



WILDLIFE WING
Himachal Pradesh Forest Department

MANAGEMENT PLAN
OF
SECHU TUAN NALLA
WILDLIFE SANCTUARY
(2025-26 TO 2034-35)



By
Divisional Forest Officer
Wildlife Division Chamba (H.P.)



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)



Wildlife Wing

Himachal Pradesh Forest Department
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MANAGEMENT PLAN OF

SECHU TUAN NALLA

Wildlife Sanctuary

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OFFICE ORDER

Office Order No/2024-25/ 247/2025 Dated Shimla-I, the/ 19-03-2025

The Management Plan of Sechu-Tuan Nalla Wildlife Sanctuary for the period from 2025-26 to 2034-35 as submitted by the author Divisional Forest Officer (Wildlife), Sh. Kuldeep Singh Janwal, HPFS, Chamba Wildlife Division is hereby approved for the management of the protected area for the next 10 years.


Pr. Chief Conservator of Forests (WL)
and Chief Wildlife Warden H. P. Shimla-I.

Endst. No. WLM /Management Plan/ 738/84 Dated/ 19/3/2025

Copy forwarded to:-

1. Additional Principal Chief Conservator of Forests (Wildlife), Shimla for information please.
2. Conservator of Forests CF Wildlife (N) Dharamshala for information and necessary action.
3. Divisional Forest Officer (Wildlife) Chamba for information and necessary action w.r.t. his office Memo No. 3096 dated 26.02.2025. Three hard bound copies of approved Management Plan of Sechu-Tuan Nalla Wildlife Sanctuary may be sent to this office for record.
4. Office Order File.


Pr. Chief Conservator of Forests (WL)
and Chief Wildlife Warden H. P. Shimla-I.



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

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Every management plan is the result of perseverance and efforts from several persons who contributes to various aspects of plan in terms of data collection, photographs, proposals, vision in management etc. As the last sentence is written, I would like to express my immense gratitude to several of these persons without whom this management plan would not have become a reality. First of all, I would like to sincerely thank Sh Amitabh Gautam IFS, Principal Chief Conservator of Forest (Wildlife) cum Chief Wildlife Warden, Himachal Pradesh for his valuable guidance and inputs in drafting of the management plan especially with respect to inclusion of various maps and new chapters that are novel additions to the plan. This management plan is as much a creation of Sh. Amitabh Gautam IFS, Principal Chief Conservator of Forest (Wildlife) cum Chief Wildlife Warden, Himachal Pradesh as it is of the author. The undersigned is immensely thankful to Sh. Saroj Bhai Patel IFS, CF (N), Wildlife, for his invaluable guidance and inputs in providing framework to management plan and for motivating the entire staff of Sechu Tuan Nalla Wildlife Sanctuary with his infectious sincerity and dedication in compilation of the plan. The undersigned would like to thank Sh Sanjeev Singh, HPFS, Divisional Forest Officer (HQ) for his valuable inputs. The soul of this management plan is based on invaluable inputs from the field given by Range Officer and his staff who daily patrol the sanctuary boundaries. In this regard, gratitude is due to Sh. Rajesh Chauhan, Range Forest Officer Sechu Wildlife Range & Sh Manoj Kumar thakur, Range Forest Officer, Bharmour Wildlife Range and all Sechu Wildlife Range staff viz. Sh. Rajender Kumar, Forest guard, Sechu and Sh. Akshay Kumar, Forest Guard for their painstaking efforts in collecting and compiling data. The undersigned would also like to thank the ministerial staff of Wildlife Division Chamba who have made their contributions through editing and formatting this document.



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MESSAGE

India as a mega diverse nation contributes about 7% of the world's biodiversity and the state of Himachal Pradesh having 15% protected area out of its total geographic area is a crucial contributor to this mega diversity. The state's PA network harbors a rich assemblage of floral and faunal diversity given the multitude of habitats - the forests, meadows, rivers, grasslands, alpine pastures, steep valleys and cliffs which offers refuge to wide variety of fauna. The altitudinal variation and the numerous forest types and habitats mean the state has a great array of mosaic habitats which is crucial for the prosperity of wildlife. The forest and wildlife in this age is facing pressures owing to rapid economic growth and development combined with inability of management and planners to integrate the pressures as part of their plan and address the issues. The climate crisis we are witnessing today, the fragmentation of wildlife habitat owing to widespread linear infrastructure and the rising cases of human-wildlife conflict are some such critical issues which is hampering conservation ubiquitously. In this context, there is a great need to strengthen the arm of wildlife conservation, nurture the values of coexistence and tolerance and provide innovative solutions harnessing new age technologies to satisfy development pressures yet take wildlife conservation along. The Sechu Tuan Nalla Wildlife sanctuary is a key protected area which has undergone great changes in recent past owing to rationalization in 2013 and the area of the sanctuary is 390.29 sq km. The sanctuary having variety of habitat varies from deep forest to the alpine pastures which offer safe haven for the high-altitude flora and faunal species such as snow leopard, brown bear, musk deer, ibex, blue sheep etc. The protected area faces great challenges as the most of the area is inaccessible and cover with the snow. I am glad to know that the management plan for this protected area has been prepared for the next 10 years in a comprehensive manner documenting the historical practices, existing floral and faunal diversity, research studies carried out in the sanctuary, current activities of eco-tourism etc. The plan also makes detailed documentation of existing natural resources and assets through GIS maps which have greatly enriched visualization and spatial planning outlook. The management plan by incorporating chapters on Eco-sensitive zone and offering prescriptions for this buffer zone strives to garner support of local community and enable safe wildlife passage in the buffer area which is the need of hour in conservation planning. The plan stresses on the spirit of co-existence and tolerance by offering a payment for ecosystem services model to manage the private grasslands in the sanctuary area. In the same spirit, the plan takes along the local panchayat, schools, yuvak mandal and mahila mandal etc. to garner their support to wildlife conservation and work together in domains of conservation education and eco-tourism. It also has novel suggestions of overpasses and eco-bridges to connect fragmented patches and enable gene transfer between such habitats which would be a first for state of Himachal when it comes to fruition. I would like to congratulate the entire team behind this management plan authored by Dr. Kuldeep Singh Jamwal, HPFS Divisional Forest Officer, Wildlife Division Chamba under supervision of Sh. Saroj Bhai Patel IFS, CF (WL) North for their immense effort and hard work to bring together such a comprehensive document. It is my sincere hope that future managers of the protected area would make best use of this document in managing the protected area and realize the vision and objectives set out in this plan.

(Amitabh Gautam)



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)



Dr. Pushpendra Rana, IFS
Add. Principal Chief Conservator of Forest



Message

The state of Himachal Pradesh is having a rich protected area spread across 15% of its geographical area with majestic floristic diversity and treasured faunal diversity. From the snowcapped habitats for Snow Leopard in Pin Valley to the elephant corridor down south in Simbalbara National park, the state has been able to provide a safe haven for wildlife in a time which has seen fast paced development and increased anthropogenic impacts. In this renewed paradigm, I believe there is a great need to address the new management questions and provide novel solutions corresponding to the technological development that has taken place in wildlife management. This management plan of 10 years for the Sechu Tuan Nalla Wildlife sanctuary is unique in striking that philosophy by addressing the pressures of development and balancing wildlife conservation through innovative ideas. Apart from this, there are many prescriptions of eco-tourism, soil moisture conservation, fire protection etc. that would certainly enrich management of this protected area which is unique in being one of the oldest protected patches of forest for the purpose of water conservation. The plan also comprehensively details and documents the existing situation in view of floral and faunal diversity marked by beautiful photographs from various field personnel. I would like to congratulate the entire team under leadership of Sh. Saroj Bhai Patel IFS, CF (WL) North and Dr. Kuldeep Singh Jamwal, HPFS, Divisional Forest Officer, Wildlife Division Chamba for their painstaking efforts in bringing out this management plan with invaluable contributions from range level staff led by Sh. Rajesh Chauhan, RFO Sechu (WL). I sincerely hope this document would be a primary source of guidance and reference to officers in future, the research fraternity and academia.

(Dr. Pushpendra Rana)



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)



Saroj Bhai Patel, IFS
Conservator of Forest
Wildlife (North) Circle, Dharamshala



Message

India has a Protected Areas Network covering of 106 National Park, 564 Wildlife Sanctuaries, 99 Conservation Reserves and 218 Community Reserves constituting an area of 1,73,053 Sq.km of the country's total land area which is equivalent to about 5.26 percentage of the total land area. Protected areas of Himachal Pradesh constitute around 15.1 percentage of the geographical area of the state, which is above the national average. This illustrates that the state is a pioneer in protected area management having about 5 National Parks, 26 Wildlife Sanctuaries and 3 Conservation Reserves. Each protected areas is managed as per the management plan prescription for period of about 10 years as per the approval of the Chief Wildlife Warden of the state. The Sechu Tuan Nalla Wildlife Sanctuary is a critical protected area of the Western Himalayas famed for being the unique habitat for the endangered species like snow leopard, brown bear, musk deer etc. and magnificent alpine pastures supporting high altitude herbivore population including the Himalayan Ibex, Musk Deer, Blue sheep. It has also immense floristic value and eco-tourism potential given the diversity of herbs and medicinal plants, threatened taxa and scenic landscapes it holds in itself. The management plan of the Sechu Tuan Nalla wildlife sanctuary was expired during the year 2021 and revised management plan is written by Dr. Kuldeep Singh Jamwal, HPFS and his range level team for the period from 2025-26 to 2034-35. In the current plan the author has covered comprehensively the details about history of management, the existing situation of the protected area and provided novel management prescriptions, eco-development activities involving local villages, payment for eco-system services, protection and law enforcement framework etc. I congratulate the entire team of Sechu Tuan Nalla wildlife sanctuary for bringing out this management plan and hope it will be a guiding light to future managers of the protected area, foresters and researchers visiting the sanctuary.

