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Letter No. : 140 / 3-5 Haldwani, Date: 22 / 05/2023

To,

Er. Kireet Kumar,
Nodal Officer, NMHS-PMU,
G.B. Pant National Institute of Himalayan
Environment and Sustainable Development
(GBPNIHESD),
Kosi-Katarmal,
Almora 263643, Uttarakhand

**Sub: Annual Progress Report NMSH 1st April 2022 to 31 March 2023
"Community based human-snake conflict mitigation in Kumaon
Himalayas of Uttarakhand, India."**

Respected Sir,

With reference to above mentioned subject, please find enclosed a complete Annual Progress Report (1st April 2022 to 31 March 2023) "Community based human-snake conflict mitigation in Kumaon Himalayas of Uttarakhand, India." as submitted by PI for your kind perusal and needful action.

Thanking You.

Encl: Annual Progress Report

Yours faithfully


(Sandeep Kumar) (IFS),
Director
Haldwani Zoo & safari,
Haldwani

CC: to following for information:

1. Principal Chief Conservator of Forests (HoFF), Uttarakhand, Dehradun
2. Dr. Tejaswini Arvind Patil (IFS), Chief Conservator of Forest/ Project Investigator.


(Sandeep Kumar) (IFS),
Director
Haldwani Zoo & safari,
Haldwani

National Mission on Himalayan Studies (NMHS)

**“Community based human-snake conflict mitigation in Kumaon
Himalayas of Uttarakhand, India.”**

Annual Progress Report

Year 2022-23

(Period from 01.04.2022 To 31.03.2023)

National Mission on Himalayan Studies (NMHS)

NMHS Annual Progress Report – Pro forma

Kindly fill the NMHS Annual Progress Report segregated into following 11 segments, as applicable to the objectives & quantifiable outcomes of your NMHS Project.

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 concerned Institutions/ State Agencies)
10. Knowledge Products – Publication, recommendations, etc.
11. Project Concluding Remarks

Kindly attach a descriptive Annexure/ Files separately for the segments marked for the detailed description required. Please let us know in case of any query at: nmhspmu2016@gmail.com

NMHS Progress Report

(Period from 01 April 2022 to 31 March 2023)

1. Project Information

Project ID:	GBPNI/NMHS- 2020-21/SGP/25	Sanction Date:	12/06/2020
Project Title:	"Community based human-snake conflict mitigation in Kumaon Himalayas of Uttarakhand, India"		
BTG:			
PI and Affiliation (Institution):	Dr. Tejaswini Arvind Patil (IFS) <i>previous designations:</i> Conservator of Forests (South Kumaon); Chief Conservator of Forests (Kumaon), Uttarakhand Forest Department <i>current designation:</i> Director, Forest Training Institute, Haldwani, Uttarakhand Forest Department		
Name & Address of the Co-PI, if any:	1. Dr. Parag Madhukar Dhakate (IFS) <i>previous designations:</i> Director (Haldwani Zoo) & Conservator of Forests (Western Circle), Haldwani; CCF & Special Secretary, Uttarakhand Forest Department <i>current designation:</i> Chief Conservator of Forests (VP & CF), Uttarakhand Forest Department 2. Dr. S. A. Hussain (Retired scientist, WII) <i>previous designation:</i> Scientist G & Head (Department of Landscape Level Planning & Management, Wildlife Institute of India), Dehradun, Uttarakhand Address: Wildlife Institute of India, Post Box # 18, Dehra Dun. 248 001 Uttarakhand, INDIA		
Structured Abstract - detailing the current year progress [Word Limit 250 words]:	Background: Uttarakhand is home to at least 41 snake species, 75% of which are not venomous. Common venomous snakes of the Terai and adjoining hills include: Spectacled Cobra, Russell's Viper and Common Krait. Less common venomous snakes, typically restricted to certain regions/habitats within the landscape include: Monocled Cobra, King Cobra, Banded Krait, Himalayan Pit Viper, Northern White-lipped and Salazar Pit-Vipers. Human-snake conflict (HSC) is the biggest contributor to human-wildlife conflict in South Asia. Unfortunately, India accounts for >50% of global snakebite related deaths. In order to mitigate HSC, we need to address this serious problem at multiple levels. Objectives/ Aim: (1) To assess the diversity /distribution of snakes in the study region; (2) to assess human-snake conflict cases and the status of compensatory measures; (3) to train concerned stakeholders regarding proper identification and rescue of snakes; (4) to create awareness among key stakeholders w.r.t. the		

