Preparation of People's Biodiversity Register

(13 Feb - 02 March 2020)

Progress Report Submitted

To

ENVIS Secretariat

MoEF&CC, 6th Floor, 'Vayu' Wing, Indira Paryavaran Bhawan, Jor Bagh Road, Govt. Of India, New Delhi

Selected Villages

- **Masuriya Village, Kanalichena , Thal, Pithoragarh, Uttarakhand**
- **Sani Badet Village, Kanalichena, Thal, Pithoragarh, Uttarakhand**
- **Katarmal Village, Hawalbagh, Almora, Uttarakhand**

ENVIS Centre on Himalayan Ecology

G.B. Pant National Institute of Himalayan Environment , Kosi-Katarmal, Almora, Uttarakhand

Banner for People's Biodiversity Register

Contents

Background

Concerns emerged following Earth summit in 1992 and subsequent establishment of Convention on Biological Diversity (CBD) in 1993 led to greater emphasis on **i)** conservation of biological diversity, **ii)** the sustainable use of its components, and **iii)** the fair and equitable sharing of benefits arising from the utilization of genetic resources. Being a party to the convention, India enacted Biodiversity Act in 2002 with notification of rules in 2004 in concurrence with the Global obligations and norms. To implement the provisions of Biodiversity Act, a three tier decentralized mechanism i.e. National, State and Village panchayat level was adopted. National Biodiversity Authority (NBA) was established as Competent National Authority (CIA) for granting access to users of their genetic resources via Prior Informed Consent (PIC) and Mutually Agreed terms (MAT). Likewise State Biodiversity Boards (SBBs) were also established in each state and mandated to facilitate the formation of Biodiversity Management Committees (BMCs) at local body level (Village Panchayats) and empowering them by conveying their the role and responsibilities and rendering assistance in execution.

People Biodiversity Register (PBR)

Peoples' Biodiversity Register is a document which contains comprehensive information on locally available bio-resources (plants, animals and micro organisms) their medicinal or any other use or any other traditional knowledge including landscape and demography of a particular area or village. Preparation of "People's Biodiversity Registers (PBR)" having a scientific basis proves to be an activity that is very much appropriate to our biodiversity rich country, and very much timely in the current era of rapid technological developments impacting our precious biodiversity and natural resources.

Objectives

- To get familiarize with biodiversity acts, and three-level management structure for enactment viz. NBA, SBB and BMC
- To get familiarize with various formats of People Biodiversity Register developed by USBB
- To impart various tools of Participatory Rural Appraisal (PRA) for approaching rural communities and villages

- To impart training for identification/authentication of floral and faunal diversity in different ecosystems
- To process and preserve unidentified specimens (Herbarium, Photographic documentation and android applications)
- To lay emphasis on documentation of traditional and indigenous knowledge systems relevant for conservation and sustainable use of biological diversity
- Awareness and capacity building of trainees and villagers regarding Access and Benefit Sharing (ABS) mechanism for equitable sharing of benefits arising from the use of indigenous resources, knowledge, innovation and practices

Importance

The PBR helps in the following:

- Preparing the Biodiversity Management Plans for the conservation of biodiversity
- Designation of Biodiversity Heritage Sites
- Conservation and management of threatened, endemic and high value biodiversity elements
- Preparing the community and indigenous protocols for biodiversity conservation
- Strengthening livelihoods of the local community through conservation and sustainable use
- Strengthening access and benefit sharing (ABS) mechanism between producers and users
- Protection of rights including intellectual property rights (IPR) over biological resources and associated knowledge
- Restrict the activities which cause genetic erosion
- Documentation also supports claims of local ownership of biodiversity & traditional knowledge.
- PBR receives legal protection against misuse of and appropriation by outside agencies and individuals.

Scope

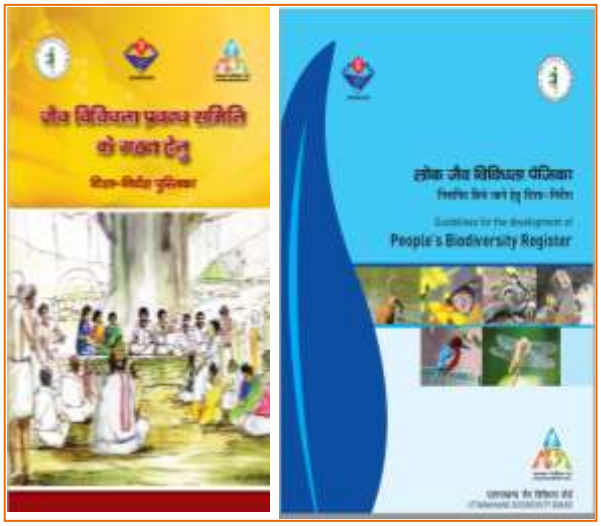
Among the role and responsibilities of BMCs, preparation of PBR is the first and foremost requirement that need to be fulfilled for exercising the remaining others. Considering the number of Village Panchayats (nearly 250,000) in the country, as well as in the targeted Uttrakhand state is concerned (7956 VPs) a large workforce of skilled youth would be required

for the preparation of almost equivalent numbers of PBRs. It has been noted that despite the formation of BMCs in the state the target preparation of PBRs still remains to be achived. Prepared so far. The scenario not only indicates the scarcity and crunch of skilled staff for the task but also opens opportunities for materializing a transition of the economy towards "Green Economy" by training and engaging youth in different environmental sectors, particularly in preparation of PBRs.

Opportunities

The candidates completing the course may be employed gainfully in zoo/wildlife sanctuaries/national parks/biosphere/Botanical gardens/Nurseries/wetland sites/ State Biodiversity Boards/ Wildlife Crime Control Bureau; industries (involved in production/ manufacturing of green products, as ETP operator); tourism (as Nature/Eco-tourist Guides), agriculture (as organic farmers/ green practitioners), education research sectors to advise on how to improve sewage, sanitation, land use services/ tackle pollution), water management, construction related areas, etc. Some of the courses enable the candidates to become self-employed.

Module (Curriculum)



Following the prescribed guidelines for the development of PBR by Uttrakhand Biodiversity Board (UBB) and keeping in mind the various skills required for the course, a fifteen day curriculum was developed. Of the total 31 formats of the PBR, 27 formats were selected for the course considering the applicability in the Himalayan region. Based on the skill required for filling up the selected formats, various sessions comprising onsite deliberations and field/exposure visits were designed.

The theoretical sessions included, various tools of Participatory Rural Appraisal (PRA); Plant diversity of Uttrakhand; Medicinal and Aromatic Plants (MAP) of Uttrakhand; Floriculture: ornamental and avenue plant species, Ethno-botany in traditional and indigenous knowledge system, Herbarium preparation, Different threatened taxa and IUCN criteria; Photographic documentation via Angle cam (an android application); Faunal diversity of Uttrakhand: Mammals, Birds, Butterflies and Pisces; Traditional and other crop varieties; Identification of

various insect groups; Crop pests of Uttrakhand; Key crop pollinators of the Himalayan region; Domesticated biodiversity and associated diseases and others.

Approach and methodology

Before the commencement of the course, a reconnaissance survey was conducted in Pithoragarh and Almora districts for selection of pilot villages and identification of entry points. The villages were selected on the basis of i): presence of biodiversity management committee in the village, ii): monitoring feasibility, iii): socio-economic landscape, iv): existing land use and forest types, and v): likelihood presence of rich traditional knowledge system.

- An inventory of villages was prepared with contact details of village representatives (data procured from Jila Panchayat website (http://ukpanchayat.org/), forest representatives, and members of local NGOs.
- Deliberating on the field datasets, Uttrapath a Muwani based NGO with adequate experience in conducting PRAs and developing PBRs was selected as an entry point partner and subsequently approached for collaboration.
- Important and standardised documents such as Guidelines for the development of PBR formats; guidelines for operationalisation of biodiversity management committee; rule and regulation of biological diversity act (CBD- 2002) and others were downloaded from Uttrakhand Biodiversity Board (UBB) website (http://www.sbb.uk.gov.in). The relevant formats prescribed in Guidelines for the development of PBR were extracted and got printed and distributed to participants for filling up PBRs.
- Based on the field observations and successive deliberations with village representatives at TRH Thal, ENVIS Centre in consensus with Uttarapath NGO two villages of Kanalicheena block District Pithoragarh and one village Katarmal of District Almora, Uttrakhand were finalised for the course.
- A Whatsapp group of selected trainees was also formed for shorting the queries, responses and communicating relevant information among each other.
- To give a wider coverage and outreach of the programme, Divisional Forest Officer (DFO), Almora, Mr. KS Rawat for inaugural function and Head of Environmental Science, GBPAUT, Prof. Uma Melkania for valedictory session were invited as chief guests, along with other forest officials, gram pradhans and media persons.

- Before putting the trainees into the filling of PBR formats various theoretical deliberations pertaining and relevant to the course (Annexure-1) were organised so that trainees could be equipped with the required skills.
- To provide a real time scenario of a rural landscape, selected PBR formats were filled in Masuriya and Sani Baret villages of Kanalicheena Block, District Pithoragrh and Katarmal village of Hawalbagh Block, District Almora. This provided an opportunity to all trainees to implement and execute the acquired theoretical learning in two different scenario of changing socio-economic and demographic landscapes. The approach was intentionally adopted, so that trainees could familiarize themselves with the bottlenecks of building rapport and finding ways to start the comprehensive documentation process of PBR.
- In addition to the above, exposure visits to institute facilities viz. research laboratories, Rural Technology Centre (RTC), Suryakunj, ex-situ conservation site, and other research institutions and Centers viz. Vivekanand Parvatiya Krishi Anushandhan Sansthan (VPKAS) Hawalbagh, were also organized for showing repositories and collections of various plant and animal resources maintained over the years. The visits were aimed to familiarise the participants with scientific nomenclature of the bio- resources and its value in strengthening the PBR documentation.

Advertisement for inviting application PBR certificate Course


हरित कौशल विकास कार्यक्रम (जीएसडीपी)

Green skill development programme on the preparation of people's biodiversity register was advertised by ENVIS centre on Himalayan Ecology, GBPNIHE in the regional news paper/ print media. Of the total forty applications received 33 Male and 7 Female candidates applied for PBR course. Later on the basis of the telephonic interview held by a panel of GBPNIHE. 15 applicants were shortlisted for PBR training course. However, later on only 12 trainees were left done to urgent personal reasons of 3 trainees. In addition of 3 Master trainers (MTs) or the GSDP- PBR course organized by us in 2018 and 2019 were also involved as resource persons.

Table. 1- Training Module of the course

Modules	Content
Unit-1. PBR- Introduction, Concept and Background - 10 hrs	
	Opening – Introduction, Expectations, and Objectives
	Convention of Biological Diversity- Bonn Guidelines Nagoya Protocol Access and Benefit Sharing Mechanism
	• Indian Biological Diversity Act, 2002 • National Biodiversity Authority • State Biodiversity Board (SBB) • Biodiversity Management Committee (BMC)
Role and responsibilities	• Role of State Biodiversity Boards and Biodiversity Management Committees in PBR preparation • Role of the Technical Support Group (TSG)
Guidelines of development	• Introduction to different Annexure and Formats of PBR register • Information's that must be included in PBR • Important points to considered in PBR preparation • Miscellaneous instructions for preparation of PBR • Check list of Peoples Biodiversity Register
Unit-2. Familiarization with PBR Annexure and Formats- 16 hrs	
Training of filling up Annexure Annexure 1-5	I. Details of Biodiversity Management Committee (BMC) of the Panchayat II. List of *Vaids*, *Hakims* and traditional health care (human and livestock) practitioners residing and or using biological resources occurring within the jurisdiction of the village III. List of individuals perceived by the villagers to possess Traditional Knowledge (TK) related to biodiversity in agriculture, fisheries, and forestry IV. Details of schools, colleges, departments, universities, government institutions, non-governmental organization and individuals involved in the preparation of the PBR V. Details of access to biological resources and traditional knowledge granted : Details of the collection fee imposed and details of the benefits derived and the mode of their sharing

Training of filling up Formats Agro-biodiversity (1-10)	• Crop/ Fruit/ Fodder Plants • Weeds • Crop Pest • Market For domesticated animal • Peoplescape • Landscape • Waterscape • Soil type
Domesticated biodiversity (11-17)	• Fruits trees • Medicinal/ Ornamental plants • Timber • Domesticated animals • Culture Fisheries • Markets/Fairs for Domesticated Animals, Medicinal Plants and other products
Wild biodiversity (18-27)	• Trees, Shrubs, Herbs, Tubers, Grasses, Climbers • Wild Plant Species of Importance • Aquatic biodiversity • Wild Aquatic Plant Species of Importance • Wild Plants of Medicinal Importance • Wild relatives of Crops • Ornamental plants • Fumigate / Chewing plants • Timber plants • Wild Animals (Mammals, Birds, Reptiles, Amphibians, Insects, Others)
Urban Biodiversity (28-31)	• Flora • Fauna • Any other information of local importance
	• Biocultural Community Protocols • Biodiversity Heritage Sites
Guide to field study	• **General Profile** Geographical location (district, Block etc), Altitude, latitude & longitude, boundary of study area Connectivity • **Socio-economic profile** Population , Literacy Rate , Drinking Water Facility (Source & Number), Sanitation (Sanitary latrine present or absent) Land holdings, Occupation, Family Income, Health care & dependency on traditional medicine, Daily food habits, Type of housing : Kuccha, Pucca etc., Level of awareness of people towards biodiversity
Unit-3. Natural resources: Survey Methodologies, Tools, IdentificationCharacteristics and Documentation- 48 hrs	

Non-living resources	Land resources and water resources
Living resources-Fauna	**Fauna:** • Invertebrates- Earthworms, insects, spiders, Mollusk etc. • Vertebrates: Fishes, Amphibians, Reptiles, Aves, Mammals, Domesticated animals • Insect Collection and Insectarium preparation • Photography
Living resources-Flora	**Flora:** • Gymnosperms, Angiosperms, herbs,, shrubs, trees, Medicinal plant survey, Wild Edibles, ornamentals, fruits, fodder, etc. • Ritualistic and social use of biodiversity • Collection and Herbarium techniques
	List of Normally Traded commodities(NTC) Biological Resources notified as normally traded commodities
Classification of threatened species IUCN, RDB, IWPA, CITES etc- Criteria, Schedule and Appendices	• Critically endangered • Endangered • Vulnerable • Least Concern • Data Deficient • Threatened species of Plants and animals
Unit-4. Real time experience: Understanding biological diversity - 30 hrs	
	Exposure Visits of Trainees to different institutions
Unit-5. PBR- Process, Methodology and Development of Resource Map - 16 hrs	
	• PRA tools and approaches • Remote Sensing and GIS Application for Natural Resource inventory & management • Development of Village Resource Map
Unit-6. PBR development by trainees in selected villages- 60 hrs	
	• Team building • Visit to identified villages • Identification of entry points • Rapport building • Deliberation on PBR-Objectives and importance • Use of PRA tools - Household interaction, community interactions. focused group discussions

	• Data collection and resource map • Feedback and comments
Unit-7. Review, Analysis and Evaluation & Valedictory - 20 hrs	
	• Data Compilation for PBR development • Preparation of group presentations • Group presentations • Feedback • Certification distribution
Total Hours	**200**

Table. 2- List of Selected Candidates for PBR course

S. No.	Name of Trainee	Gender/ Category	Qualification	Date of birth	Unique ID	Mobile no./ E-mail	Address
1	Babita Bhatt	F/Gen	Masters	10/07/1995	Babi10071995	9027301366/ Bhattshriya03@gmail.com	New indira colony khatyari, Almora
2	Dharmendra Singh	M/Gen	Intermediate	16/10/1999	DHAR15041999	8449707679/ dinubish1987@gmail.com	Vill- Newalgaon, PO- Harara, Almora
3	Pawan Kumar Mathpal	M/Gen	Intermediate	01/07/2000	PAWA01072000	8394943903/ pawankumarmathpal@gmail.com	Vill- Newalgaon, PO- Harara, Almora
4	Darshan Lal	M/SC	Intermediate	15/07/1970	DAR15071970	9410509982/ darshan0117@gmail.com	Rampur ,Bhuwala, Dehradun
5	Manisha Pandey	F/Gen	Masters	14/04/1994	Mani14041994	8650777160/ manishapandey61@gmail.com	CPP 2S ACAR, Lalkaun, Haldwani, Nainital
6	Pushkar Singh Bargali	M/Gen	Intermediate	20/10/1973	PUSH20101973	7409349829/ pushkarbarglai4@mail.com	Vill-Dini Talli Post Paharpani Tehsil Dhari Dist-Nainital
7	Saroj Kumar	M/SC	Intermediate	08/5/2001	SARO08052001	9927096177/ sarojpith2001@	Vill- Limatora Po- Chharandev,

						gmail.com	Pithoragarh
8	Mohan Ram	M/SC	High School	01/01/1980	MOHA01011980	7534979842/ uttarapath_india@rediffmail.com	Village-Bhandari Gaon Rajwar District Pithoragarh
9	Manoj Kumar	M/SC	High School	05/1/1993	MANO05011993	7251919265/ uttarapath_india@gmail.com	Village- Bamdoli 59 District Pithoragarh
10	Rekha Gorkha	F/OBC	Intermediate	18/07/1999	Rekh18071999	7248199830/ rekhagorkha123@gmail.com	Vill-Digramuwani District-Pithoragarh
11	Sanjay Bhandari	M/Gen	Intermediate	10/3/1996	SANJ10031996	9897189606/ ds787380@gmail.com	Near Shiv Mandir Gali Manpur Kotdwar Pauri Garhwal
12	Manoj Mehta	M/Gen	Internal	06/03/1985		8191032769/mehtamanu007@gmail.com	GBPNIHE, Kosi Katarmal, Almora

Selection of Resource Persons

Considering the expertise that would be required for the PBR training course 13 internal and 16 external resource persons were identified and subsequently requested for theoretical and field level deliberations excercise. List of resource persons is attached below (**Table -3**).