(Saroj Bhai Patel)



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)



Dr. Kuldeep Singh Jamwal, HPFS
Divisional Forest Officer,
Wildlife Division, Chamba.



PREFACE

Sechu Tuan Nalla Wildlife Sanctuary located in the north – East of Chamba District sharing its boundary with Lahaul & Spiti district is an important range for the wildlife, prominent of which are Snow Leopard, Ibex, Musk Deer, Himalayan Brown Bear, Asiatic Black Bear, Himalayan Tahr, Goral etc. among the mammals and Western Tragopan, Monal, Koklas & Snow cock etc. among the birds and also threatened floral species. The control and monitoring of the Wildlife Sanctuary is done under the supervision of Wildlife Division, Chamba. First management plan for this sanctuary was prepared by Sh. Surjeet Kumar Mehra, the then D.F.O. Wildlife, Chamba for a period of 10 years w.e.f. 2011-2012 to 2020-2021. Most of the works prescribed in the above management plan could not be executed for want of sufficient funds. The present management plan has been compiled following the manual for planning wildlife management in protected areas and managed forests by Wildlife Institute of India.

The present plan has been prepared to improve the habitat of wild animals in the sanctuary and to conserve the faunal and floral species in the Wildlife Sanctuary. At the same time, participation of the local habitants will be ensured for the better management of wildlife. It has also been emphasized to increase the awareness for wildlife conservation values among local people of the eco-sensitive zone and also the pilgrims visiting Buddhist Gumpa and the Mindhal Mata temple located in the vicinity of this sanctuary. In this way, Eco-Tourism as well as awareness regarding importance of wildlife and its conservation will be popularized among



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

locals, the eco-tourist and the pilgrims. This will also enhance the income of the local people living in the zone of influence the sanctuary area.

In addition to this, the emphasis is also on Eco-development activities, monitoring protocol, Eco system services and landscape approach to wildlife management. The Plan has been prepared to provide better habitat for conservation of wild animals and prescribing different operations for improvement of existing habitats which can be modified/ improved in the coming years depending upon the results obtained from monitoring and evaluation processes in the field on year-to-year basis. The period of this plan would be for 10 years i.e. from 2025-26 to 2034-35.

I would like to express my sincere gratitude & thanks to Sh. Amitabh Gautam IFS, PCCF Wildlife-cum-Chief Wildlife Warden H.P, Dr Pushpender Rana IFS, Additional Principal Chief Conservator of Forests, Shri. E. Vikram IFS, Chief Conservator of Forests, Dharamshala Circle with additional Charge Wildlife Circle (North) Dharamshala, Sh. Saroj Bhai Patel IFS, Conservator Wildlife Circle (North) Dharamshala, Sh Sanjeev Singh, HPFS, DFO (HQ), frontline staff of Sechu Tuan Nalla Wildlife Sanctuary and other seniors as well as field functionaries for their practical and valuable guidance in completion of this plan.



(Dr. Kuldeep Singh Jamwal, HPFS)



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ABBREVIATIONS

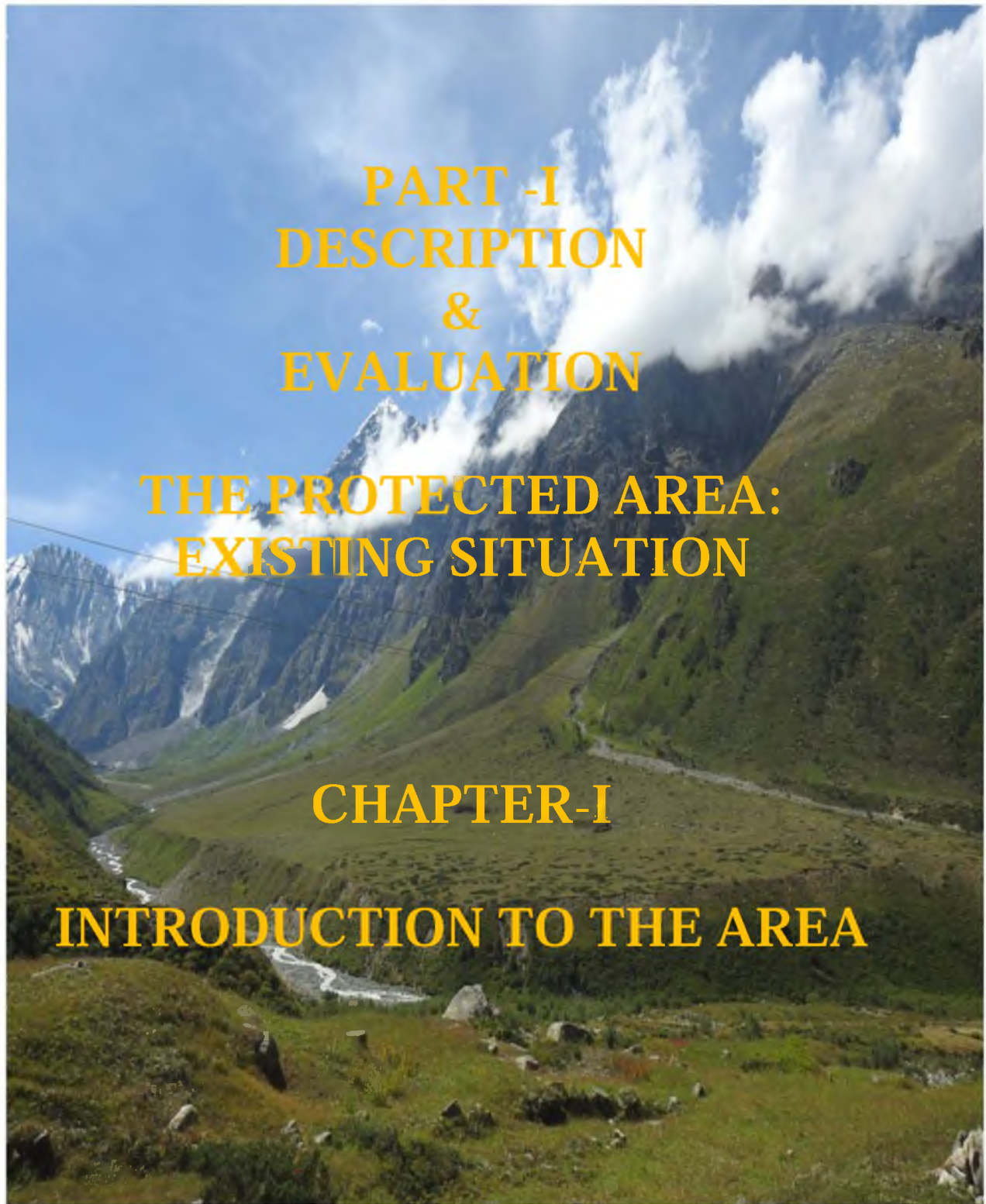


Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

CRPC - Criminal Procedure Code
CSR- Corporate Social Responsibility
DFO- Divisional Forest Officer
DPF- Demarcated Protected Forest
EC- Executive Committee
EDC- Eco Development Committee
ESZ- Eco Sensitive Zone
GIS- Geographic Information System
GPS- Global Positioning System
IUCN- International Union for Conservation of Nature
IT- Information Technology
MEE- Management Effectiveness Evaluation
NGO-Non Governmental Organization
PA- Protected Area
PES- Payment for Ecosystem Services
PRA - Participatory Rural Appraisal
SC- Scheduled Caste
SMS- Short Message Service
ST- Scheduled Tribe
TIES - International Ecotourism Society
TRAFFIC - Trade Records Analysis of Flora and Fauna in Commerce
UNESCO- United Nations Educational, Scientific and Cultural Organization
WCCB - Wildlife Crime Control Bureau
WII- Wildlife Institute of India
WLS-Wildlife Sanctuary
WPA- Wildlife Protection Act, 1972
WWF - World Wildlife Fund for Nature
ZSI- Zoological Survey of India



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)



PART -I DESCRIPTION & EVALUATION

THE PROTECTED AREA: EXISTING SITUATION

CHAPTER-I INTRODUCTION TO THE AREA



INTRODUCTION:-

Himachal Pradesh lies on the North of India in the Himalayan belt with an area of 55,673 sq. km. The state is endowed with natural scenic beauty and shows a great bio-geographic diversity. The area extends from the Shivaliks to Western Himalayan zone to the Trans Himalayan zone, which supports a rich fauna of large mammals and pheasants, many of which appear in the endangered list of Red Data Book of IUCN (1979).

The Himalayan state with its varied terrain and topography exhibits and ideal cross section of floral and faunal heritage distributed right from Shiwaliks to Alpine areas. Likewise, the socio-economic fabric of the state is not only multifaceted but also intricately linked with the forests and wildlife therein.

In this respect, District Chamba can be termed as a prototype of Himachal Pradesh because this district is the total representative of the bio-geographic diversity of the state. The district extends from the Shivalik zone (Sihunta Sub-Division) to Western Himalayan Temperate zone (Chamba and Churah Sub-Divisions) to the Trans Himalayan zone (few pockets of Pangi Sub-Division). This vast bio-geographical vista shows a great diversity of both the flora and fauna.

In the wake of reasonable fast pace of development in the state, wildlife initially did not attract much attention but in the recent years, there has been a growing awareness in the masses regarding its significance and conservation.

The subject has carved out a definite niche in the whole gamut of various developmental works and involves various state as well as centrally sponsored Wildlife Schemes.