	<p>role of snakes in the ecosystem.</p> <p>Methodology/Approach: Field surveys were carried out, secondary data from credible snake rescuers collated, and published literature gleaned to build a checklist of snakes found in the study area; available snakebite data from Forest Department records were compiled to assess the magnitude of human-snake conflict; multi-media presentations were carried out and outreach materials distributed among key stakeholders to raise awareness on snakes and snakebite.</p> <p>Results: We have recorded at least 41 snake species to occur in the study area. We completed awareness and rescue training modules for all 40 forest ranges, and in many villages within the study area. We helped built capacity among forest staff to tackle human-snake interactions. Professional snake-rescue equipment and snake identification field guides were dispensed to all range forest offices. For the first time Salazar Pit-Viper was recorded in Uttarakhand, a significant addition to the venomous snakes of the State.</p> <p>Conclusions: The most common venomous snake rescued in the Terai region is <i>Naja naja</i>, followed by <i>Daboia russelii</i>. Official snakebite data available for 6 forest divisions reported 237 snakebite cases (incl. 29 human deaths, 72 human injuries and 136 livestock deaths) between February 2019 and July 2021. As a result, a sum of Rs. 1,18,14,000 was disbursed by the Forest Department as compensation.</p>
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Project Partner Name	Affiliations	Role & Responsibilities
Partner 1	Wildlife Institute of India (WII), Dehradun, Uttarakhand	Technical expertise
Partner 2		
Partner 3		
[Add]		

2. Project Site Details

Project Site:	Kumaon (Terai West, Ramnagar , Terai Central, Terai East, Haldwani, & Nainital forest divisions). <u>Western Circle</u> 1. Terai West FD: 34806.62 Ha. 2. Ramnagar FD: 48736.90 Ha. 3. Terai Central FD: 40496.97 Ha. 4. Terai East FD: 82429.92 Ha. 5. Haldwani FD: 59578.80 Ha. <u>South Circle:</u> 6. Nainital FD: 60114.57 Ha.
IHR States Covered:	Uttarakhand
Long. & Lat.:	Approximately: E: 78°43'0" – 80°09'5" N: 28°43'4" – 29°33'2"
Site Maps* (No.):	Refer to Annexures 10 (Overall study area map) and 11 (Individual forest division maps)
Site Photographs* (No.):	Attached in the various Annexures

*Attach a separate Descriptive Annexure/ Files (.JPG, .TIFF, etc.).

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

PROJECT ACTIVITIES	DESCRIPTION OF WORK UNDERTAKEN (April '22 to March '23)	QUANTIFIABLE OUTPUTS
Project Activity 1	Building a database of snakes found in the study area (species-wise checklist w.r.t. their distribution in the various forest divisions)	<i>Annexure 1/ File attached separately]</i>
Project Activity 2	Mitigating human-snake conflict through timely and professional snake rescue	<i>Annexures 2 & 3/ Files attached separately]</i>
Project Activity 3	Conducting snake-awareness and rescue training programmes for forest department staff and village people	<i>Annexures 4,5,6,7, 12/ Files attached separately]</i>
Project Activity 4	Monitoring and protecting 3 King Cobra nests found near human habitation	<i>Annexure 8/ File attached separately]</i>
Project Activity 5	Gathering and analysing data on snakebite cases and compensation provided by the Forest Department	<i>Annexure 9 /File attached separately]</i>

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:	99,28,920.00	Grant Received Date:	1-GBPNI/NMHS-2020-21/SGP/25 Date 12/06/2020 Rs. 45,27,760.00 2-GBPNI/NMHS-2020-21/SGP/25/127/251 Date 04/02/2022 Rs. 35,12,760.00 3-GBPNI/NMHS-2020-21/SGP/25/127/251/89/295 Date 22/03/2023 Rs. <u>13,70,968.00</u> Rs. 94,11,488.00
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Project Partner(s)	Affiliations/ Institution	Budget Allocated to	Work Done by each Project Partner
Partner 1			[Name of descriptive Annexure/ File attached separately]

Project Staff Information:

S. No.	Name	Qualification	Designation	Fellowship/ Wages paid	Remarks
1.	Shri Jignasu Dolia	M.Sc.	SRF	35,000.00	Salary per month
2.	Yashpal Singh	10 th	Field Assistant	9,631.00	
3.	Bhim Singh Bonal	M.A.	Field Assistant	9,631.00	
4.	Girish Kavidayal	10 th	Field Assistant	9,631.00	
5.	Krishna Kumar	12 th	Field Assistant	9,631.00	
6.	Lalit Bisht	12 th	Field Assistant	9,631.00	

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	Midwest Snake Stix Tong-28 Nos. & etc.	2,74,732.00	07.09.2022		
[Add]	[Add]					

Note: Attach a Descriptive Annexure/ File separately.

