forests, Agricultural lands, Cardamom plantations, Goucharan and Khasmal forests and Reserve forests

Figure 1. Location of sampling sites in primary and secondary forests in the state of Sikkim in the Eastern Himalaya. The landscape of project area is located within latitudes 27.12°N to 27.72°N and longitudes 88.02°E to 88.82°E.

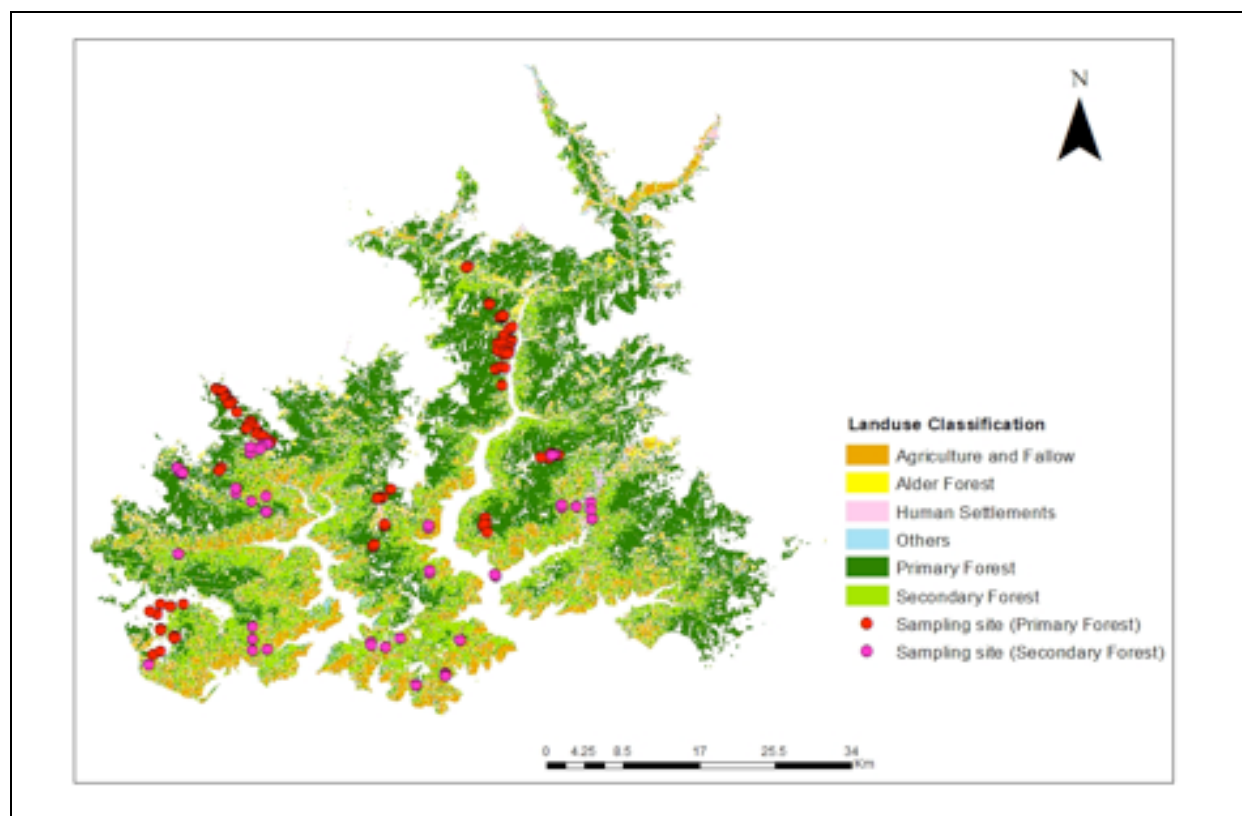


Table 2 – List of villages sampled for collection of socio-economic data

S.no	Date of sampling	Name of Village/Ward	District
1	18/03/18	Tsoka Khyoungtay	West
2	19/03/18	Tsong Dubdi	West
3	21/03/18	Khandu	West
4	22/03/18	Sopakha	West
5	25/03/18	Upper Rayoung	South
6	26/03/18	Upper Yangang	South
7	27/03/18	Pathing	South
8	30/03/18	Ranchang	North
9	30/03/18	Sangtok	North
10	02/04/18	Upper Chisopani	East
11	02/04/18	Upper Tinek	East

## Photographs of socio economic survey

Household Survey –  
Respondent in Khandu villageCommunity Survey – Key informants at Tsopaka  
village