1.1 Name, Location, Constitution and the Extent of Area

Sechu Tuan Nalla Wildlife Sanctuary is named after the Sechu and Tuan village which falls in Pangi Sub Division of tribal area. This sanctuary was originally notified vide Notification as game sanctuary in 1962 and was re-notified as Wildlife Sanctuary under section 18 of Wildlife Protection Act 1972 vide notification No. 5-11/70-SF dated 27.03.1974, the final notification of the sanctuary was issued under section 26 A of Wildlife Protection Act 1972 vide notification No. FFE-B-F(6)-3/99 dated 01.11.1999 and having control with the Divisional Forest Officer, Pangi(T). The sanctuary notification was again revised and vide this notification no. FFE-B-F(6)- 11/2005-dated Shimla/II 28.07.2010 area of sanctuary becomes 330Sq KM. The local tribal people of the area had been exercising their traditional rights since immemorial. The people had been exercising the rights i.e. timber for house construction, lopping of trees for fuel wood and fodder, torch wood collection of minor forest produce, grazing of domestic cattle etc. villagers of Chasak, ChasakBhatori, Udeen, Tuan, Sechu and adjoining villages were exercising their rights almost free of cost except



timber for house construction for nominal fee. After Rationalization the Wildlife Sanctuary was again notified vide Govt. of Himachal Pradesh Notification No. FFE-B-F(6)-11/2005-II/Sechu Tuan Nalla dated 7th June, 2013 with total area of the sanctuary is now kept 390.29 sq km. (Enclosed As **Annexure-I**). Existing area as per notification dated 28th July 2010 was 330 Sq. Km and the area taken out was 52.98 Sq. Km and the new area included in the process of rationalization is 113.27 Sq Km, thereby forming the present area 390.29 sq Km

There are only two beats i.e. Sechu beat and Tuan beat in the Wildlife Sanctuary, so the area of each beat is around 165 Sq. Km and due to harsh topography it's hard to check all the beat area for one person, so this division proposed the rationalization of beat boundary and want to incorporate 2 more beats in Sechu Tuan Nalla Wildlife Sanctuary for effective management of the sanctuary. After the rationalisation of the Wildlife Sanctuary area in 2013 a total of 5 no. of villages are being benefitted. There is one village which still exists within the limits of sanctuary, Village Murch.

Location

The sanctuary is located between 32°11'40" and 32°13'16" E longitude and 76°24' and 77°03'33" N latitude. It falls in Pangri Sub Division of Chamba District.

LOCATION MAP



Location Map of Sechu Tuan Nalla Wildlife Sanctuary



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

Constitution and extent

The sanctuary comprises of high lying areas with the following land use break up:

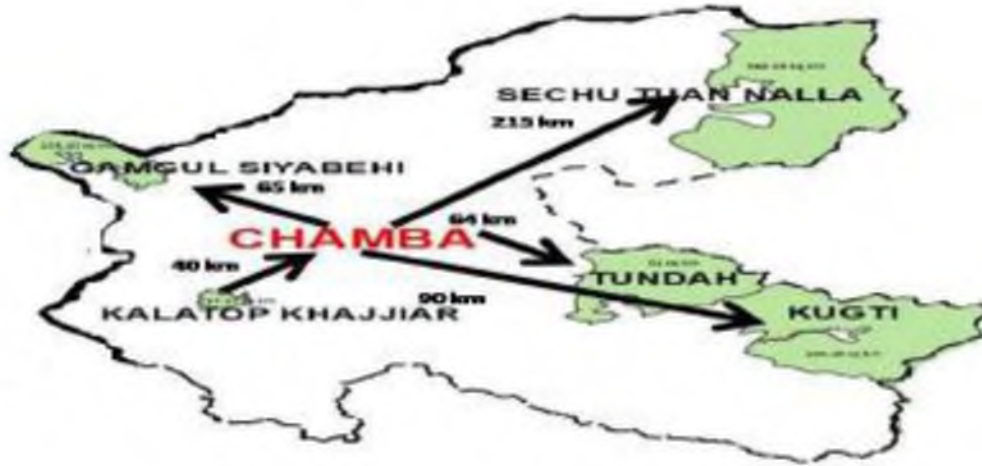
Sr. No.	Name of the Beat	Name of compartment.	Forest type.	Area in hac.
A	Sechu	Demarcated Protected Forests.		
1.		Gajroon DPF.	12/C1/D,12/C/e	154
		Dhars NDPFs		
1		ChasakBhatori Dhar.	12/DS3,15/C-III, 16/C1	4000
2		Harvin Dhar.	14/C1a,14/C1b, 12/DS3,15/C-III, 16/C1	5620
3		Sechu Dhar	12/C1/D,12/C/e, 14/C1a,14/C1b	607
4		Shidhani Dhar	13/C2b,14/C1a,14/C1b, 12/DS3,15/C-III, 16/C1	11327
		Total:-A		21708
B	Tuan	Dhars DPFs.		
1.		Chogullu Dhar.	12/C/e,12/C1/d, 12/C/e,13/C2b, 16/C1, 16/E1,15/C-III	3134
2.		Gal Dhar	-do-	2225
3.		Topiun Dhar	-do-	11962
		Total:-B		17321
		Total Govt. land. (A+B)		39029Hac.

1.2 APPROACH AND ACCESS

The sanctuary is situated in the extreme North- East of Chamba District. The sanctuary can be approached through Pathankot-Chamba-Killar-Sechu (215 KM), Manali- Sissu-Sach-Sechu (170 KM) and the nearest railhead is at Pathankot in Punjab. The sanctuary area starts from Sechu Nallavillage and bus able road is in length exists from Sechu village to village Chasak(4 KM) and to the village Tuan(9 KM) in the eco-sensitive zone of Sechu Tuan Nalla sanctuary. In between the above patches old bridle path exists. The bridle path runs beyond Chasak village up to ChasakBhatori village distance of 8 Kms.Miyar valley of Lahaul&Spiti district starts from Guldhar pass which is at walk able distance of 7km from ChasakBhatorivillage. The graziers have been using this pass for their journey along with their sheep and goats during the migration.



The sanctuary cannot be approached during the winter season due to the existence of heavy snow along the path and in the higher reaches. The best season to visit the sanctuary is May-June and September-October.



Distance map of all the sanctuaries from Chamba

1.3 THE STATEMENT OF SIGNIFICANCE

The sanctuary has several important values from various perspectives. These values are identified and categorized below:

A. Conservation value

The Wildlife sanctuary is located in the eastern part of Pangi (Killar) Sub-division in the catchment of SechuTuan Nalla away from habitation and in the remote area. Thus the significance can be attributed to the ideal habitat of the sanctuary, which harbours majestic, *Ibex (Capra siberica)*, Himalayan Tahr (*Hemitragus jemlahicus*), Musk Deer (*Moschus leucogaster*), Goral (*Naemorheudus goral*), Brown Bear (*Ursus arctos*), Black Bear (*Ursus thibetanus*), Red Fox (*Vulpes vulpes*), Himalayan Marmot (*Marmota himalayana*), Himalayan Weasel (*Mustela sibirica*), Snow Leopard (*Panthera uncia*), Leopard (*Panthera pardus*), Monal (*Lophophorous impejanus*) and Snowcock (*Tetraogallus tibetanus*). There is good interface of wooded areas and vast expenses of pastures that forms an ideal habitat for animals as well as birds.

Besides this, one Buddhist Monastery (Gompa) in village Tuan is an important representation of the rich religious and cultural heritage. This Gompa is located at a distance of 9Kms from Sechu Nalla towards to Tuan village which further leads Zaskar Pass and is visited by many pilgrims from HP and other states.



Various ecosystem services viz. provisioning, regulating, cultural and supporting services which include all types of physical goods and non-extractive benefits are being provided by this area.

Sr. No.	Ecosystem service	
1	Provisioning services	All type of physical products including food, fiber, fuel, Fresh water, Genetic resources etc.
2.	Regulating services	Air quality regulation, climate regulation, water regulation, Erosion regulation, water purification, disease regulation, pest regulation, soil quality regulation, pollination and natural hazard regulation Etc.
3.	Cultural Services	Recreation and Eco tourism, ethical and spiritual values, Educational and aspirational values
4	Supporting Services	Plant growth and nutrient cycling for soil formation and water quality regulation.

There are plenty of water sources in the Wildlife sanctuary and all of them originate from the glaciers of this area. The sanctuary has tremendous significance for its watershed value being the only source of perennial water. Adjoining villages are dependent on the sanctuary for its water source. The sanctuary has several waterfalls and snow fed streams which support good riverine diversity.



Confluence of Tarunda (left) & Jammu Nalla (right) Near Tuan Village
Photograph by Dr. Kuldeep Singh Jamwal HPFS



B. Scientific, Educational and Recreational Values

Since the Sanctuary is extremely rich in biodiversity it offers extensive opportunities for scientific study and research. It also offers considerable education value because of its richness in biodiversity and ecological processes. It offers great opportunities for trekkers, bird watchers and nature enthusiasts to explore the hidden gem of nature. The Sanctuary has high potential for developing eco-tourism. The sanctuary has Biological, ecological, hydrological, cultural and natural values and it is well buffered by the surrounding territorial forests.

C. Economic Value

- The Sechu Tuan Nalla Wildlife sanctuary provides the scenic landscape in the Pangri Valley. In this way, it indirectly contributes to several lives, livelihoods and tourist activity.
- The sanctuary has several trek routes and bird watching sites with great potential for eco-tourism and to create livelihoods for local community in form of nature guides etc.

D. Cultural and Religious Values

There is one Monastery (Gompa) in village Tuan is an important representation of the rich religious and cultural heritage. This Gompa is located at a distance of 9 Kms from Sechu Nalla towards Zaskar Passat Tuan village and is visited by many pilgrims of HP and other states. In Pangri Valley there are numerous temples of local deity. The famous Mindhalmata temple, in village Mindhal is visited by thousands of pilgrims from neighbouring Union Territory of J&K and Lahaul and Spiti District of HP.



Tuan Buddhist Monastery



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

CHAPTER-II
BACK GROUND INFORMATION
AND ATTRIBUTES



2.1 BOUNDARIES

The sanctuary is located between 32°-11'-40" and 32°-13'-16" E longitude and 76°-24' and 77°-03'-33" N latitude. It falls in Pangi Sub Division of Chamba Distt. The Sechu Tuan Nalla Wildlife Sanctuary falls under the administrative control of Wildlife Division Chamba. The limits of the Sechu Tuan Nalla Wildlife as per the latest Notification after rationalization is FFE-B-F(6) -11/2005-II/ Sechu Tuan Nalla Wildlife Sanctuary dated 07.06.2013 under Section 26(A) of the Wildlife (Protection) Act, 1972 is as under-

NORTH: From point 5856 Mtrs. up to 6072 Mtrs. along the State boundary of Jammu & Kashmir and Himachal Pradesh.