6. Expenditure Statement and Utilization Certificate

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

Expenditure Information: Year – 2022-23 (01.04.2022 to 31.03.2023)

S. No.	Financial Position/Budget Head	Funds Sanctioned	Expenditure	% of Total cost
I	Salaries/Manpower cost	1273720.00	1157288.00	
II	Travel	359773.00	370578.00	
III	Expendables & Consumables	114976.00	114950.00	
IV	Contingencies	183282.00	109898.00	
V	Activities & Other Project cost	1709874.00	856144.00	
VI	Institutional Charges	71286.00	98655.00	
VII	Equipments	943974.00	274732.00	
	Total	4656885.00	2982245.00	64.04
	Interest accrued	56536.00		
	Grand Total	4713421.00		

Period	Expenditure Statement*	Utilization Certificate (UC)*
Annual	[Annexure-13]	[Annexure-14]

*Attach the descriptive Annexure/ File in the prescribed NMHS format.

7. Project Beneficiary Groups

Beneficiary Groups [Capacity Building]	Target	Achieved
No. of Beneficiaries with income generation:	NA	NA
No. of stakeholders trained, particularly women:	750	998- this reporting period (incl. 226 women)
No. of capacity building Workshops/ trainings:		22- this reporting period
No. of Awareness & outreach programmes:		22- this reporting period
No. of Research/ Manpower developed:		At least 10 (project field assistants and individual snake-rescuers have become proficient at rescuing snakes properly)

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

Description	Total (Numeric)	Description (Name of descriptive Annexure/ File attached)*
<i>IHR States Covered</i>	1	Uttarakhand
<i>Project Site/ Field Stations Developed:</i> (attach photos) ... (attach maps)	See photos in the various Annexures
<i>No. of Patents filed (Description):</i>	NA	NA
<i>Article/ Review/ Research Paper/ Publication:</i>	None	NA
<i>New Methods/ Modellings Developed (description in 250 words):</i>	NA	NA
<i>No. of Trainings (No. of Beneficiaries):</i>	22 (998)	See Annexures 4, 5, 6 respectively- "Snake-awareness and rescue training programmes", "FD staff_participant details", "Village people_participant details"
<i>Workshops:</i>	22	See Annexure 12 "Snake-awareness and rescue training module"
<i>Demonstration Models (Site):</i> (attach maps about location & photos)	NA
<i>Livelihood Options:</i>	NA	NA
<i>Training Manuals:</i>	1	See Annexure 12
<i>Processing Units:</i> (attach photos)	NA
<i>Species Collection:</i>		NA
<i>Species identified:</i>	41	See Annexure 1
<i>Database (Numeric/Images/GIS Maps, etc.):</i>		See Annexures 10, 11 for study area map

***Attach a separate descriptive Annexure/ File.**

Note: Numeric Database should be provided in .xls format. Photos/Maps should be submitted in high quality (min. 300 dpi res.) compatible formats viz., JPEG, .JPG, .PNG, .SHP, etc. along with suitable figure legend/ caption.

9. Project Linkages (with concerned Institutions/ State Agencies)

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

Note: Attach a separate, descriptive Annexure/ File.

10. Knowledge Products – Publication, recommendations, etc.

Time Period	Publications (Research Papers, Information Material, Policy drafts, Patents, etc.)
Annual [Year 2022-23]	None

Note: Attach a separate, descriptive Annexure/ File.

11. Project Concluding Remarks

Kindly update the following Progress Parameters for the Reporting Period:

Project Objectives	Quantifiable Output against each objective	Progress made against Monitoring Indicators (specified in Sanction Letter)	Remarks
1. Assessment of diversity and occupancy pattern of snakes in general and venomous snakes in particular in the landscape, and compilation of division wise baseline data	Database of venomous and non-venomous snakes (6 Forest Divisions wise and species wise)	Baseline data for 41 snake species found in the study area has been created Checklists for snakes found in 6 forest divisions (Nainital, Ramnagar, Haldwani, Terai West, Terai Central and Terai East) have been completed	Field surveys (incl. transects, vehicle transects at night, snake rescue and roadkill data) were carried out to identify snake diversity. We liaised with trustworthy local snake rescuers and relied on published information to create division-wise and species-wise checklists
2. Assessing status of human-snake conflict division wise and species wise, its mitigation measures currently employed, status of compensatory measures and public opinion regarding this	Inventory of human snake conflict with all the details regarding species involved, mitigation and compensation (06 Forest Divisions) Development of landscape map with hotspots of human-snake conflict	Inventory of human-snake conflict data and compensation data for 6 forest divisions has been obtained for 2019-21 period. Updated data (for 2021-23 period) is still awaited	See Annexure 9 for a summary of the data. Unfortunately, species of snakes responsible for bites is not available from any division
3. Strengthening of infrastructure and Quick Response Team of forest department/field staff for mitigation and handling of human snake conflict cases	Formation of dedicated and trained Quick Response Team (QRT) for snake rescue and mitigation measures (for all 6 Forest Divisions)	We have significantly mitigated human-snake conflict by strengthening of infrastructure (e.g. providing high-quality snake-rescue kits to frontline staff) and by capacity building (i.e. training frontline staff and independent snake-rescuers how to identify and rescue snakes correctly)	Although no separate QRTs were formed in each division for snake rescue per se, existing QRT members (responsible for wildlife rescue in general) were trained in snake identification, ethical and safe handling, and were given professional equipment for the same

Project Objectives	Quantifiable Output against each objective	Progress made against Monitoring Indicators (specified in Sanction Letter)	Remarks
4. Capacity building and education of frontline forest staff regarding snakes, their role in ecology and mitigation activities	Train local community people from high-risk villages in the study area for snake identification and rescue (750 persons from 250 villages; 3 persons from each village)	We completed snake-awareness & rescue training workshops for frontline staff in all 40 ranges within the study area. During this reporting period, we trained >500 village people w.r.t. snakes, their ecological role, snakebite, mitigation measures, and snakebite related first-aid	See Annexures 4–6 for details of awareness programmes and Annexure 12 for content of these training modules
5. Awareness campaigns and workshops in villages to sensitize the local communities towards conservation of snakes	Develop field identification booklet of snakes with its identifying characteristics and description found in the landscape (1 no.) Develop a policy framework for herpetofauna conservation along with large mammalian conservation action plan (1 no.)	We conducted detailed snake-awareness & sensitization programmes in villages to educate rural people about snakes, their role in nature and why it is important to conserve them	Kindly refer to Annexure 8, which describes how we protected 3 king cobra nests (during this reporting period) along with the support of local communities. Successfully conserving the world's longest venomous snake, which often nests close to human habitation, is no small achievement. It indicates that our snake-awareness programmes in villages have made a positive difference

Methodology (in brief):	<ol style="list-style-type: none"> 1. Field surveys and reliable snake-rescue data were used to build a division/species-wise snake checklist for the study area 2. Timely and professional snake rescues were carried out to mitigate human-snake conflict 3. In-depth snake-awareness and rescue training programmes were conducted among key stakeholder groups
Major Research Achievements:	First known record of Salazar Pit Viper (<i>Trimeresurus salazari</i>) in Uttarakhand
Brief Conclusion - the current year progress – during the reporting	<ul style="list-style-type: none"> • Finalized the snake species checklist for each division • Imparted training to frontline forest staff and village

period (point-wise):	people <ul style="list-style-type: none"> • Monitored and protected 3 king cobra nests with local community support
Progress Achieved (%):	85-90 %
Remaining work to be done:	<ul style="list-style-type: none"> • Publication of bilingual snake field-identification booklet • Creation of landscape map with hotspots of human-snake conflict • Official division-wise snakebite and compensation data to be obtained and analysed for 2021-2023 period

Kindly attach the descriptive Annexure/ Files separately for the segments marked for the detailed description required. Please fill the NMHS Progress Report pro forma as applicable with respect to time and other requirements and return *via* post/ e-mail at: nmhspmu2016@gmail.com

Submitted to:

Nodal Officer, NMHS-PMU
National Mission on Himalayan Studies (NMHS)
GBPNIHESD HQs, Kosi-Katarmal,
Almora 263643, Uttarakhand
E-mail: nmhspmu2016@gmail.com

Submitted by:

(Dr. Tejaswini Arvind Patil) (IFS),
Chief Conservator of Forest/
Project Investigator
Dated (dd/mm/yy):

In case of any query, please contact at: nmhspmu2016@gmail.com