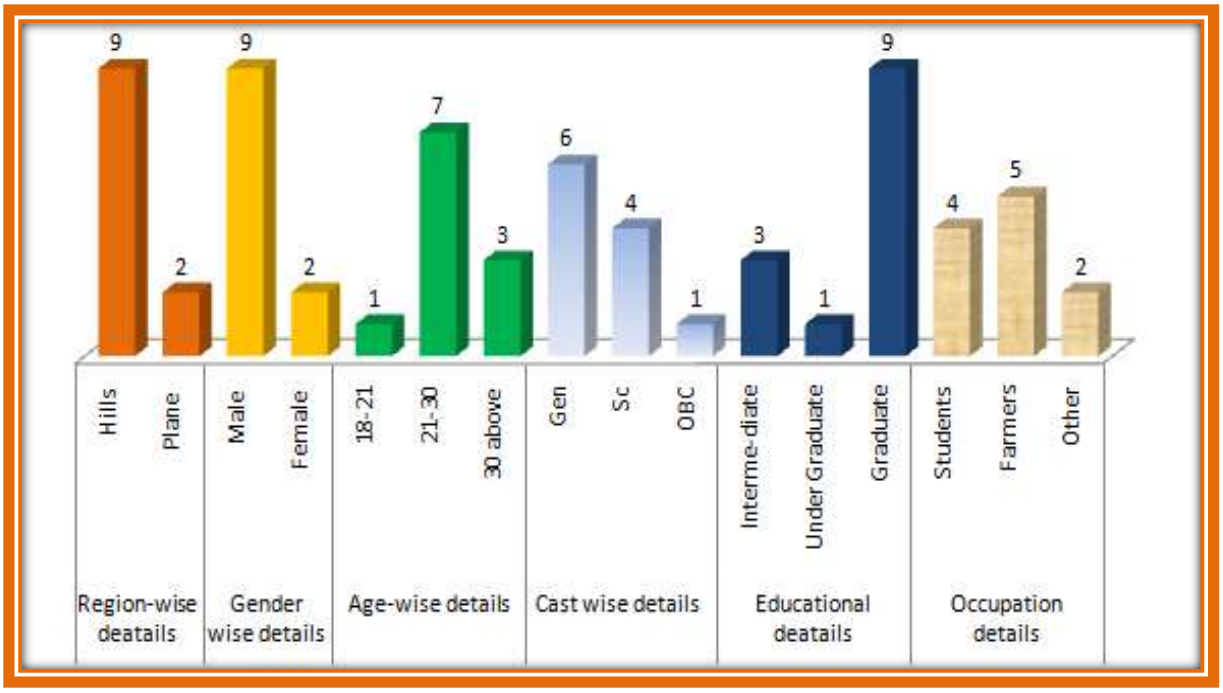
Table. 3- List of Resource Persons

S. No.	Resource Person/ Expert/Instructor Name with Designation	Centre Name	Mobile Number	Email ID
1.	Dr. G.C.S. Negi Scientist- G, Coordinator ENVIS	GBPNIHE, Kosi-Katarmal, Almora	9411105170	negigcs@gmail.com
2.	Dr. K.C Sekar, Scientist-E,	GBPNIHE, Kosi-Katarmal, Almora	9410344484	kcsekar1312@rediffmail.com
3.	Dr. I.D. Bhatt, Scientist-F	GBPNIHE, Kosi-Katarmal, Almora	9411703802	bhatt_id@rediffmail.com
4.	Dr. Satish Chandra Arya, Scientist-D	GBPNIHE, Kosi-Katarmal, Almora	9206032690	scarya@gbphied.nic.in

5.	Dr. K.S. Rawat	Forest Divisional Officer Almora		
6.	Mrs. Lata Harbola	CHIRAG Organization, Mukteshwar, Nainital	8449200079	Lata@chirag.org
7.	Mrs. Hema Bisht	CHIRAG Organization, Mukteshwar, Nainital	9756728806	hemabisht312@gmail.com
8.	Mr. Sunaullah Bhat	SSJ Campus Kumaun University, Almora	9997163702	bhatsunaullahgt@gmail.com
9.	Dr. Sandeep	SSJ Campus Kumaun University, Almora	9897286188	sandeepento@gmail.com
10.	Dr. G.C. Joshi	Retired SIC, CCARS, Tarikhet, Almora	9456189687	joshigcccras@gmail.com
11.	Dr. J.P. Gupta	Scientist Agroforestory ICAR-VPKAS, Hawalbagh, Almora	9410159392	rams34052@gmail.com
12.	Mr. R.P. Yadav	Technician ICAR-VPKAS, Hawalbagh, Almora	9451761932	guptajp80@gmail.com
13.	Mr. Rajandra Singh Hariya	Forest Guard, Thal, Pithorahgarh	9568111042	
14.	Mr. Lalit Mohan	Bageshwar (MT of GSDP course batch- 2018)	9456345961	lalitpathak169@gmail.com
15.	Mr. Naveen Pandey	Flora Expert, Lok Chetna Manch, Ranikhet, Almora	8449434319	pandeynaveen10@gmail.com
16.	Mr. Sunil Singh Mewari	Nainital (MT of GSDP course batch- 2019)	9411196361	Sunilmewari11@gmail.com
17.	Mr. Namit Bhakuni	Takula, Almora (MT of GSDP course batch- 2019)	9458350262	namitbhakuniannu@gmail.com
18.	Mr. Pratap Dhaila	Uttarapath Seva Samiti Muwani, Thal, Pithoragarh	9456729428	pdhaila@gmail.com
19.	Mr. Puran Chandra Bhatt	Uttarapath Seva Samiti Muwani,	7830795292	uttarapath-india@rediffmail.com

		Thal, Pithoragarh		
20.	Mr. Pankaj Singh Karki	Uttarapath Seva Samiti Muwani, Thal, Pithoragarh	9927711538	Karkipankaj93@gmail.com
21.	Mr. Ravi Pathak	Freelance Bird Expert, Haldwani	9410121296	ravipathak@gmail.com
22.	Mr. Himashu Joshi	Waste Mgmt. Expert, Almora	9568837974	himanshujoshiphy@gmail.com
23.	Dr. Mahesha Nand Programme Officer	ENVIS, GBPNIHESD, Almora, Uttarakhand	9627785457	maheshlyf87@gmail.com
24.	Mr. Vipin Chandra Sharma Information Officer	ENVIS, GBPNIHESD, Almora, Uttarakhand	9720335427	deepudun28@gmail.com
25.	Mr. Satish Sinha	ENVIS, GBPNIHESD, Almora, Uttarakhand	9418843510	
26.	Mr. Vijay Singh Bisht	ENVIS, GBPNIHESD, Almora, Uttarakhand	8979001275	vijays290@gmail.com
27.	Dr. Pradeep Singh, Research Scholar	GBPNIHE, Almora, Uttarakhand	7055288444 8126230214	pradeep23mehta@gmail.com

Background of Trainees



Launching of GSDP course

Day 1 (13 February 2020)

Session-1

Inauguration of Peoples Biodiversity Register course

Experts & Chief guest

Mr. K.S Rawat, Divisional Forest Officer Almora, Uttrakhand
Dr. RS Rawal, Director, GBPNIHE, Kosi Katarmal, Almora, Uttarakhand
Dr. G.C.S. Negi, Scientist 'G' & Coordinator, ENVIS, GBPNIHE, Kosi Katarmal, Almora, Uttarakhand
Mr. Rajendra Pant, Chairman, Uttarapath Sewa Samithi, Pithoragarh
Dr. K.C. Sekar Scientist 'E' GBPNIHE, Kosi Katarmal, Almora, Uttarakhand
Dr. I.D. Bhatt, Scientist 'F' GBPNIHE, Kosi Katarmal, Almora, Uttarakhand
Dr. K.M. Rai, Scientist, NBPGR, Bhowali, Nainital, Uttrakhand

Inaugural session of the course

The Programme was started with the lighting of the lamp by Chief Guest of the inaugural function Mr. K.S Rawat, Divisional Forest Officer, Almora, Uttrakhand, Dr. RS Rawal, Director, GBPNIHE, Dr. GCS Negi, Scientist G, and ENVIS Coordinator, GBPNIHE, Mr**.** Rajendra Pant, Chairman, Uttarapath Sewa Samithi, thal, Pithoragarh and other invited dignitaries. Welcoming the guests and participating trainees, Director of the Institute, Dr RS Rawal extensively deliberated upon Biodiversity and its importance for human existence. He said with the increasing shift on biodiversity for medicinal and therapeutic values has led to serious implications not only on resource sustainability but also raised concerns over ownership of resources and its associated traditional/indigenous knowledge systems (IKS). Emphasizing the importance of resource nativity and its associated IKS, he said that systematic documentation of biodiversity at various levels is essential for biodiversity conservation and management as verbal claims have no legitimacy in the contemporary Intellectual Property Rights (IPR) regime. Addressing the participants he said the course is quite relevant in the present context and offers huge opportunities of gainful employment as well when we seriously look into the numbers of districts, block and villages in the country.

Dr. G.C.S. Negi, Scientist G, and ENVIS Coordinator, GBPNIHE deliberated on background of GSDP implemented by ENVIS Secretariat of MoEF&CC, Govt. of India. Reiterating the need of green skill development in environment sector, he highlighted the salient features of the two weeks course on "Preparation of People's Biodiversity Register (PBR)" (Annexure-I). Explaining the process of preparation of PBR in detail he talked about the BMC, which has the first and foremost responsibility to initiate the preparation of PBR within its village jurisdiction. Thereafter he explained about various formats and annexure of PBR particularly relevant to Himalayan landscape. In addition to he also described about the "Bio-cultural Community Protocol" (BCP), which is an important supplementary document of PBR and includes information pertaining to different features of the area such as ecology, culture and spirituality, traditional knowledge and local traditions related to the use of bio-resources. Thereafter, the PBR course trainees were invited to reflect upon their motivation to join this course and its probable linking with green skill development and future job opportunities. A total of 15 trainees from 9 districts of Uttrakhand introduced themselves before the gathering and expressed their intentions and afterward plans.

Mr. Rajendra Pant, Chairman, Uttarapath Sewa Simithi, Thal, Pithoragarh to share his real time experiences of PBR preparation in Uttrakhand. Mr. Pant shared his experiences of preparing PBRs at village and block levels in Uttarakhand. He said that being a legal testimony of the village level biodiversity and associated IKS, preparation of PBR requires multiple approaches in documentation, identification and verification of information, therefore requires a strong and diverse technical support group. Expressing satisfaction over the identified pilot sites, he said the course would provide adequate exposure to participants in knowing the i): changing/different socio-economic settings of the Uttarakhand villages; ii): ways of social/community interaction; and iii): tools participatory rural appraisal and rapport building. Extending assistance of his team for the course, he urged the participants to completely immerse themselves in the process of learning to familiarize themselves in understanding the various parameters of form filling.

Finally summarizing the session, Chief Guest Mr. K.S Rawat, Divisional Forest Officer Almora, Uttarakhand highlighted the urgency of having a skilled force capable of preparing PBRs. Citing rich legacy of our various traditional knowledge system/ practices, cultivation methods and crop varieties and ethno-botany and healing systems he said that the such knowledge systems are traditionally being passed verbally from generations, therefore now vulnerable to theft and misuse by others for commercial gain without benefitting the actual owners. He said PBR could be an important document in strengthening Access and Benefit sharing (ABS) mechanism and ensuring fair and equitable sharing of benefits between actual owners and people involved in commercial utilization of resources. Elaborating further, he said the rich legacy of our time tested systems and practices need to be documented at the earliest before we loose it completely either through our apathy and negligence or through some illegal and unethical means. He said that increasing theft of IPR not only indicates the huge economic and medicinal potential our IKS holds but also reveals the promising and long lasting solutions to the constrained modern systems. Concluding his talks he said being a member secretary of a BMC, his department would be very happy to extend all the possible help for the course. He expressed hopefulness that the trainees in future would explore and avail opportunities with Uttrakhand Biodiversity Board for preparation of PBRs and create employment for themselves and others.

At the end of the inaugural session vote of thanks was proposed by Dr. Mahesh Nand, Programme Officer, ENVIS, GBPNIHE.

Session-2

Lecture-I: Introduction to PBR Course and Training on filling up of Formats of People's Biodiversity Register

Dr. G.C.S. Negi, ENVIS Coordinator

Considering the need of familiarizing the trainees about the course background, its importance, need and scope, Dr GCS Negi, deliberated upon the chronology of events (international and national) that led to the formation of National Biodiversity Authority (NBA), State Biodiversity Boards (SBBs) and subsequent inaction of Biodiversity Conservation Acts (2002) in the country. He stated that it was the Nagoya Protocol that ensured ownership of Biodiversity resources through fair and equitable sharing mechanism of access and benefit sharing (ABS). He said that PBR in this context has become quite significan t not only to document our rich bio-resources and its associated knowledge systems/practices but also to establish ownership at individual (local healers) and community levels. After the historical details, Dr. Negi provided a brief overview on various formats (31) meant for documentation of biodiversity. Thereafter, he conducted a mock exercise of filling the formats by giving several examples of filled PBR formats of the region the earlier PBR courses of ENVIS. He mentioned that although preparation of PBR is primarily a participatory process requiring intensive and extensive consultation with the people, yet individual observations and implementation of scientific methodologies are also very crucial. Continuing further, he said that it is always desirable to explain the objectives and purpose of PBR in the first community level meeting in the presence of all sections of people in the panchayats, members of the BMC, students, knowledgeable citizens and all those interested in the nature conservation, before initiating the process of documentation. He said, comprehensive documentation is needed that could be photographs (including digital images), drawings, audio, and video recordings and other records for filling up PBR formation. He also highlighted that every effort should be made to identify the persons with proven knowledge of local biodiversity; special attention should be given to the elderly persons who can also provide information on the biodiversity which was available in the past but no longer seen at present, however prior consent should be taken in advance. In some cases focused group discussion (FGDs) may be held for the purpose of documentation. He also interpreted how to fill the PBR formats based on agro-biodiversity, domesticated biodiversity, wildlife biodiversity including natural resources, and survey and documentation guide to field study. Thereafter he gave training on filling up of formats of PBR. He stressed upon writing the information given by people without any

modification in the formats. He also cautioned the trainees to take almost care of local tradition and customs while interacting with them to take out desired information.

Lecture-II: Forest vegetation of Uttrakhand/ Plant Collection and Herbarium Techniques and Identification

Dr. K.C. Sekar, Scientist 'E' GBPNIHE

Documentation of forest vegetation knowledge with regard to biodiversity and its uses is an important part of PBR preper. Considering the importance o f forest vegetation and floral diversity in this lecture Dr. Sekar explained about basic key features for identification of Himalayan flora and distribution of flora across the hilly landscape. He also showcased the rich plant diversity of Uttrakhand (aquatic/ terrestrial) / rare & endangered plants) with a variety of photographs of plant life taken from different areas of the Himalayan region. He also focused on habitats, altitudinal range, phenology and threat category of plants found in western Himalaya and explained about some precautions to be taken during field surveys.

Lecture- III: Role of Germplasm Collection and its Applications

Dr. K.M. Rai, Scientist, NBPGR, Bhowali, Nainital, Uttrakhand

Explaining the mandate of the NBPGR centre, which is to collect and preserve the diverse germplasm of edible food crops and their wild relatives, Dr. Rai explained the importance and implications of germplasm conservation and preservation for future technological applications and innovations. He said that PBR formation would require an extensive documentation of crop varieties and their wild relatives which hold location specific characteristics and qualities but rarely known and documented. Deliberating of the rich traditional varieties and their importance he showcased many samples of crop varieties, which are very uncommon and unique in many sense. Elaborating further, he said as agriculture is seeing rapid transformation and gradually turning towards uniformity with adoption of high yielding and pest resistant seeds, it is therefore very important to document and preserve our diverse crop varieties before they become obsolete and extinct from our systems. Concluding his

talks he said PBR could also become an important tool for stock taking and mapping priority conservation area for local specific cultivars, therefore it is very essential to fill the formats in its true spirit.

Lecture- IV: Mountain Farming and Rural Technologies

Dr. I.D. Bhatt, Scientist-E, GBPNIHE, Kosi Katarmal, Almora

To familiarize the trainees with the rich Medicinal and Aromatic Plant (MAP) resources, an on-site deliberation was conducted by Dr. I.D. Bhatt, in the Suryakunj, an ex-situ conservation site of Institute. Interacting with the participant, Dr. Bhatt showcased many MAP species thriving in the site. Explaining profile of individual plant species he explained their vernacular name, English name, common name, scientific name, threat status, nativity, conservation and ecological value, medicinal and commercial importance. He enthused trainees to develop a vision on livelihood for income generation and enhance their proficiency to explore vast opportunities lying in the green sector. Describing about the use of aromatic plants products in health management and their cultivation for income generation, he motivated the trainees to develop a small projects on conservation of high altitude medicinal that may fund by start-up plan of Govt. of India.