EAST: The main ridge, commencing from point 6072 Mtrs. of Zanskar (Jammu & Kashmir) State boundary separating the watershed of Sechu Nalla and Miyar Nalla along Urgose Pass and up to Ghordhar Pass 5105 mtr.

WEST: From near Baihali Jot 6302 Mtrs. to Malanu point 5233 Mtrs. up to Sidhani Nalla along the ridge and then along Sidhani Nalla up to point 2727 then along Chasak Nalla up to Bhator to Mtrs., Kulma Jot to via 3923 Mtr. height, 3434 mtr. height then boundary of Khud PF on ridge, 4666 Mtr. height, Dibri on ridge, 4639 height, 3730 Mtr. height, Mini Jot, Hud nal, 5488 Mtr. height, 5681 Mtr. height, 6142 Mtr. height, 5271 Mtr. height upto 5856 Mtr.

SOUTH: From Ghordhar Pass 5105 Mtr. to Duphao Jot at point 6070 Mtrs. along the ridge, then upto Baihali Jot at point 6302 Mtrs

All Boundaries of PA will be demarcated using differential global positioning system (DGPS) survey on priority basis.

2.1.1 THE ECO-SENSITIVE ZONE

The Eco-sensitive Zone of Sechu Tuan Nalla Wildlife Sanctuary was notified by Ministry of Environment, Forests and Climate Change New Delhi vide Notification No. S 3193 dated: 28 September 2017 (**Enclosed as Annexure-III**)

(1) Extent and boundaries of Eco-sensitive Zone.-(1) The extent of Eco-sensitive Zone varies from 0 meter to 1 kilometer from the boundary of Sechu Tuan Nalla Wildlife Sanctuary, 0 Eco-Sensitive Zone towards North, South and Eastern sides is due to inter-State boundary with UT of Ladakh and high altitude areas and the area of the Eco sensitive Zone is 46.45 sq. km.

(2) The map of Sechu Tuan Nalla Wildlife Sanctuary demarcating the Eco-sensitive Zone is appended as **Annexure IV**.

(3) The Geo Co-ordinates of prominent locations of the boundary of Sechu Tuan Nalla Wildlife Sanctuary and its Eco-Sensitive Zone is appended as **Annexure V**.



(4) The list of villages falling within the Eco-Sensitive Zone is appended as **Annexure VI.**

2.2 GEOLOGY, ROCK AND SOIL

The hill ranges usually lie in the east west direction with some local variation. The rock formation generally consists of schist's which are very common and occur in different forms such as shales, slates, gneisses, argillaceous clay etc. Underlying rocks are granite and gneiss almost uniform in character. Rock system in general, is unstable and of friable in nature. Sub soil in the Chander Bhaga is fairly hard, generally argillaceous shale. Soil beads inverse proportion to the slope. On southern aspects soil tends to be shallow and dry with rock out crops.

2.3 TERRAIN

Sanctuary lying in the middle Himalayas has basically a difficult terrain with steeply rising rock precipices interspersed with some moderately steep and occasional plateau like alpine pasture. The lofty peaks with number of ridges and spurs are the characteristic grandeur of the area.

2.4 CLIMATE

The Climatic condition of the Sanctuary is characterized as follows:

2.4.1 RAINFALL PATTERN AND DISTRIBUTION

The area acquires greater proportion of precipitation in the form of rain/snow during the winter season. The monsoon rains also occur during July August also.

2.4.2 RAINFALL AND SNOWFALL



Sechu Village - Photograph by :Sh. Rajesh Chauhan RFO



The sanctuary experiences greater proportion of precipitation in the form of rain/snow during the winter season. The monsoon rains do occur but the quantum of rain is very less. The data rainfall and snowfall collected from the nearest metrological stations for the Sechu Tuan Nalla Wildlife Sanctuary is not available.

2.4.3 TEMPERATURE

It is primarily the temperate conditions which prevail in this region. Temperature goes down considerable during winter. Sub-zero conditions touching -10°C are not rare during the winter season. During summer months, however, the weather normally remains clear with quite equable temperatures which may go up to 25°C .

2.4.4 HUMIDITY

Atmospheric humidity increases during the winter season. Otherwise, the humid conditions rarely prevail with very little turbidity in the atmosphere. The relative humidity data for the past 10 years is not available from the nearest metrological stations.

2.4.5 WIND SPEED

Generally the sanctuary experiences light wind of 6-11 Km/hr velocity. At the occasions particularly during winter there may be some gentle to moderate winds ranging from 12-29 Km/hr. These chilly winds are generally experienced along Nallas during nights as the cool winds descend the slope forming katabatic wind.

2.4.6 DROUGHT

Droughts occur during April-May and early June and again during October-November. Normally such droughts come as routine weather conditions and do not have any noticeable influence on the vegetation or water supply. It is only during occasional prolonged droughts when the young regeneration gets adversely affected. The perennial streams and water bodies are not much affected. However, the cultivated crops suffer damage on this account.

2.5 WATER SOURCES

The area is endowed with numerous perennial Streams/ Nallas and small water bodies which are mainly snow fed and receive large volume of water from melting of snow during summer season. The major Nallas/ streams originating from the Wildlife Sanctuary which reaches the Sechu village and form Sechu Nalla which is one of the main tributary of Chander Bhaga river are as following:-



Sr. No.	Name of Nalla
1	Chasak Bhatori Nalla
2	Shidhani Nalla
3	Harvin Nalla
4	Tarunda Nalla
5	Jammu Nalla
6	Gal Nalla

Besides these, there are few prominent water bodies in the Wildlife Sanctuary (**Enclosed as Annexure-VII**). Some species of fishes are definitely available in these nallas but the same have not been identified. The source of runoff water is snow; as such there are sufficient reasons for the rearing of Trout fish.



Tuan Nalla



Chasak Bhatori Nalla

2.6 BIO-GEOGRAPHIC CLASSIFICATION

Biogeographically, the area falls into Trans Himalayan Zone.

2.7 RANGE OF WILDLIFE, STATUS DISTRIBUTION AND HABITAT

The floral and faunal diversity with respect to altitudinal zone of the Sanctuary is as under-

The composition of the forest crop varies with altitude and aspect. The high altitude conifers like deodar, kail, fir and spruce in pure and mixed forms along with broad leaved species are growing in the temperate zone in the lower elevation. The kail is predominant



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

in the southern aspect whereas deodar, fir and spruce are occupying the cooler locations. The pastures and rocky cliffs exist in the alpine zone. Flora and fauna present in various altitudinal ranges of wildlife sanctuary is as under-

Sr. No.	Altitudinal Range (in meters)	Flora	Fauna
1.	2800–3300	<i>Abies pindrow</i> , <i>Cedrus deodara</i> , <i>Picea smithiana</i> , <i>Taxus wallichiana</i> , <i>Prunus persica</i> , <i>Prunus cornuta</i> , <i>Rhamnus virgatus</i> , <i>Betula utilis</i> , <i>Rubus</i> , <i>Morchella esculenta</i> , <i>Cotoneaster bacillaris</i> , <i>Indigofera heterantha</i> , <i>Viburnum, erubescens</i> , <i>Sarcococca</i> , <i>Rosa species</i> <i>Juniperus recurva</i> , <i>Berberis lycium</i> , <i>Artemisium spp.</i> <i>Viola odorata</i> , <i>Valeriana walichii</i> , <i>Fragaria</i> , <i>Rumax nepalensis, etc.</i>	Snow Leopard <i>Uncia uncia</i> ASIATIC BLACK BEAR <i>Selenarctos thibetanus</i> COMMON LEOPARD <i>Panthera pardus</i> GORAL <i>Nemortha edus goral</i> RED FOX <i>Vulpes vulpes</i> JUNGLE CAT <i>Felis chaus</i> HIMALAYAN GREY LANGUR <i>Semnopithecus ajax</i> SIBERIAN WEASEL <i>Mustela sibirica</i> ROYLE'S PIKA <i>Ochotona roylei</i> MONAL <i>Lophophorous impejanus</i>



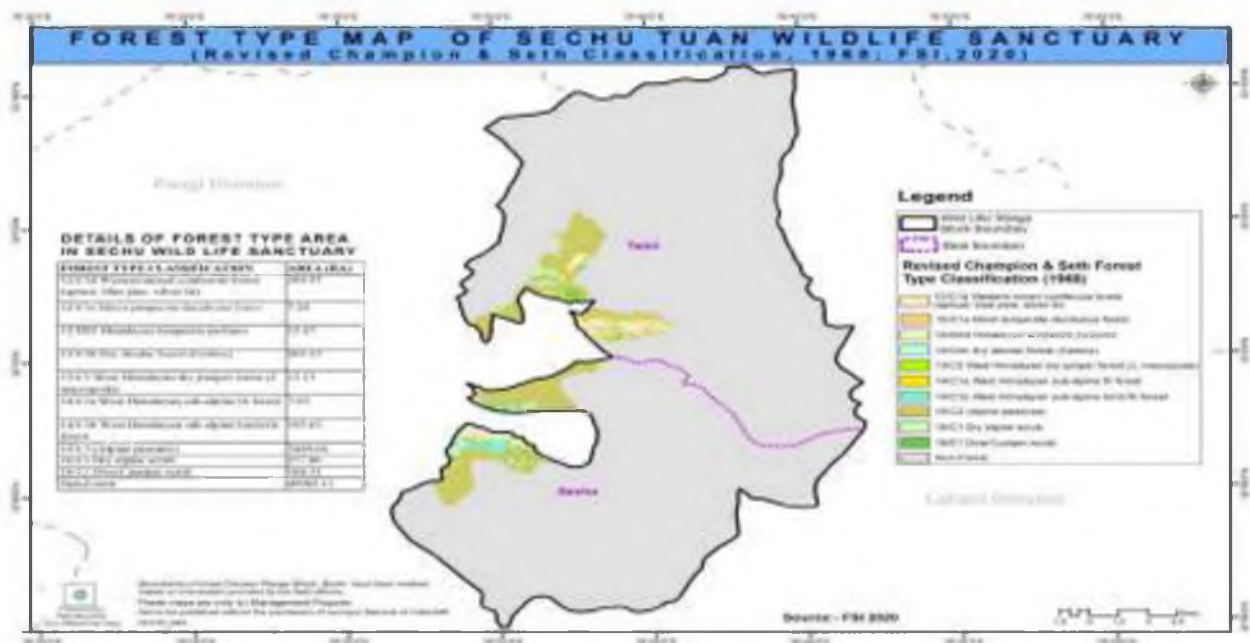
2.	>3300	<i>Rhododendron companulatum</i> , <i>Juniperus communis</i> , <i>Iris kemaonensis</i> , <i>Trifolium repens</i> , <i>Jurinea macrocephala</i> , <i>Aconitum heteroplyllum</i> , <i>Picrorhiza kurrooa</i> , <i>Sassurea lappa</i> , <i>Viola odorata</i> , <i>Valeriana wallichii</i> etc.	Snow Leopard <i>Uncia uncia</i> HIMALAYAN BROWN BEAR <i>Ursus arctos</i> MUSKDEER <i>Moschus moschiferus</i> HIMALAYAN THAR <i>Hemitragus jemlahicus</i> HIMALAYAN Ibex <i>Capra sibirica hemalayanus</i> Blue Sheep <i>Pseudois nayaur</i> HIMALAYAN Griffon Vulture <i>Gyps himalayensis</i> Bearded Vulture <i>Gypaetus barbatus</i> RED FOX <i>Vulpes vulpes</i> MONAL <i>Lophophorous impejanus</i> CHUKAR <i>Alectoris chukar</i> SNOW COCK <i>Tetraogallus himalayensis</i> SNOW PARTRIDGE <i>Lerwa lerwa</i> Red Billed Chough <i>Pyrrhocorax pyrrhocorax</i>
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2.7.1 FOREST TYPES

According to the classification of Revised Champion & Seth (1965), the forests of the Sanctuary are categorized into the following forest types.

Sr. No.	Forest type	Classification	Area (in Ha)
1	Western Mixed Coniferous Forest(Spruce, blue pine, silver fir etc)	12/C1/d	584.29
2	Moist Temperate Deciduous Forest	12/C/e	7.03
3	Himalayan temperate pastures	12/DS3	15.15
4	Dry deodar forest (<i>Cedrus deodara</i>)	13/C2b	205.40
5	West Himalayan dry juniper forest (<i>J.macropoda</i>)	13/C5	13.13
6	West Himalayan sub-alpine fir forest	14/C1a	7.83
7	West Himalayan sub-alpine birch/fir forest	14/C1b	193.65
8	Alpine Pastures	15/C3	3486.12
9	Dry alpine scrub	16/C1	276.94
10	Dwarf juniper scrub	16/E1	168.25
11	Non forest		49957.80



Forest Type map of Sechu Tuan Nalla Wildlife Sanctuary as per Champion & Seth Classification





Alpine Pasture (15/C3)



Dry Alpine scrub (16/C1)



**Moist Temperate deciduous
Forest (12/C/e)**



**Western Mixed Coniferous Forest
(12/C1/d)**

Forest Types of Sechu Tuan Nalla Wildlife Sanctuary

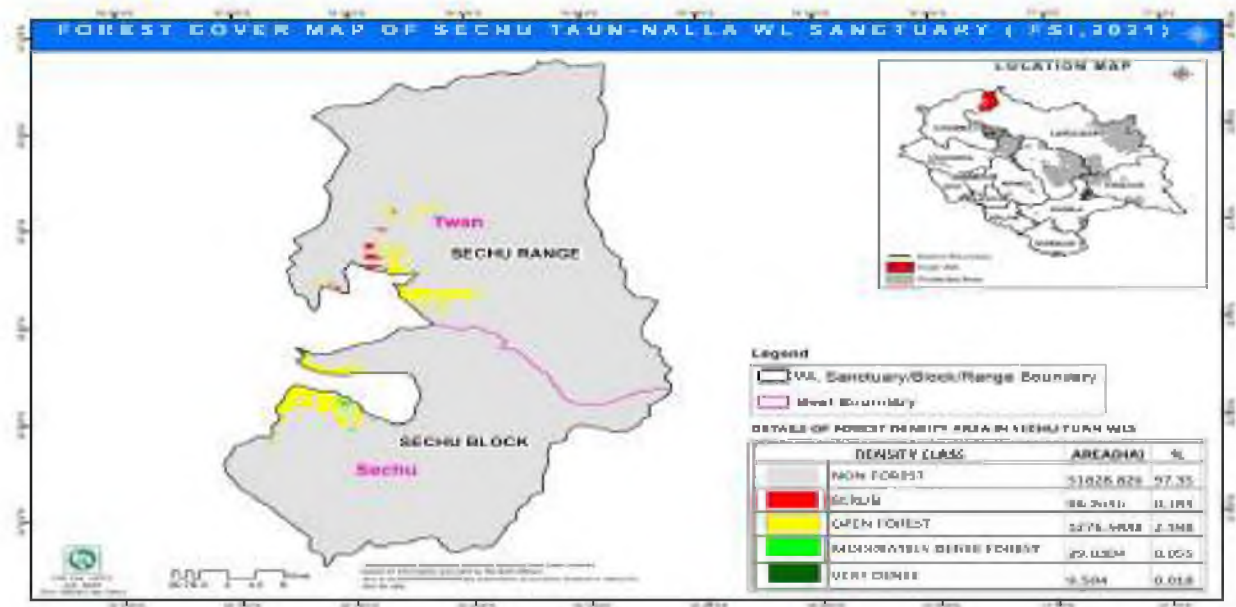


Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

2.7.2 FOREST COVER

The sanctuary has fairly close canopied forests of mixed coniferous species in the lower elevation whereas the higher altitudes as described under forests type are mainly alpine pastures. There is a good interface of the blanks and the forested area. This provides ideal shelter to different animals and bird species.

Sr. No.	Classification	Area (In Ha)	Percentage (%)
1	Very Dense Forest	9.504	0.018
2	Moderately Dense Forest	29.0304	0.055
3	Open Forest	1276.5888	2.398
4	Scrub	98.2656	0.185
5	Non Forest	51828.826	97.35



Forest Cover Map of Sechu Tuan Nalla Wildlife Sanctuary

2.7.3 COMMUNITIES AND SPECIES OF CONSERVATION IMPORTANCE

2.7.3.1 FLORA

Nothing out of this varied floral composition can be ignored from conservation point of view. But still emphasis can be laid on maintenance of adequate cover and proportion of broad leaved species of trees, bushes and herbs enough to provide fruits, flowers, seed food and other edible food and habitat for the wild animals, variety of birds and other micro organisms.



Medicinal plants and the pastures require to be maintained in a healthy condition so that these can support and sustain the wildlife optimally and at the same time prevent erosion. The detailed list of plants found in Sechu Tuan Nalla Wildlife Sanctuary can be found in **Annexure XVI**.







**Pedicularis
bicornuta**



**Potentilla
argyrophylla**



Potentilla atrorosea



Sorbus kashmiriana



Pink Rhododendron



Betula

Plants of Sechu Tuan Nalla Wildlife Sanctuary



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

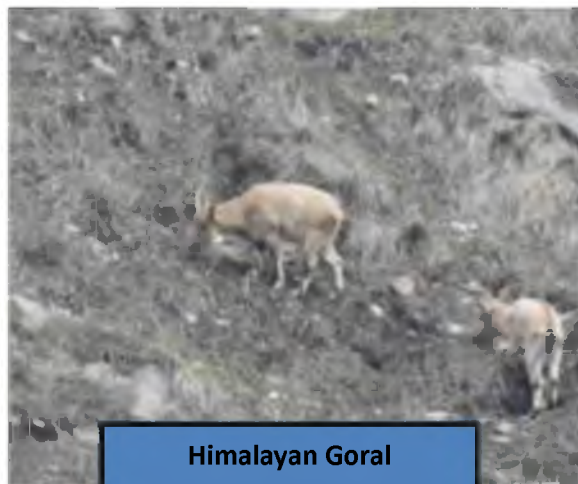
2.7.3.2 FAUNA

2.7.3.2 .A Mammals

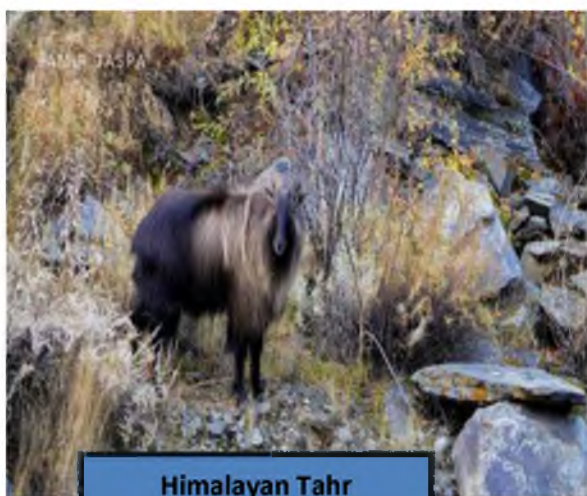
The most of the area of the sanctuary with many precipitous rocky cliffs in high altitude remains almost undisturbed for most part of the year. It is an ideal place for the conservation, protection breeding of wildlife. Moreover, it has a very good interface of blank lusty green pastures with forested area in patches and also in continuity which give shelter as well nice feeding grounds and habitat to many herbivores and important bird species. The detailed list of animals found in Sechu Tuan Nalla Wildlife Sanctuary can be found annexed in **Annexure XVIII**.