Day 2 (14 February 2020)

Session-1

Visit Rural Technology Centre and Agriculture Diversity of Uttarakhand

Experts

Smt. Lata Harbola, and Smt. Hema Bisht, CHIRAG, Mukteshwar, Nainital, Uttarakhand Dr. G.C Joshi, Former SIC, CCRAS, Tarikhet, Almora, Uttrakhand
Dr. J.P Gupta, Scientist, Dr. R.P Yadav, Technician, VPKAS, Almora, Uttarakhand
Dr. D.S. Rawat, Retd. Scientist-G, GBPNIHE Kosi-Katarmal, Almora, Uttarakhand

Visit Rural Technology Centre and Agriculture Diversity of Uttarakhand

In the morning of day-2, trainees visited the Rural Technology Centre (RTC) of the Institute under the guidance of Dr. Harshit Pant, Scientist-C, GBPNIHE, where they learnt about *Environment-friendly Rural Technologies and their role in livelihood enhancement*. Elucidating the success stories of RTC, she briefed about the various technologies and models established and developed by the centre during the successive years of progress towards minimizing the rural drudgeries and optimizing the farmyard income. Later on along with Dr. Satish Arya, and other staff members she also facilitated the visit to various demonstrations on rural technologies i.e. integrated fish farming, nursery and plantation, low cost cooling chambers, off season vegetable cultivation, bamboo based poly houses, mushroom chambers, preparation of bio- briquettes, bio globules, bio composting and vermin composting etc. At the end of session the trainees visited to pine needle based paper making unit, an initiative to utilize the highly inflammable pine leaves for minimizing forest fires and engaging rural mass in income generation form litter collection.

Lecture-I: Training on PRA Techniques

Smt. Lata Harbola, and Smt. Hema Bisht, CHIRAG, Mukteshwar, Nainital, Uttrakhand

After the demonstration of rural technologies, the trainees attended an interaction session on "*Importance of PRA tool and techniques*" by Mrs. Lata Harbola and Smt. Hema Bisht, experts from CHIRAG NGO, Nainital. Addressing the participants, she said that Participatory Rural Appraisal (PRA) is an important set of tools for communication, information collection and knowledge sharing, regardless of whether it is carried out as part of project identification or appraisal. She said PRA requires transparent procedures, and for that reason, a series of open meetings (an initial open meeting, final meeting, and follow up meeting) generally frame the sequence of PRA activities. Elaborating in detail of various PRA tools () and techniques, she said that it is not always necessary to use all tools in conjugation, as project objectives and situational context differ from place to place , therefore personal wisdom plays an important role in selection of appropriate tools and its implementation. After the onscreen deliberation, Mrs Harbola and Smt Hema Bisht organized a mock exercise on implementation of PRA tools, where two groups were formed and enacted the exercise of finding an entry point, organizing a village meet, disclosing

the project objectives, facilitating preparation of village resource map and focused group discussion pertaining to village biodiversity resources.

Lecture- II: Socio-Economic Rural Technologies for Livelihood Generation

Dr. D.S. Rawat, Retd. Scientist-G, GBPNIHE

Although a large number of community organizations are involved in developing rural technologies for bringing about change in their socio-economic landscape, yet these technologies are relatively confined and adopted by only a few. Considering the background of the trainees as well as their likely interaction with the rural communities during the course on preparation of PBR, a session on "*Socio-Economic rural technologies for livelihood generation*" was organized, so that they can adopt few technologies themselves and shared their learning with the potential individuals. The deliberation was given by Dr. D.S. Rawat, Retd. Scientist- G, GBPNIHE. Citing some examples of progressive farmers of the region who gradually incorporated rural technologies and turned their subsistence agriculture into market based farming system, he described the basic aims and relevance of the rural echnologies. Providing details of various training programs held at the Rural Technology centre (RTC) or thse GBPNIHE for diversifying the income sources of the people, he said interested individuals could benefit themselves by attending such programmes and witnessing the results in the established demonstrations. In addition, he also shared his vast experience of community interaction with the rural people. He said familiarity with various tools of Participatory Rural Appraisal (PRA) is must for effective communication and desirable outcomes. He told PRA should aim to incorporate the knowledge and opinions of rural people in the planning and management, however, it demands viable rapport and trust building in the beginning.

Session-2

Visit to Agricultural Diversity Museum of VPKAS

Lecture- III: Pollinators of the Region and Their Role in Agriculture

(Dr. J.P Gupta, Scientist, VPKAS, Almora, Uttrakhand)

To provide an exposure on various crop seeds, especially of high yielding varieties developed by the VPKAS, Uttrakhand, a visit to ICAR museum was organized. The visit was organized so that trainees could differentiate between the traditional crop varieties and others which are currently in practice. Highlighting the achievements of VPKAS for improving the crop yields in the Himalayan region, Dr. J.P Gupta showed number of improved varieties of seeds mainly of rice, wheat, pulses, maize, fruits and vegetables. After the visit to the museum, or special deliberation on *"pollinator of the region and their role in agriculture"* was organized so that trainees could understand and witness the valuable entomofauna of the region, particularly the butterflies of District Almora. The session was followed by interactive demonstration on beekeeping at experimental farms of VPKAS, where Dr. Gupta explained the work division between worker, queen, and drone by exposing bee hives of Italian bee (*Apis mellifera*) and Indian bee (*Apis cerana*). Explaining the cost benefit analysis and elaborating the feasibility of bee keeping in the region, he said trainees could also consider apiculture as a viable mean of farmyard income diversification.

Lecture- IV: Mountain Farming and Hill Agriculture

Mr. R.P Yadav, Technician, VPKAS, Almora, Uttrakhand

The session on mountain farming and hill agriculture was planed so that the trainees could understand about the mountain soil types, suitable crop varieties as per the soil types and various climatic events impacting the crop yield. Showing some experimental plots where some crops were in bloom, Dr. RP Yadav talked about the limitations of mountain farming pertaining to soil nutrients and

vulnerabilities to unpredictable and disastrous climatic events. However, he said despite such constraints and vulnerabilities, hill agriculture could still holds the capacity to provide a sustainable living. Deliberating on "*Agri-diversity of Uttrakhand and employment generation through various agricultural activities*" he elaborated how one could practice sustainable agriculture with the available support from government schemes and the agriculture institute. Highlighting the VPKAS role in distributing goods and improved varieties of seeds for higher income generation, he shared some basic identification key of various crop varieties of (PUSA Basmati 1509, PANT Sankar Dhan 3), Pulses (V.L. Gahet 15), Kala Bhatt (V.L. 65), Vegetables such as Radish (Dunagiri Local), Tomato (V.L. Tamatat 1, 2, 4, Maneesha, Naveen, Baadshah, Rakshita), Onion (V.L. 65, PUSA Red, NASIK Red) etc.

Lecture-V: Flora of Uttrakhand and its Ethno-botanical importance

(Dr. G.C Joshi, Former SIC, CCRAS, Tarikhet, Almora, Uttrakhand)

Documentation of Traditional Knowledge (TK) is integral part of PBR, as it contains valuable implications for ABS and intellectual property rights (IPR) issues. To deliberate on the importance of TK a lecture was delivered on "*Flora of Uttarakhand and its traditional ethnobotanical importance*" by Dr. G.C. Joshi In his presentation with the help of several slides, he emphasized on various common plants used in traditional health care systems in the Himalayan region. Giving examples of many formulations where plant as a whole or part of the plant, solely or in combination with other plants or mixed with some other material are being used in treatment of various ailments. Sensitizing the participants about the efficacy of these herbal formations, he explained although the recovery time of these herbal concoctions is relatively higher than the prevalent allopathic drugs yet these formulations are rather safe and with no or minimal side effects.

In addition to rich ayurvedic healing system which is extensively based on medicinal plants and its derivatives, he also dwelt upon various other alternative traditional systems of health care viz. Fire therapy, Hot therapy, Aromatherapy, Acupressure, and Acupuncture, which were prevailing in Uttarakhand till the of practices of contemporary health care system invaded in our lives. In his Concluding remarks he said, the gradual but steady shift to alternative health care systems and subsequent research endevours for search of medicinally active compounds in plants clearly indicating wide scope of commercial implications therefore, it becomes quite imperative to document all we have before we would have nothing either to offer or to loose.

Day 2 (15 February 2020)

Session-1

Fauna Diversity of Uttrakhand

Experts

Dr. Sandeep, Assistant Professor, Zoology department, SSJ Campus Kumaun University, Almora, Uttarakhand
Dr. Ravindra Joshi, freelance, Dharanaula, Almora, Uttarakhand
Mr. Ravi Pathak, Ph. D. Scholar, GBPNIHE, Almora, Uttarakhand

Lecture- I: Insects of Uttrakhand and their Identification

Dr. Sandeep, Assistant Professor, Zoology department, S.S.J. Campus, Almora, Uttrakhand

Insects make a very important component of an agro-ecosystem and its overall biodiversity pool. They contribute immensely to ecosystem functioning and benefit mankind with provisioning of many tangible and intangible goods and services such as crop pollination, nutrient mineralization in soil and honey, lac, silk etc. Considering the diversity of insects and their limitations in identifying them a lecture-cum-hands on training was delivered by Dr. Sandeep, Assistant Professor, Zoology department, Almora, through an interactive deliberation on "Insects of Uttrakhand and their Identification". Elaborating on different insect orders, Dr. Sandeep shared some basic identifying features/keys of different insect orders, such as Coleoptera, Hemiptera, Hymnoptera, Orthoptera, Odonates, Lepidoptera and many others. Deliberating further on insect taxonomy, he also revealed about their preferred habitats, role in ecosystem, economic potential, medicinal and scientific applications in various sectors. Summarizing his talks he elucidated the role of insects in different livelihood options including apiculture, sericulture, lac culture and agriculture.

Lecture- II: Butterflies of Uttrakhand

Dr. Ravindra Joshi, freelance, Dharanaula, Almora

Among all insects, butterflies are perhaps the most conspicuous and beautiful, therefore, appreciated and loved by all. Considering everyone's childhood adventures with these beautiful winged insects, a lecture on butterflies of Uttrakhand was planned to further infuse interest and make an entry point to develop appreciation for other lesser known and overlooked insect groups. Deliberating through an interactive presentation on "Butterflies of Uttrakhand" Dr. Ravindra Joshi, a freelance wildlife expert, Almora elaborated extensively on many aspects of butterflies. Beginning his talk, Dr. Joshi enumerated some basic keys of differentiating between a moth and butterfly as they both

have remarkable similarities and belong to common order Lepidoptera. Continuing further he showed life cycle of a butterfly and different stages of a butterfly development from tiny little egg to voracious caterpillar then to vulnerable and sessile hanging pupa to newly emerged butterfly. Explaining key characteristics of different butterfly families, he then dwelt upon various aspects of butterfly behavior, ecology, diapause, migration, and their survival tactics. Showing examples of photographic evidences, he then explained about sexual dimorphism, mimicry, change in coloration, seasonal forms, etc. Interacting with participants Dr. Joshi turned the discussion towards plant-insect relationship, and said that the role of butterfly in pollination is rather limited and termed as psycho-phily; however, butterflies are critically dependent on various plant species for survival for oviposition and larvae development. He said collection of data for PBR therefore, should not be based on unilateral observations rather it should be based on possible interactions between different species.

Lecture- III: Large mammals of Indian Himalayan Region

Dr. Ravindra Joshi, freelance, Dharanaula, Almora

Considering the requirements of the PBR preparation, an interactive deliberation was aimed for familiarizing the participants with the unique diversity of large mammals of the Indian Himalayan Region (IHR). Interacting participants with photographs, info-graphics, Dr. Joshi deliberated upon representative mammalian fauna of the region, viz. barking deer, spotted deer, samber deer, goral, Himalayan serow, marten, civet, black bear, leopard, tiger, tahr, bharal and snow leopard. Talking in detail of each mammalian species he explained about their food preference, distribution range, territorial limits, behavioural traits, conservation and aesthetic values. Focusing on prey-predator relationships, Dr. Joshi said, primarily it is the food base availability which governs the distribution as well abundance of the species, however, there are other factors which control species number in check, like inter-species and intra species conflicts for mating rights as well as food. Continuing the talk, he then deliberated on major survey methodologies (transect walk, encounter rates looking for direct and indirect evidences, etc.) Including camera trapping methods (night vision cameras, thermal imaging, mstripe) where animal activity is recorded passively with highly sensitive sensors and trigger mechanisms. He

said these methods has its own limitations and effective only to detect cryptic terrestrial species, but less accurate in case of arboreal, flying and species live underground most of the time. Concluding his talks he revealed about various conservation approaches (Landscape, Ecosystem and Species), conservation methods (in-situ and ex-situ), global (CITES) and national legislation for wildlife protection (IWPA,1972 -amended 2003-Schedule and appendices), IUCN threat status, so that the participants could find themselves prepared for PBR and other biodiversity related assessments and planning work.

Session-2

Lecture- IV: Human- Wildlife conflict

Dr. Ravindra Joshi, freelance, Dharanaula, Almora

At the second half of the day, Dr. Ravindra Joshi, deliberated on the human- wildlife conflict. In his lecture he described types of conflict including Interpersonal conflict; Intrapersonal conflict; intergroup conflict and Intra group conflict**.** He said the human -wildlife conflicts are not usual phenomena as considered nowadays, but yes the frequency of being into conflict with each other has increased many times. He said some species are in direct conflict (monkeys, wild boars, porcupines), whereas others are often by incidence or by compulsion (leopard, tiger, bear, snakes and others). Some cause property loss due to continuous infringement of human settlements, whereas some cost loss of lives (livestock and human). He said extermination wildlife in conflict is a theoretical hyperbole often circulated in press and policy but practically impossible to practice. He said the frequency of human-wildlife conflict could be minimised with proper understanding of human-wildlife conflict dynamics and careful observations of wildlife behaviour. He said species in conflict in Himalaya differs regionally as well as attitudinally; therefore planning should be in accordance with distribution regime and behaviour studies. He said instead of blaming wildlife for the conflict we need to introspect and reorient our habits, practices and living norms, so that conflicts can be avoided. He said conflict frequencies usually increase with the increasing encroachment into wild areas and change in land use. It is therefore recommended to follow the principle of co-existence and live in harmony with species than to create conflicting environments by poking unnecessarily.

Lecture-V: Basic ornithology and bird identification

Mr. Ravi Pathak, Ph. D. Scholar, GBPNIHE, Almora

The session was taken up by Mr. Ravi Pathak. He delivered a lecture on Birds and their identification keys. He through his presentation explained to the participants how observing various key features in birds like bird plumage, feathers, length of tail, etc. can help them identify a bird with more ease. He also described how the birds are named, based on various identification keys. Mr. Pathak told the trainees that all the common name/ English name of the birds are more or less derived typically by the colour, shape of beak, feet, and body parts, their habits and habitats. Mr. Pathak also helped the participants in identifying the birds that they have captured during the training programme, which further helped in the compilation of the bird database for the PBR of all the surveyed villages during the training. He suggested and recommended various field guides and reference books on birds that might be of use for the participants for identifying birds, which will further help them in preparing PBR.

Day- 4 (16 February 2020)

Session-1

Departure from HQ to TRH Thal, Pithoragarh, Uttarakhand

Session-2

Interaction with Uttarapath Sewa Sastha, Thal, Pithoragarh

On day four of course trainees departed from Institute HQ to TRH Thal, Pithoragarh, where logistics and accommodation for the participants were arranged by the ENVIS staff. In addition, some pilot villages were also identified by the ENVIS staff for the course implementation. On reaching Thal after a tedious journey of nearly 200Km across the hilly terrain, the team first arranged their belongings in their rooms and thereafter gathered and had an interaction with Uttarapath Sewa Sastha (USS), Thal, Pithoragarh. Welcoming the participant's once again ENVIS Coordinator, Dr. GCS Negi invited Mr. Rajendra Pant, Chairman, USS for his valuable views on approaching the identified pilot villages. Thanking Dr. Negi, Mr. Pant suggested that it is impractical to reach every pilots within the stipulated time of the GSDP course, therefore recommended to conduct the exercise in two villages to provide different scenarios to the participants. He said a meeting with village heads of identified pilots and forest guard, Thal is scheduled for the next day, therefore it would be better to have deliberation and consensus for finalizing the pilots. Agreeing with the suggestion the meeting was called off for the day.

Day- 5 (17 February 2020)

Session-1

Interaction with the village heads

Interaction with the village heads for delineating the future course of action

The meeting with village heads began with the welcome address by the ENVIS Coordinator, DR GCS Negi. Highlighting the relevance of the course for developing village level biodiversity management plans and safeguarding community rights over resource ownership and traditional use practices, Dr. Negi extensively deliberated on historical context, role and responsibilities of NBA, UBB and BMCs towards the preparation of PBR. He then revealed about the purpose and objectives of the course and asked the members for willingness and consent. The interaction witnessed some heated arguments regarding the BMC formation in their village as the newly elected representatives were not aware about the statuary status of the BMC and its members. However, with the subsequent convincing from the secretary of the BMCs, Mr. Rajandra Singh Harariya, Forest Guard, the dissent disappeared soon. The meeting saw willingness from all the village heads (Sani baret, Sener, Hipa, Berat, Jubber, Masuriya and Udiyari), but except few most of the village heads expressed their inability in facilitating the PBR exercise during the current time schedule due to some prior engagements elsewhere. The meeting left us with few choices, so finalizing the pilot villages became quite easy and less debatable.