Himalayan Ibex



Himalayan Goral



Himalayan Tahr

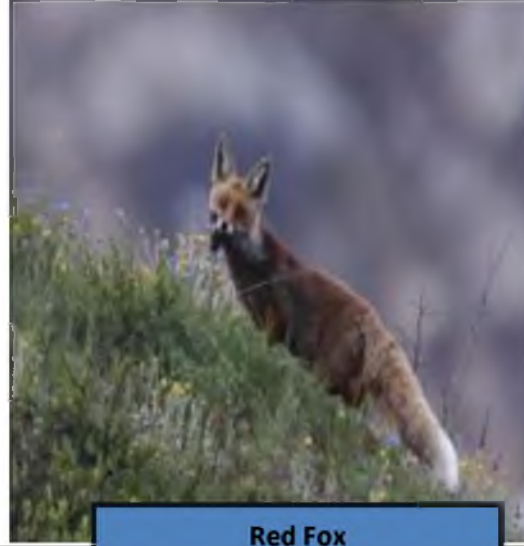


Long Tailed marmot





Himalayan stoat



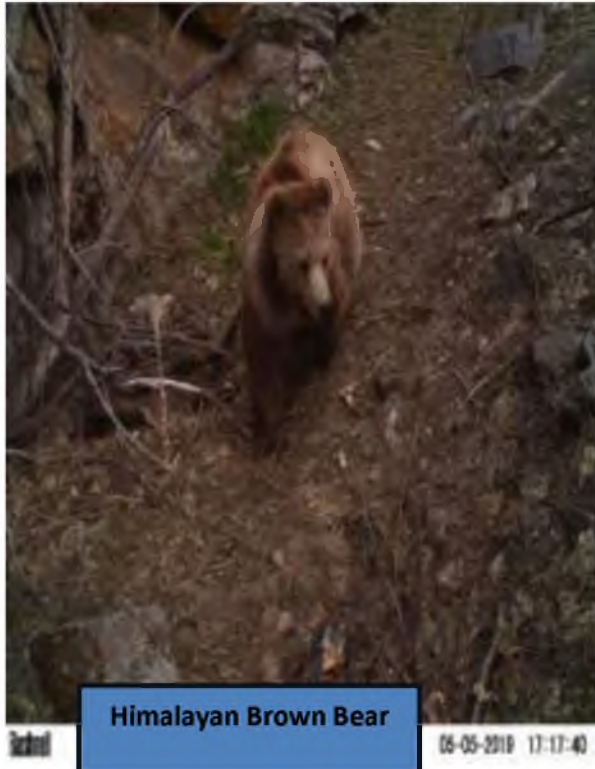
Red Fox



Snow Leopard



Musk Deer



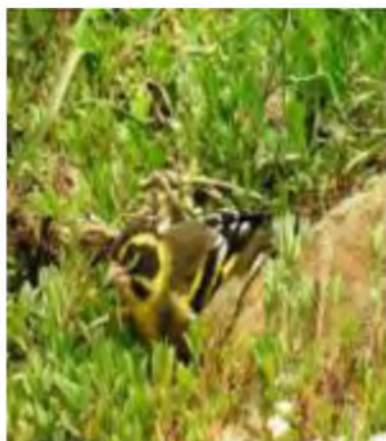
Major Faunal species of Sechu Tuan Nalla Wildlife Sanctuary



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

2.7.3.2. Avifauna

The sanctuary is rich in bird life. It has birds that are typical of the Himalayan region including Himalayan Woodpecker, Chukor Partridge, Monal Pheasants, Red Billed Chough, Eurasian Cuckoo, Himalayan Griffon, etc. The complete list of birds of sanctuary is given in **Annexure-XVII**.



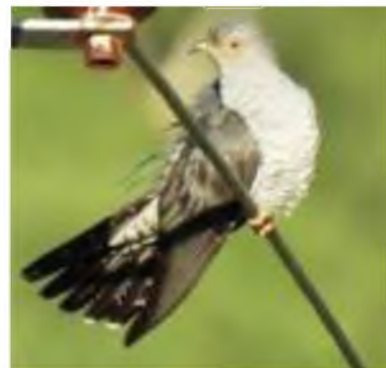
Yellow breasted Green Finch



Chukor Partridge



Blue Fronted Redstart



Eurasian Cuckoo



White tailed Ruby throat



Red Billed Chough





Citrine Wagtail



Blue whistling thrush



White capped Redstart



Great Barbet



Snow Pigeon



Large-billed Crow



Himalayan Griffon Vulture



Northern nut cracker



Himalayan Bulbul

Avifauna of Sechu Tuan Nalla Wildlife Sanctuary



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

2.7.3.2 .C Butterflies

The sanctuary is known for wide diversity of butterflies that inhabit the open areas of the sanctuary and where there is good presence of water and attracting plants. The detailist of butterflies is given **Annexure XIX**.



Dark Clouded Yellow Indian



Tortoise shell



Painted Lady



Queen of Spain Fritillary

Butterflies of Sechu Tuan Nalla Wildlife Sanctuary



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

2.7.3.3 FOOD FOR WILD ANIMALS

The vegetation of varied nature offers plenty of food for the wild animal. Some fruit bearing tree species like *Juglans regia*, *Aesculus indica*, *Prunus persica*, *Prunus padus*, *Pyrus pashia*, *Berberis aristata*, Wild Cherry, Cotoneaster etc. are the staple diet of the Wild animals. Some animals like Himalayan Brown Bear and Asiatic Black Bear prefer the fruits of *Prunus persica*, *Prunus cornuta*, *Rhamnus virgatus*, *Berberis aristata* and *Viburnum cotinifolium* as their food. Other plants or their parts consumed by them are *Rumex nepalensis*, *Fagopyrum esculentum*, *Morchella esculent* and, *Fragaria nubicola*, which are found in good number in this sanctuary. Herbivorous consume many varieties of grasses, herbs and fodder plants and mainly venture into the vast expanse of pasture. The prey and predator relationship exists in the different species of wild animals.

2.7.3.4 HABITAT QUALITY, QUANTITY AND KEY AREAS

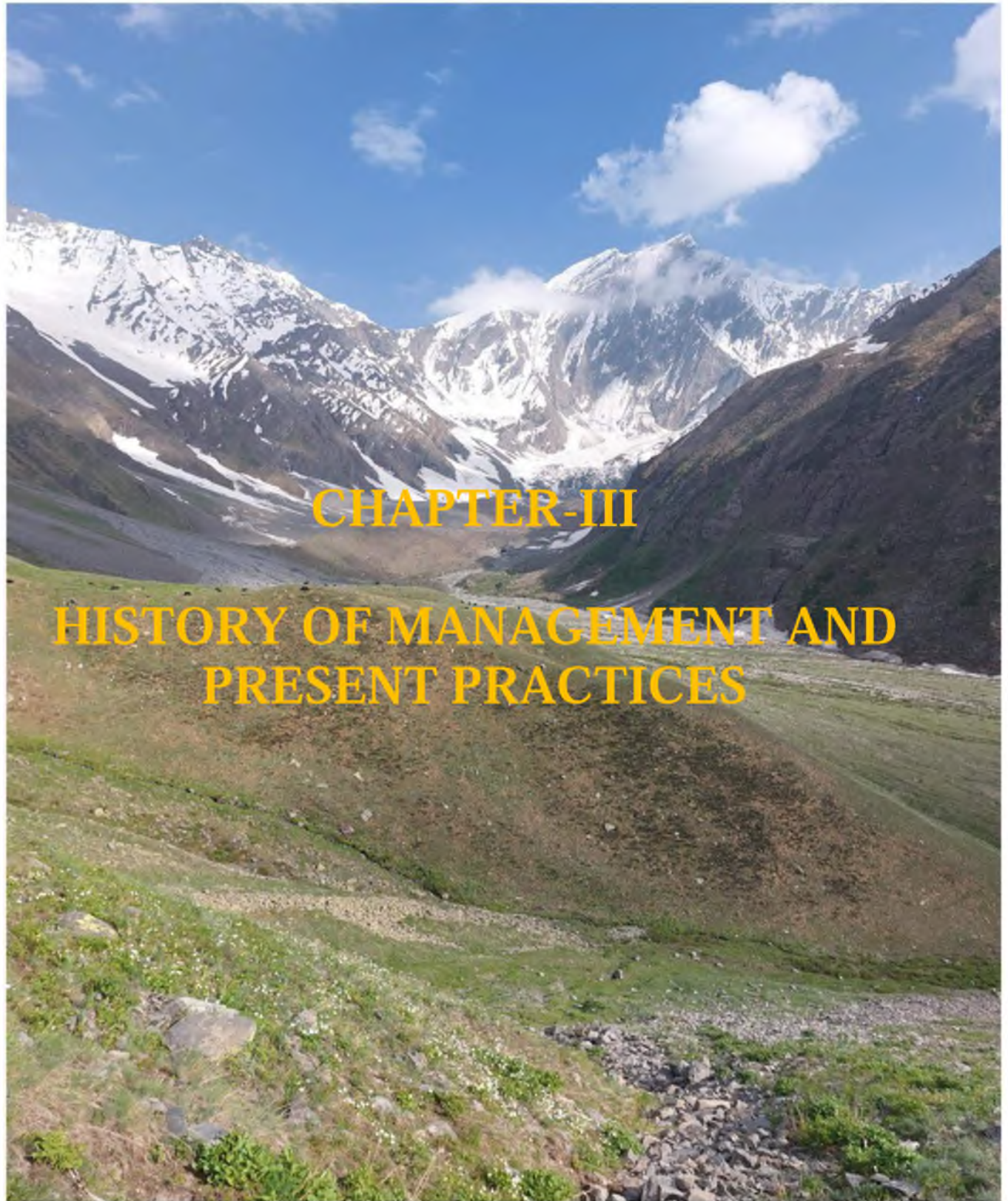
So far as the extent of habitat is concerned, it is adequate. However, due to biotic interference, the habitat has been subjected to a qualitative change. Human and cattle interference in this area of wildlife domain has leads to the conflict with the wildlife. Thereby the necessary elements of an ideal habitat have been disturbed. The habitat is well expanded and has good quality of pastures and other habitat requirements in the sanctuary.