Session-2

Visit to pilots and USS

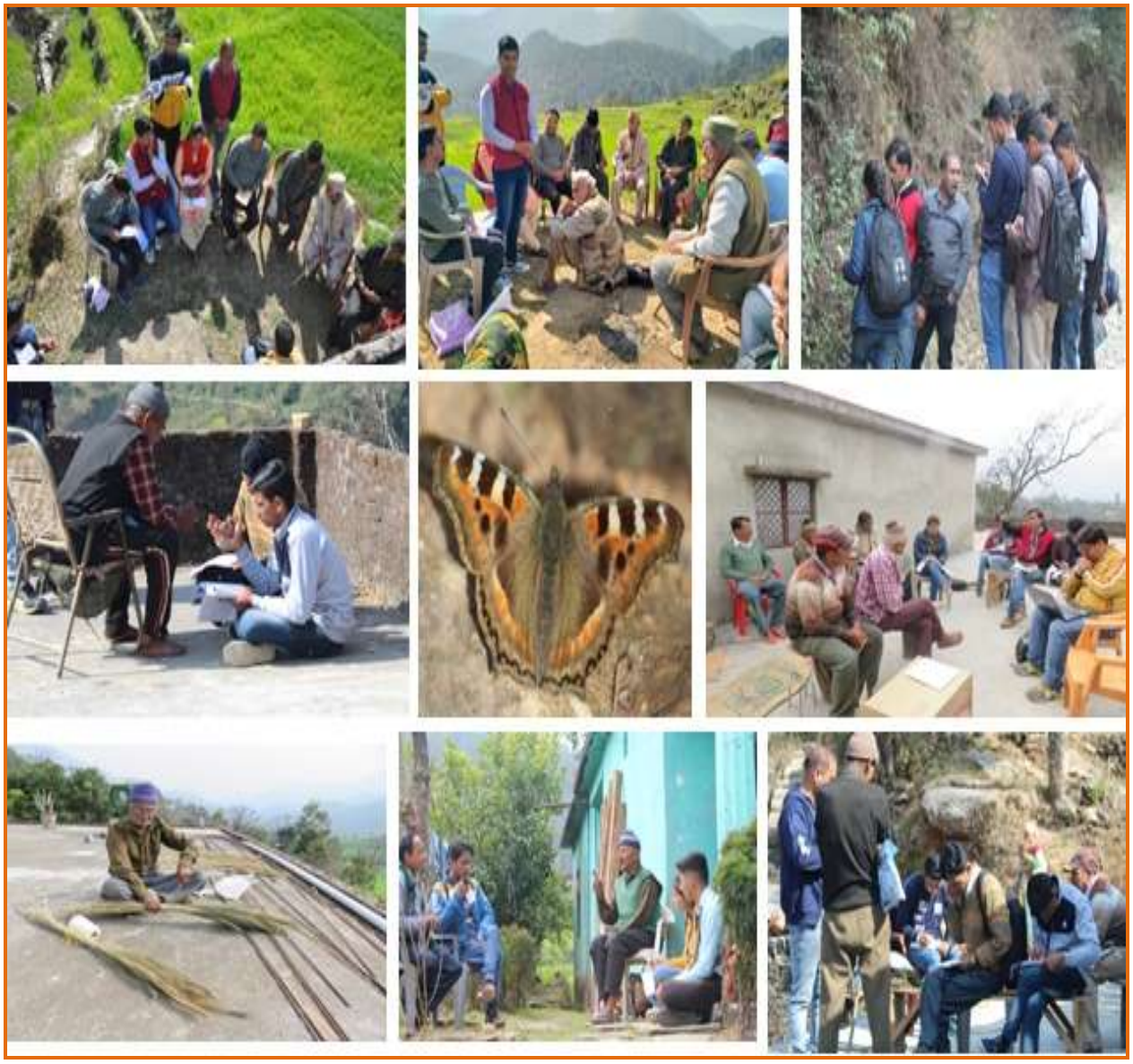
In the post lunch session, two teams were formed. One team led by ENVIS Coordinator to survey the pilots along the Gori catchment, whereas the second team visited to the USS office at Muwani, for learning their approach and methodologies of preparing PBRs. The first team finalized two villages Masuriya and Sani Baret in the Gori Catchement for the course implementation, and later joined the second team at USS Muwani, Thal.

The second team was welcomed by Dr. Pratap Dhaila, who first explained about the vision and mission of the USS. Revealing further, he said USS is working closely with rural communities through Women Cooperatives/ SHGs, Farmers' Clubs and Joint Liability Groups, and work basically in PBR development, Ringal Products, NTFP Development Programme, Dairy Development and Spice Production. After the initial briefing the USS team involved/experienced in PBR development, interacted with the participants and conducted a mock exercise for preparation of a PBR.. During the exercise the team got familiar with different annexures and form filling on various elements of biodiversity in different prescribed formats of PBR. Finally the team returned to TRH and started preparation for next day.

Day 6-9 (19- 22 February 2020)

Session-1 & 2

Preparation of PBR in village Masuriya



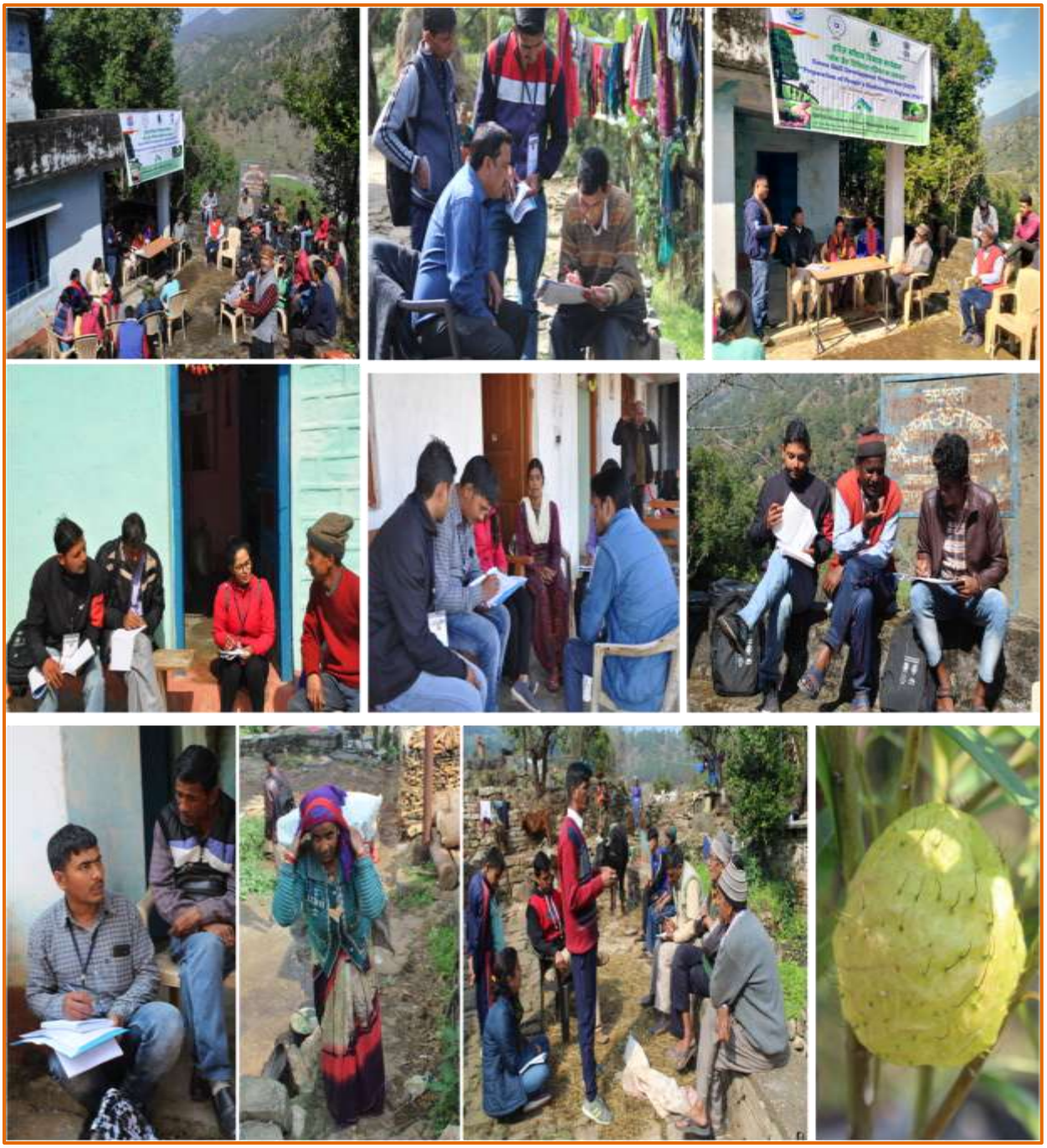
Preparation of PBR in village Masuriya of Kanalichena block, Pithoragarh

Based on the previous day consultation preparation of PBR was first initiated in village Masuriya, which was relatively far from the TRH Thal. Based on the village head recommendations the team reached around 11:00 AM village Masuriya, as most of the villagers would have finished their daily household chores by that time. The village head of village Masuriya received the team at the road head and accompanied to the village community hall where several villagers were waiting for us. After formal address, the village head introduced us and requested to start the programme. Introducing himself Dr. GCS Negi, ENVIS Coordinator first revealed about the GBPNIHE, then GSDP of MoEF&CC, GOI and thereafter the course on preparation of PBR. Highlighting the historical back ground CBD, NBA, Biodiversity Act, Dr. Negi emphasized the importance of biodiversity and the need of its documentation at village level to ensure and safeguard resource ownership and its use against intellectual copyright issues. Explaining the purpose and objectives of the course, he said the exercise will provide you all an opportunity to contribute in the preparation of your village PBR so that nothing remains undocumented and future generations could be benefitted and proud of their great legacy. Continuing the deliberation, Dr. Ravindra Joshi, Freelance wildlife expert, Almora revealed that the team is here to learn the process of preparing a PBR so that in future they can employ themselves in preparation of PBRs of other villages as well. Clarifying the queries and doubts of the people he sought their valuable time and cooperation in form filling of the PBR formats, when the team members individually visit their houses. Knowing the purpose of the exercise, the villagers unanimously gave their consent for the course. Soon after the community interaction, the two teams, each including one institutional research scholar and two resource persons (flora/fauna) dispersed and started the form filling with village members. The teams for next three days from 20-22 Feb 2020, attempted to visit each and every household of the village Masuriya, and collected data on various formats of PBR, especially related to crops **(Annexure-II)**, flora **(Annexure-III)**, bird **(Annexure-IV)**, insects (butterfly) **(Annexure-V)**, avifauna and mammal **(Annexure-VI)**. Besides the designated resource persons, the course was facilitated and guided by a dedicated team of USS staff and five Master trainers of previously held two GSDP courses on preparation of PBR.

Day- 10- 12 (23- 25 February 2020)

Session-1 & 2

Preparation of PBR in village Sani Badet



Preparation of PBR in village Sani Baret Thal, Pithoragarh

For PBR exercise in village Sanibaret the team adopted similar adopted as did in village Masuriya. The team was accompanied by village head of village Sani baret to a nearby community hall, where village members were already gathered and waiting for us. After the initial welcome, the village head of Sanibaret introduced us and requested to reveal the purpose of our visit. Thanking the village head of Sanibaret, Dr. Ravindra Joshi, Freelance Wildlife expert, Almora, revealed the same what Dr. GCS Negi, ENVIS Coordinator deliberated in village Masuriya. Adding further, he deliberated extensively on role and responsibilities of BMC, particularly regarding PBR formation and its importance and future implications of village socio-economics. Clarifying the terms of PBR in detail, he said the preparation of PBR is itself is quite democratic as it should be developed by the people, it would be a document of the people and it would for the benefit of the people. Aligning his tune with the people concerns and aspirations, he said the PBR document would not only provide legitimacy to ownership of village biodiversity resources but also facilitate the fair and equitable sharing of benefits arising from its commercial utilization through ABS mechanism. Adding further he said, PBR also provide an assessment to the qualitative and qualitative stock of the valuable biodiversity resources and thereby, also be helpful in developing conservation and management plans for the valuable and unique elements of the biodiversity of the village. He said PBR is an empowering tool and exclusive property of village itself which provide legal protection to its biodiversity resources and its associated knowledge systems/practices. He said any use of village biodiversity resources meant for commercial or any other purposes (except for the individual use or practiced in village TKS) without the prior and due consent of village BMC would be considered illegitimate. After addressing the queries and questions of the people, Dr. Joshi requested the gathering to assist the team in preparation of the village PBR by sharing the valuable information while the trainees will be visiting your houses for the next three days.

Thereafter, like village Masuriya, the team dispersed in two teams and started the form filling exercise by in small groups and PBR in village and for next two days conducted household surveys and collected data on prescribed PBR formats.

Day 12 (25 Februray 2020)

Session-1 & 2

Ichthyofauna of lotic waters in Kumaun

Dr. Ravindra Joshi, freelance, Dharanaula, Almora

On the last day of village survey in Sani-baret an on-site deliberation on "Ichthyofauna of lotic waters in Kumaun" was aimed to familiarize the participants with aquatic biodiversity of the region. Continuing the talk, Dr. Ravindra Joshi organized /conducted an exposure visit along the Gori river bank in Munsiyari. Deliberating upon river types rain-fed and glacial-fed) he said the flow (velocity and discharge), physico-chemical parameters (temperature. BOD, DO, turbidity etc.), surrounding geology, gradient not only contributes to river morphology but also shapes the biodiversity composition. He said, water temperature and velocity are two important factors in limiting the species richness and distribution in a fresh water lotic system. He said, therefore, contrary to rain-fed fish fauna, fish species in glacial fed stream thriving mainly in higher reaches, not above 3000 masl or beyond their thermal tolerance limits, are evolved with adhesive apparatus to withstand against the high velocity of water current. He said species of rainfed as well as glacial fed streams, particularly flowing in valley and low lying areas are relatively similar. Similarly small sub-streams of main streams with less flow and water discharge are differing in composition and size. He said such sub-streams along with the riparian zone with wetland like conditions are very important for new recruitments as fishes generally prefer these shallow water conditions for breeding and egg laying. Emphasizing the role of riparian zone in shaping river ecology and health, he said it is perhaps the most overlooked ecosystem or we may say an ecotone (between terrestrial land mass and river body) which act as barrier by creating filtration pathways for excessive soil discharge and other terrestrial contaminants before reaching the main river body. The zone also supports diverse biodiversity elements, such as reeds, zooplanktons, earthworms, crabs, odonates, amphibians, reptiles, water dependent birds and others to support/strengthen the food web across the systems. Describing the survey methodologies for fish and other fauna, he shared some of commonly occurring fish species thriving in Kumaun waters, such as *Tor putitora* (Mahasheer), *Tor tor (*Tor barb), *Puntius chelynoidess*, *P. ticto*, *Garra gotyla*, *G. lamta*, *Crossichelius latius*, *Barilius bendelisis*, *B. vagra*, *B. barna, Schizothorax sinuatus*, *S. richardosonni*, *S. plagiostomus*, *Botia almorahe*, *Noemacheilus beavani*, *N. rupicola*, *Bagarius* sp., *Labeo dero*, *L. dyochelius*, *Mastacembelus armatus* etc.) and few species such as *Glyptothorax pectinopterus*, *Pseudechensis sulcata*, confined to high reaches of glacial fed-streams. Concluding his talks, he said although most of

the species are of low commercial value due to smaller size yet few species like mahasheer and trout species are relished by the people very much, thus hold the potential up scaling an enterprise and good economic returns.

Day- 13 (26 February 2020)

Session- 1

Culture Visit of Historical Places

Excursion visit to Birthi waterfall and nearby historical and cultural places of Munsiyari

An excursion to Birthi water fall wall and nearby historical and cultural places of Munsiyari was organized for the participants on the penultimate day of participant's planned return to Institute HQ at Almora. The tour was aimed to provide an overview of the landscape and to provide an on-site exposure to have an understanding of scientific nomenclature of various biodiversity elements. During the excursion the resource person helped the participants in writing the scientific names of various floral and faunal elements encountered in their observations. The participants find the exercise enjoyable and helpful in correlating with vernacular names which they have recorded during the village surveys.

On their return from the picturesque surrounding of Birthi waterfall, the team visited local temples and market and recorded some historical and archeological notes along with purchasing of some souvenirs and goods for themselves and their families.

Session- 2

Cleanliness drive in TRH and surrounding premises

Aligning the training with Swach Bharat mission of GOI, a cleanliness drive was organized in the second half of the session around the premises of the TRH, Thal. Briefing the participant, Dr. Maheshanand Kuniyal, ENVIS, Programme Officer explained about the mission and its importance in maintaining a healthy lifestyle. He then deliberated upon waste types, the need of proper disposal and distributed waste collecting gloves and bags. Initiating the cleanliness drive, he urged the participants to collect all kinds of non-biodegradable waste (plastic wrappers, bottles, polythene bags, sachets, etc.) scattered within and TRH surrounding premises for proper disposal.

Day-14 (27-02-2020)

Session- 1&2

Departure from TRH Thal, Pithoragarh, to Institute HQ, Almora

On day 14th of the course, the team moved early soon after having their breakfast around 9:00 AM. During the their travel the team also visited the famous cave temple of Patabhuvneshwar at Guptari, Gangolihaat which is situated nearly 35 Km off route from the main Highway connecting Thal and Almora. The team moved/diverted from Raiagar, a small town located at the tri-junction of three connecting roads namely, Almora, Gangolihaat and Munsiyari. It took nearly four hours to visit the temple and returned to the main highway. The team reached late in the evening at institute HQ and after having their refreshment and dinner started preparation for the next day.

Day- 15- 18 (28- 31 February 2020)

Session-1 &2

Preparation of PBR in Katarmal Village

Preparation of PBR in village Katarmal, Almora

On day 15th, the team visited village Katarmal, which shares its boundary with the GB Pant institute and undergoing through noticeable socio-economic and demographic change, perhaps due to its close proximity with the district headquarter Almora and its declaration as a tourist destination by Govt of Uttarakhand. Realizing this change, exercise for preparation of PBR was intentionally planned so that participants could differentiate the scenarios of different village settings and timely document the biodiversity related knowledge systems/practices before it gets vanished. The community meeting was arranged in advance by Dr. GCS Negi, ENVIS Coordinator on his return from field deliberations.