Singhar Lake-Gul Dhar Sechu Tuan Nalla Wildlife Sanctuary



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)



CHAPTER-III

HISTORY OF MANAGEMENT AND PRESENT PRACTICES



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

3.1 GENERAL HISTORY OF FORESTS

The general history of the forests prior to the annexation of Punjab by the British Government in the year 1849 of which falls within the jurisdiction of Chamba District of which present Sechu-Tuan Wildlife Sanctuary is a part, is practically unknown. It is presumed that no large scale felling for export purpose had been carried out and only stray felling by the adjoining villagers might have taken place to meet the benefice requirements. Subsequently, the Raja of Chamba made an arrangement for delivering 10,000 logs annually to British Agent at Shahpur for the construction of barracks and other public utility works. The arrangement failed due to obstruction in the Ravi River. Further, the Raja made an arrangement in 1861 to sell standing trees direct to the British Govt. but it lasted up to 1864. In May 1864, the forests were again leased to the British govt. for a period of 99 years subject to renewal of the rules every 20 years.

Some clauses of the lease had been re-drafted in 1872. The demarcation of the forests was done at the option of Raja of Chamba and the British Govt. assumed the exclusive control of Reserve Forests whereas the other forests were managed by the Chamba State for the benefit of the Ruler and the subjects. The demarcation of settlement work of the present-day Reserve Forests of Bakloh, Dalhousie, Upper Chamba, Bharmour and Trehta Ranges was completed in 1879-82. The lease of the Reserved Forests was revised in 1886 and 1905. On 1st April, 1908, the British Government restored the management of these forests to His Highness, the Raja of Chamba experimentally for a period of Five years in the first instance on certain conditions. All the Reserved Forests were finally handed over back to Raja of Chamba in the year 1913 and the lease was cancelled. The Reserve Forests were placed under the control of Conservator of Forests and the State's Revenue Forests were placed under the control of Superintendent of Forests. The two units functioned independently except that the conservator of Forests acted as an advisor to the Superintendent of Revenue Forests.

After independence in 1947, Chamba State was merged in Civil District of Chamba as a part of Himachal Pradesh under Govt. of India. The forests of Chamba District were divided into two forests divisions *i.e.* Churah and Chamba.

This sanctuary was originally notified vide Notification as game sanctuary in 1962 and was re-notified as Wildlife Sanctuary under section 18 of Wildlife Protection Act 1972 vide notification No. 5-11/70-SF dated 27.03.1974, the final notification of the sanctuary was issued under section 26 A of Wildlife Protection Act 1972 vide notification No. FFE-B-F(6)-3/99 dated 01.11.1999. After Rationalization the Wildlife Sanctuary was again notified vide Govt. of Himachal Pradesh Notification No. FFE-B-F(6)-11/2005-II/Sechu Tuan Nalla dated 7th June, 2013 with total area of the sanctuary is now kept 390.29 sq km.

However, plantations have been raised under various centre and state schemes and soil conservation measures carried out in different years did help in the improvement of habitat for wildlife in the sanctuary.

The following activities have been executed under the expired working plans.



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

3.2 TIMBER OPERATIONS: -EXPLOITATION OF FORESTS

The exploitation of forests for export purpose started during 1850 onwards. Thereafter felling of moderate intensity took place up to 1885. The forests were further exploited under the provisions of various working plans which remained under operations from time to time. Further a complete ban of commercial green felling has been imposed in whole of H.P. since 1983. However, dry, dead, diseased trees were being removed in salvage marking in the various forests of sanctuary. The timber exploitation work in the sanctuary was carried out during 1994-95 to 2005-06. The trees granted to the right holders for house construction in TD rights for the period 1994-95 to 2003-04. The timber exploitation activity over the years has affected the wildlife due to loss of habitat and occasional poaching by labourers. With the pronouncement of judgement in a court case titled as all activities of timber exploitation has been stopped.

3.3 FIREWOOD

There has been no exploitation for firewood in the past. However, the local right holders, migratory and nomadic graziers had been collecting fuel wood from dry fallen trees and bushes existing in the forests for their domestic use for more than hundred years. Fuel wood is also collected for marriage and funeral purpose. On an average, there is a consumption of 75 qtls fuel wood per annum per family for cooking and heating purposes. Further, it is estimated that the nomadic graziers also collect fuel wood for cooking purpose. The proposal for the rationalization of area of the sanctuary has been moved during the year 2005-06 making a provision of exclusion of 881 ha forest and private area for the use of villagers and includes an equivalent non habilitated area into the sanctuary. But the matter has not been finalized as yet.

3.4 NON- TIMBER FOREST PRODUCE (NTFP) COLLECTION

The collection and removal of minor forest produce is regulated under the Chamba Minor Forest Produce Exploitation and Export Act 2003, and under Section 41 and 42 of Indian Forest Act, 1927 and rules made there under from time to time. The extraction, purchasing and export permits of the minor forest produce have been issued in the past after realizing prescribed fee/royalty under the above rules by the competent forest officers. The minor forest produce exported from the sanctuary during 1994-95 to 2003-04. Extraction and export of minor forest produce has now been stopped since 2004-05 with orders of Hon'ble Supreme Court of India.

The collection of medicinal herbs and shrubs shall be carried out in the wildlife sanctuary for bonafide domestic use only as per the settlement rights.

3.5 LEASES

As there is no green felling or Salvage removal from the sanctuary area hence, no leases at present exist in the sanctuary



3.6 GRAZING

The right to grazing in all types of forests, except Reserved Forests is more or less unlimited and was being exercised for more than 125 years. In reserved forests, the number of cattle allowed to be grazing has been fixed but this regulation has seldom been enforced in the field. In the days of Rajas, people who used to herd cattle in excess of prescribed number had to pay fees in the shape of Ghareri to the State. This was an effective check on the tendency of rearing cattle over and above the maximum domestic requirement of a family. Since the abolition of this tax by H.P. Govt. the pressure on forests has increased considerable resulting in soil erosion particularly adjoining to the villages. The number of sheep and goats allowed to graze in particular dhars and forests was freezed to the enumeration carried out during the year 1971-72. The number was further revised and freezed to the actual enumeration carried out during 1987-88. Now the Grazing Advisory Committee has allowed the number of sheep and goats and other cattle to graze as per actual enumeration with effect from 2005-06. The dhars are more or less free of rights. The Tribes were allowed grazing on payment of prescribed fee during the past. The grazing has now been suspended w.e.f. 2005-06 in compliance of the orders of Hon'ble Supreme Court of India.

The total cattle population is 3280 and they are being grazed in the sanctuary area. The detail is annexed at **Annexure- VIII**. No any nomadic grazer is allowed to enter in sanctuary area and no bodies have any seasonal grazing permit.

3.7. STATUS OF SETTLEMENT RIGHTS

The local tribal peoples of the area have been exercising their traditional rights since time immemorial. However, the right of the habitants living in the Sechu Tuan Nalla Wildlife Sanctuary were settled as per settlement of Chamba district during the year 1881. The people had been exercising the right *i.e.* timber for house construction, lopping of trees for fuel and fodder, torch wood, collection of minor forest produce, extraction of soil and minerals, grazing of domestic and migratory cattle, sheep and goats since 1881. Villagers of Chasak, Chasak-Bhatori, Udeen, Twan, Sechu, Murch and of the adjoining villages were exercising their rights almost free of cost except timber for house construction and grazing of sheep and goats for a nominal fee. All the rights of these people have been suspended now following the order dated 14.02.2000 of Hon'ble Supreme Court of India in IA No. 548 in writ petition No. 202/95.

3.8 OTHER PROGRAMMES AND ACTIVITIES

3.8.1 PLANTATIONS

The afforestation and pasture improvement activities by artificial sowing and planting of species beneficial to wildlife and suitable to the temperate climate have been carrying out since long back. The detail of plantations raised from 2012-13 to 2021-22 with number of plants and species planted in the plantation areas is given as **Annexure-IX**. However, there are some patches in various forests where the growing stock has reduced due to continued biotic



interference and natural calamities, such areas have to be regenerated by selecting site-specific species suitable for wildlife.

3.8.2 SOIL MOISTURE CONSERVATION WORKS

The sanctuary as a whole is well vegetated and suffers less from problem of erosion. However, there are certain streams which require to be treated to control flow of sediments, silt, save soil and reduce siltation in water ponds. In this context, soil conservation works are done in the sanctuary consisting of check walls, retaining walls and dry-stone check dams.

3.8.3 MAINTENANCE OF BRIDLE PATHS/ TREKKING ROUTES

These paths have dual purpose of patrolling/ inspection and for eco-tourism purposes. However, every year these paths needs to be maintained to clear them from slides (due to glacial movement), unwanted vegetal growth to make them ideal for movement on foot. Further, snowfall during the winters also leads to landslides, falling of tree branches or stem which may block such paths or may get damaged due to avalanche. Hence, maintenance of these paths is done periodically.

There are already some trekking paths in the area, however, for better study of flora, fauna and for better protection network, some more routes are required to be constructed. Detail of already existing trekking routes is enclosed as **Annexure-X**.



Wildlife officials in Tuan to Tarunda Nalla Trek



3.9 FOREST PROTECTION

Forest protection is accorded as top priority in the PA. Protection here is multidimensional as wildlife habitat face varied threats from illicit felling, habitat destruction, illegal NTFP collection, littering, anthropogenic activities, hunting, etc. In order to curb these and to enforce the Wildlife Protection Act and other forest laws in its letter and spirit, forest protection is essential activity which is performed through varied measures like patrolling, hiring of anti-poachers, anti-grazers and fire watchers, holding awareness programmes and also issuing damage reports in case of detection of illegal activities.