The meeting was held in the backdrop of famous Sun temple of Katarmal at an open community ground situated at the entrance of the village gate. Starting the interaction, Dr GCS Negi thanked the village head for arranging the meet at short notice and extensively deliberated on PBR background, need, importance, historical context, and global conventions, NBA, UBB and BMC. Explaining the purpose and objective of the GSDP course on preparation of PBR, he said it would be a great service and wonderful legacy to pass on to our future generations, if we could timely document our traditional wisdom whose remnants are still visible and present in the village. He said the wisdom and knowledge lying with the elderly people may look obsolete now but we still can't say for sure when a certain piece of information or a unique biodiversity element could change the fortune of a village. Urging the community members to contribute wholeheartedly by sparing their time in the process of form filling of the PBR, he said that the present exercise offer us a chance to document our village bio-resource in a very limited time frame, which otherwise could be very resource intensive. Addressing the queries and questions of the people, the team finally started the exercise of PBR preparation following the approach adopted in previous two villages of district Pithoragarh.

Day-19 (1/03/2020)- Compilation of data and preparation of presentations for the valedictory

Although the team compiled data on day to day basis on return from the field, yet day 19th of the course was fully devoted to compilation, synthesis and preparation of village-wise brief preparations for the valedictory. Considering the village numbers the trainees participants were divided into three teams to present the outputs of each targeted pilot village. To facilitate the preparation, a template developed by the ENVIS team was provided to the trainees, so that a symmetry and comparative assessment could be done among villages.

Deliberation on waste management

Er. Himanshu Joshi (B.Tec. Civil)

As a mandatory discourse for all the GSDP courses, an on-screen deliberation on 'waste management' was organized in the evening session. Interacting participants Er. Himanshu Joshi, B.Tech Civil of BPJKS (Bashundhara Paryavaran Avum Jan Kalyan Samiti), Almora deliberated extensively on waste and its management. The presentation included definition of waste types; differentiation of waste and by product; factors affecting waste generation; classification of solid waste; outlining necessity and activities associated with efficacious waste management; waste management hierarchy and its components; integrated waste management; techniques of domestic and municipal waste management (reuse, repurposing, recycling, recovery, disposal); concept of waste to energy and wealth, and attitude building and behavioral change.

Day- 20 (02- 03 March 2020)

Session-1 &2

Valedictory Session and Certificate Distribution

Valedictory Session & Certificate Distribution

On the final day, the team gathered at the conference hall of the institute for the valedictory and to receive their GSDP course certificate of Master trainer on preparation of PBR. The session was attended by Chief guest Prof. Uma Melkania, Former Head of Environmental Science, GBPAUT, Dr. RS Rawal, Director GBPHIE, Dr. GCS Negi, ENVIS Coordinator and other dignitaries. Welcoming the Chief guest and seeking due permission from the chair, Dr, Negi briefed the chair about the course and the entire process (selection of trainees, criteria for pilot selection, approach of target the villages, data collection, etc.) of completing the course in three different identified pilots. He then invited the team leaders to present the outputs of the village PBRs. Focusing on the unique biodiversity elements, particularly of agri-diversity each group leader showed the quantitative and qualitative datasets on species numbers and richness of the assigned targeted village. The datasets particularly on unique biodiversity elements or TKS was adequately supported by photographic evidences and characteristics details. During their presentations the trainees also shared their instance of new experiences and learnings.

Reaching to the PBR outputs and the trainee's interactive presentation, Prof. Melkania said, she is quite impressed with course outputs as the results speak themselves for the hard work and dedication of the participants. She said, it is quite remarkable that the trainees managed to collect good amount of quality datasets in a very limited time duration from three different villages, which is usually not feasible with the traditional scientific approach. She said considering the background of the participants it is very difficult to believe that course trainees are behind these very systematic and scientific presentations. She appreciated the efforts of the ENVIS centre and resource persons involved for executing the course in the best professional way. She said that the exercise would definitely helped in developing a scientific acumen among the participants, therefore could be helpful for them beyond the envisaged limits of PBR preparation. Wishing the master trainers for their future endeavours, she thanked Dr. Negi for inviting and providing him an opportunity to interact with these young and energetic fellows.

After the concluding remarks, Dr. Negi again requested the Chief guest to distribute the certificate to the participants. On receiving the certificate, the jubilant trainees assembled for group photographs and dispersed for the refreshment.

Day-21 (03/03/2020) - Departure of trainees from institute HQ

On the final day, the ENVIS Center disbursed all the travel claims of the participants and soon after, embracing the fond memories of course and a proud certificate of a Master trainer, the participants waved each other and happily departed to their homes.

Annexure- I

Check list of Plants found in Masuriya and Sani Badeth villages during PBR formation

Local Name	Botanical Name	Habit	Place
बड़ी इलायची	*Amomum subulatum*	शाक	मसूरिया, बडेत सानीगांव
भिण्डी	*Abelmoschus esculentus*	शाक	मसूरिया, बडेत सानीगांव
प्याज	*Allium cepa*	शाक	मसूरिया, बडेत सानीगांव
धुआर	*Allium humile*	शाक	मसूरिया, बडेत सानीगांव
लहसुन	*Allium sativum*	शाक	मसूरिया, बडेत सानीगांव
चौलाई	*Amaranthus caudatus*	शाक	मसूरिया, बडेत सानीगांव
भुजा	*Benincasa hispida*	शाक	मसूरिया, बडेत सानीगांव
सरसो	*Brassica campestris*	शाक	मसूरिया, बडेत सानीगांव
लाई	*Brassica napus*	शाक	मसूरिया, बडेत सानीगांव
फूलगोभी	*Brassica oleracea* var. *botrytis*	शाक	मसूरिया, बडेत सानीगांव
बंदगोभी	*Brassica oleracea* var. *capitata*	शाक	मसूरिया, बडेत सानीगांव
अरहर	*Cajanus cajan*	शाक	मसूरिया, बडेत सानीगांव
चना	*Cicer arientinum*	शाक	बडेत सानीगांव
मिर्च	*Capsicum annuum*	शाक	मसूरिया, बडेत सानीगांव
मिर्च	*Capsicum frutescens*	शाक	मसूरिया, बडेत सानीगांव
बथुवा	*Chenopodium album*	शाक	मसूरिया, बडेत सानीगांव
जखिया	*Cleome viscose*	शाक	मसूरिया, बडेत सानीगांव
गडेरी	*Colocasia esculenta*	शाक	मसूरिया, बडेत सानीगांव
धनिया	*Coriandrum sativum*	शाक	मसूरिया, बडेत सानीगांव
ककड़ी	*Cucumis sativus*	शाक	मसूरिया, बडेत सानीगांव
कददू	*Cucurbita maxima*	शाक	मसूरिया, बडेत सानीगांव
हल्दी	*Curcuma domestica*	शाक	मसूरिया, बडेत सानीगांव
रामकरेला	*Cyclanthera pedata*	बेल	मसूरिया, बडेत सानीगांव
तरूड़	*Dioscorea bellophylla*	शाक	मसूरिया, बडेत सानीगांव
गेठी	*Dioscorea bulbifera*	शाक	मसूरिया, बडेत सानीगांव
झंगोरा	*Echinochloa frumentacea*	शाक	मसूरिया, बडेत सानीगांव

मडुआ	*Eleusine coracana*	शाक	मसूरिया, बडेत सानीगांव
उगल	*Fagopyrum esculentum*	शाक	मसूरिया, बडेत सानीगांव
काला भट्ट	*Glycine max*	शाक	मसूरिया, बडेत सानीगांव
कपास	*Gossypium herbaceum*	शाक	मसूरिया, बडेत सानीगांव
जौं	*Hordeum vulgare*	शाक	मसूरिया, बडेत सानीगांव
लौकी	*Lagenaria siceraria*	बेल	मसूरिया, बडेत सानीगांव
मसूर	*Lens culinaris*	शाक	मसूरिया, बडेत सानीगांव
हालंग	*Lepidium sativum*	शाक	मसूरिया, बडेत सानीगांव
अलसी	*Linum usitatissimum*	शाक	मसूरिया, बडेत सानीगांव
तौरया	*Luffa acutangula*	बेल	मसूरिया, बडेत सानीगांव
टमाटर	*Lycopersicon lycopersicum*	शाक	मसूरिया, बडेत सानीगांव
गहत	*Macrotyloma uniflorum*	शाक	मसूरिया, बडेत सानीगांव
करेला	*Momardica charantia*	बेल	मसूरिया, बडेत सानीगांव
धान	*Oryza sativa*	शाक	मसूरिया, बडेत सानीगांव
बीन	*Phaseolus lunatus*	शाक	मसूरिया, बडेत सानीगांव
राजमा	*Phaseolus vulagris*	शाक	मसूरिया, बडेत सानीगांव
मटर	*Pisum sativum*	शाक	मसूरिया, बडेत सानीगांव
मूली	*Raphanus sativus*	शाक	मसूरिया, बडेत सानीगांव
गन्ना	*Saccharum officinarum*	शाक	मसूरिया, बडेत सानीगांव
तिल	*Sesamum indicum*	शाक	मसूरिया, बडेत सानीगांव
कौणी	*Setaria italic*	शाक	मसूरिया, बडेत सानीगांव
बैंगन	*Solanum melongena*	शाक	मसूरिया, बडेत सानीगांव
आलू	*Solanum tuberosum*	शाक	मसूरिया, बडेत सानीगांव
पालक	*Spinacia oleracea*	शाक	मसूरिया, बडेत सानीगांव
चिचन	*Trichosanthes anguina*	शाक	मसूरिया, बडेत सानीगांव
मेथी	*Trigonella foenum-graecum*	शाक	मसूरिया, बडेत सानीगांव
गेंहू	*Triticum aestivum*	शाक	मसूरिया, बडेत सानीगांव
बाकुला	*Vicia faba*	शाक	मसूरिया, बडेत सानीगांव
रैंस	*Vigna angularis*	शाक	मसूरिया, बडेत सानीगांव
मांस	*Vigna mungo*	शाक	मसूरिया, बडेत सानीगांव

मूंग	*Vigna radiata*	शाक	मसूरिया, बडेत सानीगांव
मक्का	*Zea mays*	शाक	मसूरिया, बडेत सानीगांव
अदरक	*Zingiber officinale*	शाक	मसूरिया, बडेत सानीगांव
		Fruits Plants	
कागजी नींबू	*Citrus aurantifolia*	झाड़ि	मसूरिया, बडेत सानीगांव
नींबू	*Citrus medica*	पेड़	मसूरिया, बडेत सानीगांव
गलगल	*Citrus pseudolimon*	पेड़	मसूरिया, बडेत सानीगांव
माल्टा	*Citrus sinensis*	पेड़	मसूरिया, बडेत सानीगांव
जामिर	*Citrus jambhiri*	पेड़	मसूरिया, बडेत सानीगांव
अखरोट	*Juglans regia*	पेड़	मसूरिया, बडेत सानीगांव
लीची	*Litchi chinensis*	पेड़	मसूरिया, बडेत सानीगांव
आम	*Mangifera indica*	पेड़	मसूरिया, बडेत सानीगांव
शहतुत	*Morus alba*	पेड़	मसूरिया, बडेत सानीगांव
केला	*Musa balbisiana*	शाक	मसूरिया, बडेत सानीगांव
आवंला	*Phyllanthus emblica*	पेड़	मसूरिया, बडेत सानीगांव
पुलम	*Prunus cerasifera*	पेड़	मसूरिया, बडेत सानीगांव
आड़ू	*Prunus persica*	पेड़	मसूरिया, बडेत सानीगांव
अमरूद	*Psidium guajava*	पेड़	मसूरिया, बडेत सानीगांव
दाड़िम	*Punica granatum*	पेड़	मसूरिया, बडेत सानीगांव
नाशपाती	*Pyrus communis*	पेड़	मसूरिया, बडेत सानीगांव
जामुन	*Syzygium cumini*	पेड़	मसूरिया, बडेत सानीगांव
अंगूर	*Vitis vinifera*	बेल	मसूरिया, बडेत सानीगांव
		Fodder Crops	
च्यूरा	*Aesandra butyracea*	पेड़	बडेत सानीगांव
तुतनलिया	*Arundinella nepalensis*	घास	मसूरिया, बडेत सानीगांव
जई	*Avena fatua*	शाक	मसूरिया, बडेत सानीगांव
क्वैराल	*Bauhinia variegate*	पेड़	मसूरिया, बडेत सानीगांव
सरसों	*Brassica campestris*	शाक	मसूरिया, बडेत सानीगांव
काला बासिंग	*Eupatorium adenophrum*	शाक	मसूरिया, बडेत सानीगांव
तिमुल	*Ficus auriculata*	पेड़	मसूरिया, बडेत सानीगांव
ख्योणा	*Ficus semicordata*	पेड़	मसूरिया, बडेत सानीगांव

भीमल	*Grewia optiva*	पेड़	मसूरिया, बडेत सानीगांव
जौं	*Hordeum vulgare*	शाक	मसूरिया, बडेत सानीगांव
बकेन	*Melia azedarach*	पेड़	मसूरिया, बडेत सानीगांव
शहतूत	*Morus alba*	पेड़	मसूरिया, बडेत सानीगांव
बिमोसिया	*Pennisetum flaccidum*	घास	मसूरिया, बडेत सानीगांव
फल्यांट	*Quercus glauca*	पेड़	मसूरिया, बडेत सानीगांव
बांज	*Quercus leucotrichophora*	पेड़	मसूरिया, बडेत सानीगांव
औंस	*Thysanolaena maxima*	घास	मसूरिया, बडेत सानीगांव
मक्का	*Zea mays*	शाक	मसूरिया, बडेत सानीगांव
	Weeds		
निरफुली	*Ageratum conyzoides*	शाक	मसूरिया, बडेत सानीगांव
–	*Anagallis arvensis*	शाक	मसूरिया, बडेत सानीगांव
पती	*Artemisia nilagirica*	शाक	मसूरिया, बडेत सानीगांव
ज्वांत	*Avena fatua*	शाक	मसूरिया, बडेत सानीगांव
–	*Capsella bursa-pastoris*	शाक	मसूरिया, बडेत सानीगांव
मैथी झाड़	*Cardamine impatiens*	शाक	मसूरिया, बडेत सानीगांव
झौं	*Conyza canadensis*	शाक	मसूरिया, बडेत सानीगांव
कालाबांसा	*Eupatorium adenophrum*	शाक	मसूरिया, बडेत सानीगांव
चटकूरा	*Galium asperifolium*	शाक	मसूरिया, बडेत सानीगांव
गलपात	*Persicaria nepalensis*	शाक	मसूरिया, बडेत सानीगांव
	Silene conoidea	शाक	मसूरिया, बडेत सानीगांव
बलमरी	*Stellaria media*	शाक	मसूरिया, बडेत सानीगांव
सिसुन	*Urtica ardens*	शाक	मसूरिया, बडेत सानीगांव
–	*Veronica javanica*	शाक	मसूरिया, बडेत सानीगांव
कैर	*Vicia hirsuta*	शाक	मसूरिया, बडेत सानीगांव
	Domasticated Medicinal Plants		
सिल्फर	*Bryophyllum pinnatum*	शाक	मसूरिया, बडेत सानीगांव
तेज पत्ता	*Cinnamomum tamala*	पेड़	मसूरिया, बडेत सानीगांव
जमिर	*Citrus jambhiri*	पेड़	मसूरिया, बडेत सानीगांव
हल्दी	*Curcuma domestica*	शाक	मसूरिया, बडेत सानीगांव
अखरोट	*Juglans regia*	पेड़	मसूरिया, बडेत सानीगांव

श्याम तुलसी	*Ocimum tenuuflorum*	शाक	मसूरिया, बडेत सानीगांव
अमरूद	*Psidium guajava*	पेड़	मसूरिया, बडेत सानीगांव
जमुन	*Syzygium cumini*	पेड़	मसूरिया, बडेत सानीगांव
मैथी	*Trigonella foenum-graecum*	शाक	मसूरिया, बडेत सानीगांव
	Ornamental Plants		
एलोवेरा	*Aloe vera*	शाक	मसूरिया, बडेत सानीगांव
मोरपंखी	*Biota orientalis*	पेड़	मसूरिया, बडेत सानीगांव
बोगनविलिया	*Bougainvillea spectabilis*	झाड़ि	मसूरिया, बडेत सानीगांव
बोटलब्रश	*Callistemon citrinus*	पेड़	मसूरिया, बडेत सानीगांव
केली का फूल	*Canna indica*	शाक	मसूरिया, बडेत सानीगांव
–	*Dianthus chinensis*	शाक	मसूरिया, बडेत सानीगांव
रबड़	*Ficus elastic*	पेड़	बडेत सानीगांव
गुब्बारा फूल	*Gomphocarpus physocarpus*	शाक	बडेत सानीगांव
गुडहल	*Hibiscus rosa-sinensis*	झाड़ि	मसूरिया, बडेत सानीगांव
–	*Hydrangea macrophylla*	झाड़ि	बडेत सानीगांव
कनेर	*Nerium oleander*	झाड़ि	मसूरिया, बडेत सानीगांव
–	*Tradescantia pallid*	शाक	बडेत सानीगांव
गुलाब	*Rosa indica*	झाड़ि	मसूरिया, बडेत सानीगांव
हाजरी	*Tagetes erecta*	शाक	मसूरिया, बडेत सानीगांव
–	*Tropaeolum majus*	शाक	मसूरिया, बडेत सानीगांव
	Wild Plants Diversity		
अपामार्ग	*Achyranthes bidentata*	शाक	मसूरिया, बडेत सानीगांव
बासिंग	*Adhatoda zeylanica*	झाड़ि	मसूरिया, बडेत सानीगांव
रामबांस	*Agave cantala*	झाड़ि	मसूरिया, बडेत सानीगांव
निरफूलिया	*Ageratum conyzoides*	शाक	मसूरिया, बडेत सानीगांव
रतपत्या	*Ajuga parviflora*	शाक	मसूरिया, बडेत सानीगांव
उतीस	*Alnus nepalensis*	वृक्ष	मसूरिया, बडेत सानीगांव
जंगली चौलाई	*Amaranthus spinosus*	शाक	मसूरिया, बडेत सानीगांव
बकोल	*Anaphalis busua*	शाक	मसूरिया, बडेत सानीगांव
छड. घास	*Apluda mutica*	घास	मसूरिया, बडेत सानीगांव
–	*Arachne cordifolia*	झाड़ि	मसूरिया, बडेत सानीगांव

सांप का भुट्टा	*Arisaema tortuosum*	शाक	मसूरिया, बडेत सानीगांव
पती	*Artemisia nilagirica*	शाक	मसूरिया, बडेत सानीगांव
तुतनलिया	*Arundinella nepalensis*	घास	मसूरिया, बडेत सानीगांव
कैरवा	*Asparagus curillus*	झाड़ि	मसूरिया, बडेत सानीगांव
–	*Barleria cristata*	शाक	मसूरिया, बडेत सानीगांव
क्वैराल	*Bauhinia variegata*	वृक्ष	मसूरिया, बडेत सानीगांव
किलमोड़ा	*Berberis asiatica*	झाड़ि	मसूरिया, बडेत सानीगांव
सिल्फर	*Bergenia ciliata*	शाक	मसूरिया, बडेत सानीगांव
कुमरिया	*Bidens biternata*	शाक	मसूरिया, बडेत सानीगांव
कुमरिया	*Bidens pillosa*	शाक	मसूरिया, बडेत सानीगांव
–	*Blumea mollis*	शाक	मसूरिया, बडेत सानीगांव
खागसी	*Boehmeria platyphylla*	झाड़ि	मसूरिया, बडेत सानीगांव
दया	*Callicarpa macrophylla*	झाड़ि	मसूरिया, बडेत सानीगांव
–	*Campanula benthamii*	शाक	मसूरिया, बडेत सानीगांव
भांग	*Cannabis sativa*	शाक	मसूरिया, बडेत सानीगांव
–	*Capillipedium assimile*	घास	मसूरिया, बडेत सानीगांव
मेथी झाड	*Cardamine impatiens*	शाक	मसूरिया, बडेत सानीगांव
–	*Carex cruciata*	शाक	मसूरिया, बडेत सानीगांव
मुनरिया	*Caryopteris odorata*	झाड़ि	मसूरिया, बडेत सानीगांव
सीमल	*Bombax ceiba*	वृक्ष	मसूरिया, बडेत सानीगांव
–	*Casearia graveolens*	वृक्ष	मसूरिया, बडेत सानीगांव
खडिक	*Celtis australis*	वृक्ष	मसूरिया, बडेत सानीगांव
बनार	*Cassia tora*	शाक	बडेत सानीगांव
छेवदार	*Cedrus deodara*	वृक्ष	बडेत सानीगांव
कंटोज	*Caesalpinia decapetala*	झाड़ि	बडेत सानीगांव
ब्राह्मी	*Centella asiatica*	शाक	मसूरिया, बडेत सानीगांव
गोडिया घास	*Chrysopogon serrulatus*	घास	मसूरिया, बडेत सानीगांव
गोडिया घास	*Chyrsopogon gryllus*	घास	मसूरिया, बडेत सानीगांव
कन्या	*Cirsium verutum*	शाक	मसूरिया, बडेत सानीगांव
पारी पतेल	*Cissampelos pareira*	शाक	मसूरिया, बडेत सानीगांव
ंकावली	*Clematis buchaniana*	बेल	मसूरिया, बडेत सानीगांव

तिलफर	*Cocculus laurifolius*	वृक्ष	मसूरिया, बडेत सानीगांव
धीरसोंग	*Colebrookea oppositifolia*	शाक	मसूरिया, बडेत सानीगांव
पत्थर चूर	*Coleus barbatus*	शाक	मसूरिया, बडेत सानीगांव
वन पिनालू	*Colocasia affinis*	शाक	मसूरिया, बडेत सानीगांव
झौ	*Conyza Canadensis*	शाक	मसूरिया, बडेत सानीगांव
–	*Craniotome furcata*	शाक	मसूरिया, बडेत सानीगांव
–	*Crassocephalum crepidio ides*	शाक	मसूरिया, बडेत सानीगांव
दूधी बेल	*Cryptolepis buchanani*	झाड़ि	मसूरिया, बडेत सानीगांव
सुरई	*Cupressus torulosa*	वृक्ष	बडेत सानीगांव
आकाश बेल	*Cuscuta reflexa*	शाक	मसूरिया, बडेत सानीगांव
दूब घास	*Cynodon dactylon*	घास	मसूरिया, बडेत सानीगांव
–	*Cynoglossum zeylanicum*	शाक	मसूरिया, बडेत सानीगांव
तुश्यारी	*Debregeasia longifolia*	झाड़ि	मसूरिया, बडेत सानीगांव
	Dendrobium denudans	शाक	मसूरिया, बडेत सानीगांव
बंस	*Dendrocalamus strictus*	शाक	मसूरिया, बडेत सानीगांव
–	*Dichrocephala intergifolia*	शाक	मसूरिया, बडेत सानीगांव
काउगडी	*Dicliptera bupleuroides*	शाक	मसूरिया, बडेत सानीगांव
–	*Dioscorea bellophylla*	शाक	मसूरिया, बडेत सानीगांव
–	*Drymaria cordata*	शाक	मसूरिया, बडेत सानीगांव
भी काफल	*Duchesnea indica*	शाक	मसूरिया, बडेत सानीगांव
–	*Emilia sonchifolia*	शाक	मसूरिया, बडेत सानीगांव
–	*Erigeron karviskianus*	शाक	मसूरिया, बडेत सानीगांव
पर्ण बाबिल	*Eriophorum comosum*	घास	मसूरिया, बडेत सानीगांव
बबिल	*Eulaliopsis binata*	घास	मसूरिया, बडेत सानीगांव
काला बांसा	*Eupatorium adenophrum*	शाक	मसूरिया, बडेत सानीगांव
दूधी	*Euphorbia heterophylla*	शाक	मसूरिया, बडेत सानीगांव
दूधी	*Euphorbia hirta*	शाक	मसूरिया, बडेत सानीगांव
स्योन	*Euphorbia royleana*	झाड़ि	मसूरिया, बडेत सानीगांव
झनकार	*Fagopyrum dibotrys*	शाक	मसूरिया, बडेत सानीगांव

तिमल	*Ficus auriculata*	वृक्ष	मसूरिया, बडेत सानीगांव
बरगद	*Ficus benghalensis*	वृक्ष	मसूरिया, बडेत सानीगांव
बेडूली	*Ficus hederacea*	बेल	मसूरिया, बडेत सानीगांव
दूधी	*Ficus nemoralis*	वृक्ष	मसूरिया, बडेत सानीगांव
बेडू	*Ficus palmate*	वृक्ष	मसूरिया, बडेत सानीगांव
पीपल	*Ficus religiosa*	वृक्ष	मसूरिया, बडेत सानीगांव
ख्योणा	*Ficus semicordata*	वृक्ष	मसूरिया, बडेत सानीगांव
छाचरी	*Ficus subincisa*	वृक्ष	मसूरिया, बडेत सानीगांव
सालपर्णी	*Flemingia bracteata*	झाड़ि	मसूरिया, बडेत सानीगांव
–	*Floscopa scandens*	शाक	मसूरिया, बडेत सानीगांव
कूर	*Galium asperifolium*	शाक	मसूरिया, बडेत सानीगांव
कूर	*Galium elegans*	शाक	मसूरिया, बडेत सानीगांव
–	*Gnaphalium luteoalbum*	शाक	बडेत सानीगांव
	Gnaphalium pensylvanicum	शाक	बडेत सानीगांव
–	*Gentiana argentea*	शाक	मसूरिया, बडेत सानीगांव
–	*Geranium ocellatum*	शाक	मसूरिया, बडेत सानीगांव
–	*Glochidion velutinum*	झाड़ि	मसूरिया, बडेत सानीगांव
सिल्वर ऑक	*Grevillea robusta*	वृक्ष	मसूरिया, बडेत सानीगांव
भिमल	*Grewia optiva*	वृक्ष	मसूरिया, बडेत सानीगांव
मठियारी	*Hedera nepalensis*	बेल	मसूरिया, बडेत सानीगांव
वन हल्दी	*Hedychium spicatum*	शाक	मसूरिया, बडेत सानीगांव
कुमेरिया घास	*Heteropogon contortus*	घास	मसूरिया, बडेत सानीगांव
टोबनी	*Hypericum oblongifolium*	झाड़ि	मसूरिया, बडेत सानीगांव
–	*Impatiens bicolour*	शाक	मसूरिया, बडेत सानीगांव
सिरोय घास	*Imperata cylindrica*	घास	मसूरिया, बडेत सानीगांव
–	*Inula cappa*	झाड़ि	मसूरिया, बडेत सानीगांव
–	*Inula cuspidata*	झाड़ि	मसूरिया, बडेत सानीगांव
भरड	*Ipomoea purpurea*	शाक	मसूरिया, बडेत सानीगांव
जकरेण्डा	*Jacaranda mimosifolia*	वृक्ष	मसूरिया, बडेत सानीगांव
लिमूडा	*Jasminum dispermum*	झाड़ि	मसूरिया, बडेत सानीगांव
कूरी	*Lantana camara*	झाड़ि	मसूरिया, बडेत सानीगांव

–	*Launaea procumbens*	शाक	मसूरिया, बडेत सानीगांव
पदयाडू	*Leptodermis lanceolata*	झाड़ि	मसूरिया, बडेत सानीगांव
निजरस	*Leucas lanata*	शाक	मसूरिया, बडेत सानीगांव
–	*Lindenbergia grandiflora*	शाक	मसूरिया, बडेत सानीगांव
–	*Lindenbergia indica*	शाक	मसूरिया, बडेत सानीगांव
–	*Lindenbergia macrostachya*	शाक	मसूरिया, बडेत सानीगांव
अयार	*Lyonia ovalifolia*	वृक्ष	मसूरिया, बडेत सानीगांव
–	*Maesa montana*	झाड़ि	बडेत सानीगांव
जीवक	*Malaxis acuminate*	शाक	मसूरिया, बडेत सानीगांव
रयोणी	*Mallotus philippinensis*	वृक्ष	मसूरिया, बडेत सानीगांव
पोदिना	*Mentha arevensis*	शाक	मसूरिया, बडेत सानीगांव
पीपरमेंट	*Mentha piperita*	शाक	मसूरिया, बडेत सानीगांव
करीपत्ता	*Murraya koenigii*	झाड़ि	बडेत सानीगांव
काफल	*Myrica esculenta*	वृक्ष	मसूरिया, बडेत सानीगांव
–	*Myrsine Africana*	झाड़ि	मसूरिया, बडेत सानीगांव
–	*Nastarium officinale*	शाक	बडेत सानीगांव
कौल	*Persea gamblei*	वृक्ष	मसूरिया, बडेत सानीगांव
–	*Persicaria capitata*	शाक	मसूरिया, बडेत सानीगांव
–	*Persicaria hydropiper*	शाक	मसूरिया, बडेत सानीगांव
ग्लपात	*Persicaria nepalensis*	शाक	मसूरिया, बडेत सानीगांव
आंवला	*Phyllanthus emblica*	वृक्ष	मसूरिया, बडेत सानीगांव
चीड़	*Pinus roxburghii*	वृक्ष	मसूरिया, बडेत सानीगांव
–	*Plantago erosa*	शाक	मसूरिया, बडेत सानीगांव
–	*Pogostemon benghalensis*	झाड़ि	मसूरिया, बडेत सानीगांव
–	*Polypogon fugax*	घास	मसूरिया, बडेत सानीगांव
पाप्लर	*Populus ciliate*	वृक्ष	मसूरिया, बडेत सानीगांव
–	*Portulaca pilosa*	शाक	बडेत सानीगांव
पयां	*Prunus cerasoides*	वृक्ष	मसूरिया, बडेत सानीगांव
घिघारू	*Pyracantha crenulata*	झाड़ि	मसूरिया, बडेत सानीगांव
मेहल	*Pyrus pashia*	वृक्ष	मसूरिया, बडेत सानीगांव

–	*Oplismenus compositus*	घास	मसूरिया, बडेत सानीगांव
वन तुलसी	*Origanum vulgare*	शाक	मसूरिया, बडेत सानीगांव
–	*Osbeckia stellata*	झाड़ि	मसूरिया, बडेत सानीगांव
–	*Osyris wightiana*	झाड़ि	मसूरिया, बडेत सानीगांव
सानड	*Ougeinia oojeinensis*	वृक्ष	मसूरिया, बडेत सानीगांव
चल्मोडी	*Oxalis corniculata*	शाक	मसूरिया, बडेत सानीगांव
चल्मोडी	*Oxalis dehradunensis*	शाक	मसूरिया, बडेत सानीगांव
बांज	*Quercus leucotrichophor a*	वृक्ष	मसूरिया, बडेत सानीगांव
फल्यांट	*Quercus glauca*	वृक्ष	मसूरिया, बडेत सानीगांव
–	*Rabdosia coetsa*	झाड़ि	बडेत सानीगांव
घड़ी	*Randia tetrasperma*	झाड़ि	मसूरिया, बडेत सानीगांव
प्यूली	*Reinwardtia indica*	झाड़ि	मसूरिया, बडेत सानीगांव
प्यूली	*Rhamnus virgatus*	झाड़ि	मसूरिया, बडेत सानीगांव
बुरांश	*Rhododendron arboreum*	वृक्ष	मसूरिया, बडेत सानीगांव
अरण्डी	*Ricinus communis*	झाड़ि	मसूरिया, बडेत सानीगांव
–	*Rorippa Montana*	शाक	बडेत सानीगांव
कुज	*Rosa brunonii*	झाड़ि	मसूरिया, बडेत सानीगांव
चटकुरा	*Rubia manijth*	शाक	मसूरिया, बडेत सानीगांव
हिसालु	*Rubus ellipticus*	झाड़ि	मसूरिया, बडेत सानीगांव
काला हिसालु	*Rubus niveus*	झाड़ि	मसूरिया, बडेत सानीगांव
जोगी हिसालु	*Rubus paniculatus*	झाड़ि	मसूरिया, बडेत सानीगांव
भिल्मोडा	*Rumex hastatus*	शाक	मसूरिया, बडेत सानीगांव
–	*Rumex nepalensis*	शाक	मसूरिया, बडेत सानीगांव
–	*Rungia pectinata*	शाक	मसूरिया, बडेत सानीगांव
खीना	*Sapium insigne*	वृक्ष	मसूरिया, बडेत सानीगांव
–	*Scrophularia calycina*	शाक	मसूरिया, बडेत सानीगांव
–	*Scutellaria scandens*	शाक	मसूरिया, बडेत सानीगांव
–	*Senecio nudicaulis*	शाक	मसूरिया, बडेत सानीगांव
–	*Setaria glauca*	शाक	मसूरिया, बडेत सानीगांव
–	*Siegesbeckia orientalis*	शाक	मसूरिया, बडेत सानीगांव
रिंगाल	*Sinarundinaria falcata*	शाक	मसूरिया, बडेत सानीगांव

ककुरदड.	*Smilax aspera*	बेल	मसूरिया, बडेत सानीगांव
मकई	*Solanum nigrum*	शाक	मसूरिया, बडेत सानीगांव
कण्ठकारी	*Solanum surattense*	शाक	मसूरिया, बडेत सानीगांव
रीठा	*Sapindus mukorossi*	वृक्ष	मसूरिया, बडेत सानीगांव
–	*Spermadictyon suaveolens*	झाड़ि	मसूरिया, बडेत सानीगांव
गन्जाडू	*Stephania elegans*	बेल	मसूरिया, बडेत सानीगांव
गन्जाडू	*Stephania glabra*	बेल	मसूरिया, बडेत सानीगांव
सिमकौल	*Stranvaesia nussia*	वृक्ष	मसूरिया, बडेत सानीगांव
जमुन	*Syzygium cumini*	वृक्ष	मसूरिया, बडेत सानीगांव
हरड.	*Terminalia chebula*	वृक्ष	मसूरिया, बडेत सानीगांव
माकड.	*Thalictrum foliolosum*	शाक	मसूरिया, बडेत सानीगांव
–	*Themeda anathera*	घास	मसूरिया, बडेत सानीगांव
तुन	*Toona ciliate*	वृक्ष	मसूरिया, बडेत सानीगांव
औंस घास	*Thysanolaena maxima*	घास	मसूरिया, बडेत सानीगांव
–	*Tripogon filiformis*	घास	मसूरिया, बडेत सानीगांव
चमरमवा	*Ulmus wallichiana*	वृक्ष	मसूरिया, बडेत सानीगांव
बिच्छू घास	*Urtica ardens*	शाक	मसूरिया, बडेत सानीगांव
समया	*Valeriana wallichii*	शाक	मसूरिया, बडेत सानीगांव
	Vanda cristata	शाक	मसूरिया, बडेत सानीगांव
अकलबीर	*Verbascum thapsus*	शाक	मसूरिया, बडेत सानीगांव
–	*Veronica anagallis-aquatica*	शाक	मसूरिया, बडेत सानीगांव
–	*Vitis flexuosa*	बेल	मसूरिया, बडेत सानीगांव
सिवांली	*Vitex negundo*	झाड़ि	मसूरिया, बडेत सानीगांव
कठबेर	*Zizyphus mauritiana*	झाड़ि	बडेत सानीगांव

Annexure- II

Check List village Katarmal Village, Almora

वृक्ष, झाड़ियां, जड़ी–बूटियां, कन्द, घास, लता इत्यादि (Wild Trees, Shrubs, Herbs, Tubers, Grass and climbers)

स्थानीय नाम	वैज्ञानिक नाम	आदत	स्थान
–	*Acanthospermum hispidum*	शाक	कटारमल
अपामार्ग	*Achyranthes bidentata*	शाक	कटारमल
बासिंग	*Adhatoda zeylanica*	झाड़ि	कटारमल
साजी	*Aerva sanguinolenta*	शाक	कटारमल
रामबांस	*Agave cantala*	झाड़ि	कटारमल
भुवनी झाड	*Ageratum conyzoides*	शाक	कटारमल
रतपत्या	*Ajuga parviflora*	शाक	कटारमल
उतीस	*Alnus nepalensis*	वृक्ष	कटारमल
जंगली चौलाई	*Amaranthus spinosus*	शाक	कटारमल
बकोल	*Anaphalis busua*	शाक	कटारमल
–	*Anisomeles indica*	शाक	कटारमल
छड. घास	*Apluda mutica*	घास	कटारमल
काली दूधी	*Ardisia solanacea*	झाड़ि	कटारमल
सांप का भुट्टा	*Arisaema tortuosum*	शाक	कटारमल
पाती	*Artemisia japonica*	शाक	कटारमल
पाती	*Artemisia nilagirica*	शाक	कटारमल

तुतनलिया	*Arundinella nepalensis*	घास	कटारमल
कैरवा	*Asparagus curillus*	झाड़ि	कटारमल
–	*Barleria cristata*	शाक	कटारमल
क्वैराल	*Bauhinia variegata*	वृक्ष	कटारमल
किलमोड़ा	*Berberis asiatica*	झाड़ि	कटारमल
सिल्फर	*Bergenia ciliata*	शाक	कटारमल
कुमरिया	*Bidens biternata*	शाक	कटारमल
कुमरिया	*Bidens pillosa*	शाक	कटारमल
–	*Blumea mollis*	शाक	कटारमल
सिमल	*Bombax ceiba*	वृक्ष	कटारमल
–	*Buddleja crispa*	झाड़ि	कटारमल
–	*Campanula benthamii*	शाक	कटारमल
भांग	*Cannabis sativa*	शाक	कटारमल
–	*Capillipedium assimile*	घास	कटारमल
मेथी झाड	*Cardamine impatiens*	शाक	कटारमल
–	*Carex cruciata*	शाक	कटारमल
मोनि	*Caryopteris odorata*	झाड़ि	कटारमल
देवदार	*Cedrus deodara*	वृक्ष	कटारमल
खडिक	*Celtis australis*	वृक्ष	कटारमल
ब्राह्मी	*Centella asiatica*	शाक	कटारमल

जंगली बथुवा	*Chenopodium ambrosioide*	शाक	कटारमल
गोडिया घास	*Chrysopogon serrulatus*	घास	कटारमल
कन्या	*Cirsium verutum*	शाक	कटारमल
पारी पतेल	*Cissampelos pareira*	शाक	कटारमल
कावली	*Clematis buchaniana*	बेल	कटारमल
–	*Clinopodium umbrosum*	शाक	कटारमल
धीरसोंग	*Colebrookea oppositifolia*	शाक	कटारमल
पत्थर चूर	*Coleus barbatus*	शाक	कटारमल
झौ	*Conyza Canadensis*	शाक	कटारमल
झौ	*Conyza japonica*	शाक	कटारमल
भैरव	*Cordia dichotama*	पेड़	कटारमल
दूधी बेल	*Cryptolepis buchanani*	झाड़ि	कटारमल
सुरई	*Cupressus torulosa*	पेड़	कटारमल
आकाश बेल	*Cuscuta reflexa*	शाक	कटारमल
–	*Cymbopogon jwarancusa*	घास	कटारमल
दूब घास	*Cynodon dactylon*	घास	कटारमल
–	*Cynoglossum zeylanicum*	शाक	कटारमल
बांस	*Dichrocephala intergifolia*	शाक	कटारमल
बांस	*Dicliptera bupleuroides*	शाक	कटारमल
–	*Digitaria cruciata*	घास	कटारमल

–	*Dioscorea bellophylla*	शाक	कटारमल
–	*Dodonaea angustifolia*	झाड़ि	कटारमल
–	*Drymaria cordata*	शाक	कटारमल
भी काफल	*Duchesnea indica*	शाक	कटारमल
कन्या	*Echinops niveus*	शाक	कटारमल
–	*Emilia sonchifolia*	शाक	कटारमल
–	*Erigeron karviskianus*	शाक	कटारमल
पर्ण बाबिल	*Eriophorum comosum*	घास	कटारमल
बाबिल	*Eulaliopsis binata*	घास	कटारमल
काला बांसा	*Eupatorium adenophrum*	शाक	कटारमल
दूधी	*Euphorbia heterophylla*	शाक	कटारमल
दूधी	*Euphorbia hirta*	शाक	कटारमल
स्योन	*Euphorbia royleana*	झाड़ि	कटारमल
शंखपुष्पी	*Evolvulus alsinoides*	शाक	कटारमल
तिमल	*Ficus auriculata*	वृक्ष	कटारमल
बेडूली	*Ficus hederacea*	बेल	कटारमल
बेडू	*Ficus palmate*	वृक्ष	कटारमल
पेपल	*Ficus religiosa*	वृक्ष	कटारमल
ख्योणा	*Ficus semicordata*	वृक्ष	कटारमल
सालपर्णी	*Flemingia bracteata*	झाड़ि	कटारमल

कूर	*Galium asperifolium*	शाक	कटारमल
कूर	*Galium elegans*	शाक	कटारमल
–	*Geranium ocellatum*	शाक	कटारमल
–	*Glochidion velutinum*	झाड़ि	कटारमल
–	*Gnaphalium hypoleucum*	शाक	कटारमल
–	*Gnaphalium pensylvanicum*	शाक	कटारमल
भिमल	*Grewia optiva*	वृक्ष	कटारमल
मठियारी	*Hedera nepalensis*	बेल	कटारमल
वन हल्दी	*Hedychium spicatum*	शाक	कटारमल
कुमेरिया घास	*Heteropogon contortus*	घास	कटारमल
ओबनी	*Hypericum oblongifolium*	झाड़ि	कटारमल
–	*Impatiens bicolour*	शाक	कटारमल
सिरोय घास	*Imperata cylindrica*	घास	कटारमल
–	*Inula cappa*	झाड़ि	कटारमल
–	*Inula cuspidata*	झाड़ि	कटारमल
भरड	*Ipomoea purpurea*	शाक	कटारमल
जकरेण्डा	*Jacaranda mimosifolia*	वृक्ष	कटारमल
लिमूडा	*Jasminum dispermum*	झाड़ि	कटारमल
–	*Jasminum grandiflorum*	झाड़ि	कटारमल
कूरी	*Lantana camara*	झाड़ि	कटारमल

–	*Launaea procumbens*	शाक	कटारमल
पदयाडू	*Leptodermis lanceolata*	झाड़ि	कटारमल
–	*Leucas cephalotes*	शाक	कटारमल
निजरस	*Leucas lanata*	शाक	कटारमल
–	*Lindenbergia indica*	शाक	कटारमल
अयार	*Lyonia ovalifolia*	वृक्ष	कटारमल
–	*Malva neglecta*	शाक	कटारमल
काफल	*Myrica esculenta*	वृक्ष	कटारमल
धमाकू	*Nicotiana plumbaginifolia*	शाक	कटारमल
–	*Oenothera roesa*	शाक	कटारमल
–	*Oplismenus compositus*	घास	कटारमल
वन तुलसी	*Origanum vulgare*	शाक	कटारमल
–	*Osbeckia stellata*	झाड़ि	कटारमल
–	*Osyris wightiana*	झाड़ि	कटारमल
चल्मोडी	*Oxalis corniculata*	शाक	कटारमल
चल्मोडी	*Oxalis dehradunensis*	शाक	कटारमल
–	*Persicaria capitata*	शाक	कटारमल
गलपात	*Persicaria nepalensis*	शाक	कटारमल
आंवला	*Phyllanthus emblica*	शाक	कटारमल
–	*Phyllanthus parvifolius*	झाड़ि	कटारमल

–	*Pimpinella diversifolia*	शाक	कटारमल
चीड़	*Pinus roxburghii*	वृक्ष	कटारमल
–	*Plantago erosa*	शाक	कटारमल
–	*Pogostemon benghalensis*	झाड़ि	कटारमल
झिटालू	*Prinsepia utilis*	झाड़ि	कटारमल
पयां	*Prunus cerasoides*	वृक्ष	कटारमल
–	*Pteracanthus angustifrons*	शाक	कटारमल
घिघारू	*Pyracantha crenulata*	झाड़ि	कटारमल
मेहल	*Pyrus pashia*	वृक्ष	कटारमल
बांज	*Quercus leucotrichophora*	वृक्ष	कटारमल
फल्यांट	*Quercus glauca*	वृक्ष	कटारमल
–	*Rabdosia coetsa*	शाक	कटारमल
घड़ी	*Randia tetrasperma*	झाड़ि	कटारमल
प्यूली	*Reinwardtia indica*	झाड़ि	कटारमल
बुरांश	*Rhododendron arboreum*	वृक्ष	कटारमल
कुज	*Rosa brunonii*	झाड़ि	कटारमल
चटकुरा	*Rubia manijth*	शाक	कटारमल
हिसालु	*Rubus ellipticus*	झाड़ि	कटारमल
काला हिसालु	*Rubus niveus*	झाड़ि	कटारमल
जोगी हिसालु	*Rubus paniculatus*	झाड़ि	कटारमल

भिल्मोडा	*Rumex hastatus*	शाक	कटारमल
–	*Rumex nepalensis*	शाक	कटारमल
खीना	*Sapium insigne*	वृक्ष	कटारमल
–	*Scrophularia calycina*	शाक	कटारमल
–	*Scutellaria repens*	शाक	कटारमल
–	*Scutellaria scandens*	शाक	कटारमल
–	*Senecio nudicaulis*	शाक	कटारमल
–	*Setaria glauca*	शाक	कटारमल
–	*Siegesbeckia orientalis*	शाक	कटारमल
ककुरदड.	*Smilax aspera*	बेल	कटारमल
मकई	*Solanum nigrum*	शाक	कटारमल
कण्ठकारी	*Solanum surattense*	शाक	कटारमल
–	*Spermadictyon suaveolens*	झाड़ि	कटारमल
–	*Sporobolus diander*	शाक	कटारमल
गन्जाडू	*Stephania elegans*	बेल	कटारमल
गन्जाडू	*Stephania glabra*	बेल	कटारमल
माकड.	*Thalictrum foliolosum*	शाक	कटारमल
–	*Themeda anathera*	घास	कटारमल
–	*Theropogon pallidus*	शाक	कटारमल
तुन	*Toona ciliata*	वृक्ष	कटारमल

–	*Trifolium repens*	शाक	कटारमल
–	*Trifolium repens*	शाक	कटारमल
बिच्छू घास	*Urtica ardens*	शाक	कटारमल
समया	*Valeriana wallichii*	शाक	कटारमल
अकलबीर	*Verbascum Thapsus*	शाक	कटारमल
बनप्सा	*Viola canescens*	शाक	कटारमल
–	*Vitis flexuosa*	बेल	कटारमल
धोल	*Woodfordia fruiticosa*	झाड़ि	कटारमल
तिमूर	*Zanthoxylum armatum*	झाड़ि	कटारमल
कठबेर	*Zizyphus mauritiana*	झाड़ि	कटारमल

Annexure- III

Bird documented in PBRS of villages Sani Badet, Masuriya of Distt- Pithoragarh and Katarmal village of Distt- Almora

S. No.	Common Name	Scientific Name
1	Black Bulbul	*Hypsipetes leucocephalus*
2	Himalayan Bulbul	*Pycnonotus leucogenys*
3	Streaked Laughingthrush	*Garrulax lineatus*
4	Blue Whistling Thrush	*Myophonus caeruleus*
5	Mountain Bulbul	*Ixos mcclellandii*
6	Large billed Crow	*Corvus macrorhynchos*
7	House Sparrow	*Passer domesticus*
8	Black-lored Tit	*Parus xanthogenys*
9	Great tit	*Parus major*
10	Rufous treepie	*Dendrocitta vagabunda*
11	Red billed blue Magpie	*Urocissa erythrorhyncha*
12	Rufous Sibia	*Malacias capristratus*
13	Rose-ringed Parakeet	*Psittacula krameri*
14	Slaty-headed Parakeet	*Psittacula himalayana*
15	Himalayan Bluetail	*Tarsiger rufilatus*
16	Grey winged Blackbird	*Turdus booulboul*
17	Himalayan Barbet	*Megalema virens*
18	Himalayan Treecreeper	*Certhia himalayana*
19	Chestnut belied Nuthatch	*Sitta cinnamoventris*
20	Grey hooded warbler	*Phylloscopus xanthoschistos*
21	Oriental white eye	*Zesterops palpebrosus*
22	Common Myna	*Acredotheres tristis*
23	Jungle Babbler	*Turdoides striata*
24	Barn Swallow	*Hirundo rustica*
25	Common Hoopoe	*Upupa epops*
26	Long-tailed Shrike	*Lanius schach*
27	Scarlet Minivet	*Pericrocotus falmmeus*
28	Common Pigeon	*Columba livia*
29	Oriental turtle Dove	*Streptopelia orientalis*
30	Brown fronted woodpecker	*Leiopicus auriceps*
31	Scimitar Babbler	*Pomatorhinus horsfieldii*
32	Black Francolin	*Francolinus francolinus*
33	Russet Sparrow	*Passer rutilans*
34	Black throated tit	*Aegithalos concinnus*
35	Grey Bushchat	*Saxicola ferreus*

Annexure- IV

Butterflies documented in PBRS of villages Sani Badet, Masuriya of Distt- Pithoragarh and Katarmal village of Distt- Almora

S.N.	Common name	Scientific name
1.	Yellow Swallowtail	*Papilio machaon*
2.	Lime Butterfly	*Princeps demoleus*
3.	The Spangle	*Papilio protenor*
4.	Common Mormon	*Papilio polytes*
5.	Large Cabbage White	*Pieris brassicae*
6.	Indian Cabbage White	*Pieris canidia indica*
7.	Common Brimstone	*Gonepteryx rhamni nepalensis*
8.	Spotless Grass Yellow	*Eurema latea latea*
9.	Dark Clouded Yellow	*Colias electo fieldii*
10.	The Common Copper	*Lycaena phleas*
11.	The Sorrel Sapphire	*Heliophorus sena*
12.	Pea Blue	*Lampides boeticus*
13.	Common Hedge Blue	*Acetolepis puspa*
14.	Common Punch	*Dodona durga*
15.	Common Evening Brown	*Melanitis leda ismene*
16.	Common Bush brown	*Mycalesis perseus blasius*
17.	The Chocolate Pansy	*Precia iphita iphita*
18.	Indian Red Admiral	*Vanessa indica indica*
19.	Painted Lady	*Cynthia cardui*
20.	Indian Tortoise Shell	*Aglais cachmirensis aesis*
21.	Common Sailer	*Neptis hylas*

Annexure- V

During the walaking visit area of three villages Sani Badet, Masuriya of Distt- Pithoragarh and Katarmal of Distt- Almora documented the had shown the possible presence of faunal diversity while avifauna diversity is noticeable

S. No	Scientific name	Vernacular Name	Local Name
1.	Rhesus Macacaque	*Macaca mulatta*	Baanar
2.	Langur	*Semnopithecs entellus*	Guni
3.	Sambhar	*Cervus unicolor*	Jarau
4.	Indian Muntjac	*Muntiacus muntjac*	Kaakad
5.	Spotted Deer	*Axis axis*	Chital
6.	Mainland Serow	*Naemorhedus sumatraensis*	Ghurad
7.	Goral	*Naemorhedus goral*	Jungli suar
8.	Wild Pig	*Sus scrofa*	Bhalu
9.	Asiatic Black Bear	*Ursus thibetanus*	Bhalu
10.	Sloth Bear	*Melursus ursinus*	Gidar/Siyaar
11.	Jackal	*Canis aureus*	Lomri
12.	Red Fox	*Vulpes vulpes*	Tendua/Guldaar
13.	Common Leopard	*Panthera pardus*	Jungli Billi
14.	Jungle Cat	*Felis chaus*	Cheeta billi
15.	Yellow-Throatted Marten	*Martes flavigula*	Laal Chitrola
16.	Himalayan Weasel	*Mustela sibirica*	Laal Chitrola
17.	Himalayan Weasel	*Mustela sibirica*	Kasturi
18.	Small Indian Civet	*Viverricula indica*	Khatas
19.	Common Palm Civet	*Paradoxurus hermaphroditus*	Bichu
20.	Himalayan Palm Civet	*Paguma larvata*	Newla
21.	Grey Mongoose	*Herpestes edwardsii*	Newla
22.	Small Indian Mongoose	*Herpestes jawanicus*	Kharghosh
23.	Indian Hare	*Lepus nigricollis*	Saul
24.	Himalayan Crestless Porcupine	*Hystrix brachyura*	Gilahri
25.	Three-Striped Palm Squirrel	*Funambulus palmarum*	Udne waali lal gilhri
26.	Red Giant Flying Squirrel	*Petaurista petayrista*	Chamkadar
27.	Indian Flying Fox (Fruit Bat)	*Pteropus giganteus*	

Avifauna		
1.	Chukar	*Alectoris chukar*
2.	Black Francolin	*Francolinus francolinus*
3.	Grey Francolin	*Francolin pondicerianus*
4.	Koklass Phesant	*Pucrasia macrolopha*
5.	Red Junglefowl	*Gallus gallus*
6.	Kalij Pheasant	*Lophura leucomelanos*
7.	Indian Peafawl	*Pavo cristatus*
8.	Speckled Piculet	*Picumnus innominatus*
9.	Brown-Capped Pygmy Woodpecker	*Dendrocopos nanus*
10.	Grey-Capped Pygmy Woodpecker	*Dendrocopos canicapillus*
11.	Brown-Fronted Woodpecker	*Dendrocopos canicapillus*
12.	Brown-Fronted Woodpecker	*Dendrocopo sauriceps*
13.	Fulvous-Breasted Woodpecker	*Dendrocopos macei*
14.	Yellow-Crowned Woodpecker	*Dendrocopos mahrattensis*
15.	Himalayan Woodpecker	*Dendrocopos himlayensis*
16.	Lesser Yellownape	*Picus chlorolophus*
17.	Greater Yellownape	*Picus flavinucha*
18.	Strek-Throated Woodpecker	*Picus xanthopygaeus*
19.	Scaly-Bellied Woodpecker	*Picus squamatus*
20.	Grey-Headed Woodpecker	*Picus canus*
21.	Himalayan Flameback	*Dinopium shorii*
22.	Black-Rumped Flameback	*Dinopium benghalense*
23.	Greater Flameback	*Chrysocolaptes lucidus*
24.	White-Naped Woodpecker	*Chrysocolaptes festivus*
25.	Great Barbet	*Megalaima virens*
26.	Brown-Headed Barbet	*Megalaima zeylanica*
27.	Lineated Barbet	*Megalaima lineata*
28.	Blue-Throated Barbet	*Megalaima asiatica*
29.	Coppersmith Barbet	*Megalaima haemacephala*
30.	Indian Grey Hornbill	*Ocyceros birostris*
31.	Orientalpied Hornbill	*Anthracoceros albirostris*
32.	Great Hornbill	*Buceros bicornis*
33.	Common Hoopoe	*Upupa epops*
34.	Dollarbird	*Eurystomus orientalis*
35.	Common Kingfisher	*Alcedo atthis*
36.	White- Throted Kingfisher	*Halcyon smymensis*
37.	Crested Kingfisher	*Megaceryle lugubris*
38.	Pied Kingfisher	*Ceryle rudis*
39.	Blue-Bearded Bee-Eater	*Nyctyrnis athertoni*
40.	Green Bee-Eater	*Merops orientails*
41.	Large Hawk Cuckoo	*Hierococcyx sparverioides*
42.	Indian Cuckoo	*Caculus micropterus*
43.	Asian Koel	*Eudynamys scolopacea*
44.	Sirkeer Malkoha	*Phaenicophaeus leschenaultii*
45.	Greater Coucal	*Centropus sinensis*

46.	Lesser Coucal	*Centropus bengalensis*
47.	Rose -Ringed Parakeet	*Psittacula krameri*
48.	Plum- Headed Parakeet	*Psittacula cyanocephala*
49.	Red-Breasted Parakeet	*Psittacula alexandri*
50.	Asian Palm Swift	*Cypsiurus balasiensis*
51.	House Swift	*Apus affinis*
52.	Crestrd Treeswift	*Hemiprocne coronata*
53.	Oriental Scops Owl	*Otus sunia*
54.	Brown Fish Owl	*Ketupa zeylonenis*
55.	Asian Barred Owlet	*Glucidium cuculoides*
56.	Jungle Owlet	*Glaucidium radiatum*
57.	Brown Hawk Owl	*Ninox scutulata*
58.	Large-Tailed Nighyjar	*Caprimilgus macrurus*
59.	Indian Nightjar	*Caprimugulgus asiaticus*
60.	Rock Piegeon	*Columba livia*
61.	Oriental Turtle Dove	*Strepyopelia orientalis*

Participant's Feedback

- The trainees agreed that the preparation of PBRs has enormous scope of engaging youth in gainful employment, however requiring diverse set of skills.
- The trainees genuinely revealed that unlike other registers, PBRs require utmost care and involvement of the individuals considering its statutory status for ABS.
- The trainees expressed apprehensions of immediately being engaged/employed in preparation of PBRs due to mandatory obligation of being a part of a Technical Support Group (TSG) before registering at SBB.
- The trainees said comprehensive documentation of biological resources during the course tenure help them to look more closely towards its value and future implications.
- The trainees found the course quite useful in diversifying their professional capabilities besides skilling them for preparation of PBRs.
- The trainees said village surveys during the PBR preparation were almost like a self introspection and revisit to our rich traditional systems. However, expressed concerns over fast depletion of traditional resources and knowledge systems due to market driven agricultural transformations.
- In view of ongoing transitions happening across the rural landscape, the trainees suggested that SBBs should act proactively to speed up the preparation of PBRs before nothing substantial remains to document.

- Besides PBRs, the trainees said the course exposed them to various other facets of biodiversity, which would be of great option values viz. MAP plant cultivation, Value addition of produce, Bird and Butterfly tourism, etc., for their future endeavours.

Media Coverage

4 दैनिक जागरण हल्द्वानी, 14 फरवरी 2020
www.jagran.com

लोक जैव विविधता पर 15 दिनी प्रशिक्षण शुरू

संस, अल्मोड़ा : जीबी पंत राष्ट्रीय हिमालयी पर्यावरण एवं सतत विकास संस्थान कोसी के इनविस केंद्र में लोक जैव विविधता पर आधारित पंद्रह दिवसीय प्रशिक्षण शुरू हो गया है। प्रशिक्षण कार्यक्रम का शुभारंभ डीएफओ सिविल सोयम केएस रावत ने किया।

कार्यक्रम को संबोधित करते हुए उन्होंने कहा कि लोक जैव विविधता पंजिका का संकलन जागरूकता फैलाने के साथ ही ग्रामीण समुदायों के सशक्तिकरण व संरक्षण को मजबूती प्रदान करेगा। वैज्ञानिक डॉ. जेसी कुनियाल ने कहा कि युवाओं को रोजगार के लिए प्रेरित किया जा सके इसके लिए समय समय पर इस तरह के कार्यक्रमों का आयोजन किया जाता रहा है। ताकि इनका अधिक से अधिक लाभ ग्रामीण क्षेत्रों

कार्यक्रम

- युवाओं के विकास की खातिर ऐसे कार्यक्रमों को बताया जरूरी
- जीबी पंत राष्ट्रीय हिमालयी पर्यावरण एवं सतत विकास संस्थान में आयोजन

के युवाओं तक पहुंच सके। उन्होंने बताया कि वर्ष 2021 तक भारत सरकार का लक्ष्य करीब साढ़े पांच लोगों को वन एवं पर्यावरण के क्षेत्र में कौशल विकास के लिए तैयार करना है। कार्यक्रम संयोजक गिरीश नेगी ने भी स्लाइड शो के माध्यम से प्रशिक्षण कार्यक्रम के बारे में विस्तार से जानकारी दी।

इस मौके पर डॉ. आइडी भट्ट, विक्रम नेगी, रवींद्र जोशी, महेशानंद, विपिन चंद्र, प्रदीप मेहता, विजय सिंह आदि मौजूद रहे।

(नैनीताल/अल्मोड़ा) ०५ मार्च २०२० पृ-१

अमर उजाला अल्मोड़ा-बागेश्वर

युवाओं को जैव विविधता को संकलित करने के गुर सिखाए

जीबी पंत संस्थान में हुए प्रशिक्षण में आठ जिलों के एक दर्जन युवाओं ने की भागीदारी

Outcomes

इस प्रकार प्रशिक्षित कुशल व्यक्ति हरित कौशल विकास कार्यक्रम के पाठ्यक्रम को पूरा करने के लिए निम्न के तौर पर मजबूती प्रदान कर सकते है।

पारिस्थितिक उद्यमी– जैविक कृषि, नर्सरी, वन्यजीव अभयारण्य, प्राकृतिक उद्यान, बॉटनिकल गार्डन, राज्य जैव विविधता बोर्ड, जैव विविधता प्रबंधन समितियां

पर्यावरणीय उद्योग– वन्य उत्पाद उत्पादन, प्राकृतिक/इको–पर्यटन गाइड

कृषि उद्योग– जैविक कृषि/हरित प्रतिभागी, शिक्षा एवं शोध क्षेत्र; अपशिष्ट प्रबन्धन (नगर पालिका/समिति) इत्यादि में कार्य कर सकते है।

Special issue of Newsletter

- All articles are writing by GSDP trainees and Resource Persons on People's Biodiversity Register publishing Volume 17 (1) 2020.
- Trainees compile 3 Preparation of People's Biodiversity Register of three selected villages (Sani Badeth and Masuriya- Pithoragarh Distt. and Katarmal village of Distt. Almora). Compiled PBRs are attached.

Employment Opportunities

Success story/ Placement Status

S. No	Name	Current Organisation	Designation	E-mail ID
1.	Pushkar Bargali	Running in his own school Sarswati sishu niketan dini Paharpani block- dhari, Distt-Nainital	Principal	pushkarbargali4@gmail.com
2.	Manisha Pandey	Research scholar	JPF	manishapanday614@gmail.com
3.	Darshan Lal	Prakarti samajik sankhya Bhauwala (NGO) Dehradun	Secretary	darshan011@gmail.com
4.	Babita Bhatt	Work in my surrounding diversity (insect diversity)	-	babitabhattento@gmail.com
5.	Rekha Gorkha	Education (B.A.)	-	rekhagorkha123@gmail.com
6.	Sanjay Bhandari	The wild heritage, guest house, Ramnagar	Nature guide	bhandarisanjay212@gmail.com
7.	Pawan Mathpal	Education (B.A.)	-	pawankumarmathpal@gmail.com
8.	Dharmendra Singh	Education (B.A.)	-	dinubish1987@gmail.com
9.	Mohan Ram	NGO Uttarapath, Thal, Pithoragarh	Field assistant	uttarapath_india@rediffmail.com
10.	Saroj Kumar Arya	Education (B.A.)	unemployed	ps1889632@gmail.com
11.	Manoj Kumar	Running his own Milk dairy and Shop	Self employed	uttarapath_india@gmail.com

Acknowledgements

- ENVIS Secretariat, Ministry of Environment, Forest & Climate Change, Govt of India, New Delhi
- Director, G.B. Pant National Institute of Himalayan Environment, Kosi- katarmal, Almora
- District Forest Officer, Almora (Govt. of Uttarakhand)
- Prof. Uma Melkania, Dept. of Environmental Sciences, GBPUAT, Pantnagar
- Dr. G.C. Joshi, Former Scientist Incharge, CCRAS, Tarikhert (Almora)
- Director & Faculty, ICAR-VPKAS, Almora
- Mr. Rajendra Pant, Uttarapath Sewa Samiti, Thal (Pithoragarh)
- Dr. Ravindra Joshi, Wild life Expert, Almora
- Mr. Naveen Pandey, Flora Expert, Lok Chetna Manch Ranikhet, Almora
- All Selected Master Trainers
- Gram Pradhans of Thal Area (Pithoragarh) and Katarmal Villages (Almora)
- ENVIS Coordinator (Dr. G.C.S. Negi Scientist 'G' & Head) & ENVIS Team (Dr. Mahesha Nand, Mr. Vipin Chandra Sharma, Mr. Satish Sinha & Mr. Vijay Singh Bisht) G.B. Pant National Institute of Himalayan Environment, Kosi- katarmal, Almora

GSDP Flyer

Green Skill Development Programme (GSDP)

Importance of Skilling India's Youth

India's youthful manpower, a result of the demographic dividend, need to be provided with skills and ability to tackle global challenges. The more we give importance to skill development the more competent youth will be. It is important to predict the possibilities of the future, and prepare for them today itself. We have to make India the skill capital of the world.

Shri Narendra Modi, Prime Minister of India

To protect the environmental right of our future generations, all of us have a green social responsibility. The fast evolving and emerging technologies in dynamic world to combat the menace of environmental degradation need to be complemented by specially trained and skilled manpower in various field at all levels. Imparting skill sets for greener transformation will generate employment opportunities and strengthen our resolve to conserve and preserve the priceless environment.

Dr. Harsh Vardhan, Minister, Environment, Forest and Climate Change

Background

India being the second most populous country in the world is bestowed with a large working population. India has advantage of reaping this demographic dividend. However, high drop-out rates from school coupled with poor vocational skills may hinder in reaping this dividend. There exists a demand supply gap of skill sets, both cognitive and practical, at various levels in the Environment/ Forest fields in India

Opportunities

The candidates completing the Course(s) may be employed gainfully in the zoos/wildlife sanctuaries/national parks/ biosphere reserves/ Botanical Gardens/Nurseries/wetland sites/ State Biodiversity Boards/Biodiversity Management Committees/Wildlife Crime Control Bureau; industries (involved in production/ manufacturing of green products, as ETP operator); tourism (as Nature/Eco-tourist Guides), agriculture (as organic farmers/ green practitioners), education & research sectors as well as engage in waste management (in Municipal Corporations/ Councils/Urban Local bodies to advise on how to improve sewage, sanitation, land use services/ tackle pollution), water management, construction related areas, etc. Some of the courses enable the candidates to become self-employed.

Achievements

The first GSDP course was formulated for skilling Biodiversity Conservationists (Basic Course) and Para-taxonomists (Advance Course) of 3 months duration each, on a pilot basis in ten select districts of the country (covering nine bio-geographic regions). 94 Trainees successfully completed the basic course qualifying as skilled Biodiversity Conservationists and 152 Trainees completed the Advanced Course qualifying as skilled Para-taxonomists. BSI and ZSI were the nodal Centres for the pilot programme.

For further details:

ENVIS Secretariat
Ministry of Environment, Forest & Climate Change (MoEF&CC)
New Delhi- 110 003

ENVIS Flyer

ENVIS CENTRE ON HIMALAYAN ECOLOGY

G.B. Pant National Institute of Himalayan Environment & Sustainable Development

(An Autonomous Institute of the Ministry of Environment, Forest & Climate Change, Govt. of India)
Kosi-Katarmal, Almora - 263 643, Uttarakhand, India

Background

ENVIS Centre on Himalayan Ecology at the G.B. Pant National Institute of Himalayan Environment & Sustainable Development (GBPNIHESD) was established in 1992-93 with the financial support from the Ministry of Environment, Forest & Climate Change (MoEF&CC), Government of India, New Delhi.

Mandate

To spread environmental awareness and help Research and Development (R&D) in the areas related to Himalayan Ecology

Objectives

- To collect, compile and process information on different aspects of Himalayan Ecology.
- To disseminate available information to various stakeholders through electronic and print media.
- To develop, up-grade and maintain ENVIS website.

STATE AT A GLANCE

Indian Himalayan Region

- ISSN : 2455-8133 (Online)
- Open Access
- 12 Issues (since 2014)

Himachal Pradesh, Arunachal Pradesh, Jammu and Kashmir, Sikkim, Uttarakhand, Nagaland, Mizoram, Manipur, Meghalaya, Tripura, Assam Hills & West Bengal Hills

More Information
http://gbpihedenvis.nic.in/State_at_Glance.html

ENVIS Bulletin

HIMALAYAN ECOLOGY

- ISSN : 0971-7447 (Print)
- ISSN: 2455-6815 (Online)
- Annual Publication
- Open Access
- 25 Volumes (since 1993)

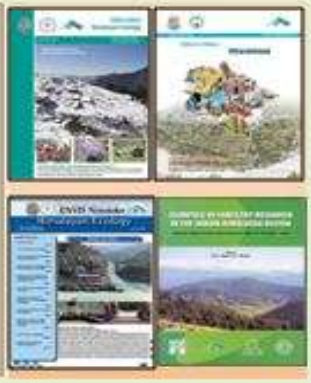
More Information
http://gbpihedenvis.nic.in/Envis_bulletin.html

ENVIS Newsletter

HIMALAYAN ECOLOGY

- ISSN : 2277-9000 (Print)
- ISSN: 2455-6823 (Online)
- Quarterly Publication
- Open Access
- 14 Volumes (since 2004)

More information
http://gbpihedenvis.nic.in/Envis_Newsletter.html



Coverage and Indexing of ENVIS Bulletin & Newsletter

Himalayan Database

Indian Himalayan States

- Social Profile (Demography, Literacy, Birth Rate, etc.)
- Educational Infrastructure (Universities, Schools, etc.)
- Health & Family Welfare (Hospitals, Blood Banks, etc.)
- Climate (Rainfall, Temperature, etc.)
- Land (Classification, Area, Wasteland, etc.)
- Water (Glaciers, Lakes, etc.)
- Agriculture (Area, Yield, Irrigation, Growth rates, etc.)
- Horticulture (Area, Production, Productivity, etc.)
- Livestock (Number, Production, etc.)
- Forest & Protected Area (Area, Cover, etc.)
- Minerals and Petroleum (Production, Reporting Mines, etc.)
- Industry (Industrial Estate, Area, Setup, Tourism, etc.)
- Road and Transport (Length of Roads, National Highways, etc.)
- Miscellaneous (Registered Newspaper, Post Offices, etc.)

Web Directory of various Govt. Offices/ Organization

Weather data

- Different meteorological Stations of the Institute

Academic data

- Experts, Ph.D. Theses, Research Abstracts, Books, etc.

Biodiversity

- Medicinal Plants, RET species, Protected Area Networks, etc.

Books/ Reports/Documents on IHR

News Clippings

- Convention on Biological Diversity (CBD) news
- News Articles (Daily news papers in Hindi & English)

Facilities and Other Services

ENVIS Library, Kids Corner, Glossary, Frequently Asked Questions (FAQs), Updates of Media Coverage, upcoming Events, E-section, Himalayan Initiatives Information (Himalayan Young Researchers' Forum, Himalayan Popular Lecture Series), other organizations, E- Alert services, Facebook, etc.

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