3.9.1 LEGAL STATUS

As the total area of 390.29 Sq. Km. has been declared as Wildlife Sanctuary and the same is legally protected under Wildlife (Protection) Act, 1972. The legal status of forests is as under:

3.9.1.1 RESERVE FORESTS

The Reserve Forests were constituted after demarcation during 1878-1881 and forest settlement was carried out simultaneously. Further Chamba State forests were declared as reserve forests. These were again revalidated as Reserve forests under The Indian Forests Act, 1927. Before rationalization Wildlife Sanctuary have an area of 196 ha. of Reserve Forest. However, after rationalization in the year 2013 complete Reserve Forest were taken out of the Wildlife sanctuary.

3.9.1.2 DEMARCATED PROTECTED FORESTS

The old DPFs were demarcated and settled in 1912-15. Subsequently, these were declared as DPFs under section 29 of Indian Forest Act 1927. Consequent upon the merger of states and formation of H.P. all the proprietary rights over forest area have been inherited by H.P. Govt. H.P. and declared all forest and wastelands as Protected Forests. Subsequently, the H.P. Govt. ordered that these forest stands demarcated, surveyed and rights determined and now these forests stand declared as Demarcated Protected Forests. The Demarcated Protected Forests and dhars constitute an area of 4932 hac and dhars which are completely snow bound have an area of 11327 Hac. After rationalization in the year 2013 an area of 899 ha. of Demarcated Forest were taken out of the Wildlife sanctuary. Similarly, an area of 4033 hac. of alpine pastures (Dhars/NDPFs) was excluded. And new area of 11327 ha. of alpine pastures was included in the Wildlife sanctuary. The forest wise detail is given in **Annexure –XI**.

3.9.2 HUNTING

A complete ban on hunting of wild animals has been imposed under the Wildlife (Protection) Act, 1972 and further amendments of the above Act and rules framed there under from time to time except as provided under special circumstance provided in the rules. Penalty



under section 51 of the Act has been enhanced to have a deterrent effect on the poachers. Prior to this ban, hunting used to be a favorite game of the Rajas of Chamba particularly during the winter season. Generally, the poaching is done in the remote areas during winter season when the mobility of the staff is hampered due to excessive snowfall. However, it is very rarely done in a planned way. The wild animals become easy targets of poachers and villagers when they migrate to the lower elevation during winter season due to heavy snowfall. It has been noticed that the villagers never inform the forest officers nor come forward to witness the poaching or other forest offences and become ignorant even if they know the commission of any offence. They need to be educated regarding the importance of wildlife and environment.

3.9.3 POACHING & OTHER ILLEGAL ACTIVITIES

3.9.3.1 POACHING

Poaching is one of the direct threats to the existence of wildlife. However, due to remoteness of the sanctuary in the inner Himalayas, this factor does not have any significant impact on the wildlife. No incidence of poaching has been detected during the last 15 years. However, offences of poaching during heavy snowfall, when the wild animals venture to the lower elevation i.e., in the eco-sensitive zone and near the habitation in search of food cannot be ruled out.



Awareness campaign in Sechu Panchayat against Poaching and Forest Fires

These cases are perhaps not reported / detected for want of evidence and due to existence of strong unity and affinity among the local community, as they never disclose anything against anybody easily. To curb this tendency, there is need to increase patrolling with better communication system and accessibility in the sanctuary with engagement of anti-poachers of right temperament and development of secret and effective information system.



3.9.3.2 ILLEGAL CUTTING OF TREES

No case of illicit felling of trees in the sanctuary area has been reported since long time. However, petty offences of lopping for fuel and fodder cannot be ruled out.

3.9.3.3 ILLEGAL REMOVAL OF NTFP



Jungli Pyaz (*Urginea indica*)



Wild Ajwain (*Thymus serpyllum*)



There had been a systematic exploitation of minor forest produce under the Chamba Minor Produce Exploitation and Export Act 2003 and transit rules under section 41 & 42 of IFA, 1927 in the past. As local habitants are dependent on forest and had liberal rights for exploitation of minor forest produce at that time. Thereafter, the extraction of Minor Forest Produce has been banned by the orders of Hon'ble Supreme Court of India w.e.f. 2004-05.

3.9.3.4 ENCROACHMENT AND OTHER ILLEGAL ACTIVITIES

No case of encroachment has been reported in the Wildlife Sanctuary. Other illegal activities which have taken place are illegal grazing by the domestic and nomadic goats, sheep and cattle in the plantations and closed areas. A few instances of illegal lopping, removal of fuel wood in the closed forests and plantation have been detected but largely these offences are petty and action has been taken by the staff as per prevailing acts and rules.

3.9.3.5 WILD FIRES

The chances of forest fire occurrence are more in the winters before snowfall. During this period people from surrounding villages burn their grazing lands (Ghasnis) to have more grass for the upcoming season. Fire incidences also take place when nomadic graziers cross sanctuary area, although such incidences are rare there is sharp decline in rearing livestock in the surrounding villages of eco-sensitive zone of PA. Regular patrolling along with deployment of fire watchers are carried out during summer and the winter months. Construction of water bodies, cleaning of bridle paths, inspection paths are also done during the season. Besides this regular fire awareness campaigns/ workshops are also conducted to make people aware about the loss due to forest fires. These activities help in combating with fire incidence. The list of fire prone areas is given as **Annexure XII**



Management Planning Process and Forest Fire Awareness programme(Tuan Village)



3.9.3.6 WILDLIFE HEALTH

No prominent weed species have been reported from the sanctuary. There is also no recorded history of diseases that have affected wildlife. The department of animal husbandry conducts regular vaccination of livestock in and around sanctuary. This helps in mitigating spread of any diseases from domestic livestock to wildlife

3.9.3.7 LIVESTOCK GRAZING

The sanctuary has a vast area under alpine pastures, which is visited by the migratory as well as hereditary graziers during the summer every year. Although the Hon'ble Supreme Court of India prohibited many activities including grazing in the sanctuary, yet the problem of grazing is yet to be settled, as the rights of the local as well as migratory graziers have not been settled.

3.10 TOURISM

The Sechu Tuan Nalla Wildlife Sanctuary hold a high potential of tourism in the sanctuary and it is a paradise for the trekkers and the wildlife lovers. The sanctuary has high potential for adventurous as well as religious tourism. However, no record of visitors has been kept in the sanctuary in the past. The tourist comes from different parts of Jammu and Kashmir, Ladakh and LahaulSpiti to see the enchanted valley view for refreshing themselves. During Mindhal Mata Jatra a significant number of pilgrims from Jammu and Kashmir visit Gompa situated in village Tuan and they further trek Tarunda Nalla area of the sanctuary. Some trekkers cross over to the Thanpattan region of Lahoul through Jammu nalla trek. Tourist also visits the ChasakBhatori and cross over to Miar valley of the Lahoul. Recently, tourists from other part of the country and foreigners were also seen visiting the Sanctuary area. Lush green pastures, alpine glacial lakes and permanent glaciers provide thrilling experience to the tourists. To facilitate the tourists there are two Inspection Huts viz. Sechu and Tuan and one Forest Rest House at Chasakbhatori. Construction of more facilities in the form of environment friendly trekker huts, camping sites etc. are required for the stay of the tourists.





Harwin Dhar, Sechu Tuan Nalla Wildlife Sanctuary

3.11 RESEARCH MONITORING AND TRAINING

3.11.1 RESEARCH AND MONITORING

The research and monitoring plays an important role in the management of Wildlife Sanctuary but due to rugged topography and remoteness of the Sanctuary the scope of research remained limited. Neither productive research/ monitoring nor regular training have been done so far in this sanctuary area. However, in house trainings for field staff have been undertaken. The works executed in the sanctuary are regularly being monitored by different level of forest officers as per protocol. Until and unless there is sufficient research data and information regarding the schemes to be implemented is available, the success cannot be achieved. The very basics of the subject matter viz a viz topography, climatic condition, flagship wildlife species, associates, migratory origin wildlife, predators, preys, all types of invertebrates and vertebrates including reptiles, birds, amphibians, insects, various types of flora of the area and the choice of species for different wild animals species, carrying capacity of the area, eco system services provided by the area, adaptability of the habitat to the wild animals, infrastructure available for the managerial staff in the sanctuary area and their effectiveness as well as professional skills / excellence etc. are some of the basics for research monitoring and subsequent training and the same will be executed in future for maintaining real time Wildlife data.

3.11.2 TRAINING

3.11.2.1 ON JOB TRAINING

To manage ecosystem with the basic purpose of wildlife management is a highly technical subject. Wildlife is a dynamic component of the ecosystem, which requires a well-



trained forester to comprehend, appreciate and manage. It is highly imperative that short trainings, in house trainings, refresher courses, exposure visits etc. for the field staff are made a regular feature, so that they keep abreast with the latest developments regarding different management techniques. Various training programs and sensitization modules are conducted regularly for the field staff at division level and with the members of civil society for better understanding of wildlife.

3.11.2.2 FORMAL TRAINING COURSES

Regular training courses are being conducted at Wildlife Institute of India to impart useful technical training skills for management of Wildlife Sanctuary. The officers/officials dealing with the wildlife management will be trained on regular basis as per available courses. Besides this, to acquaint with the latest management techniques adopted in different states/ countries, short training and exposure visits needs to be arranged for the officers and field staff.

3.12 WILDLIFE CONSERVATION STRATEGIES AND THEIR EVALUATION



Himalayan Ibex at Gul-dhar: Photograph by: Sh. Akshay Kumar, Forest guard



3.12.1 PATROLLING

At present joint patrolling, night raid and nakas, individual patrolling are done to protect the sanctuary from various offences. Patrolling is carried out on foot as there is no road inside the sanctuary.



Group patrolling in the sanctuary area

3.12.2 AWARENESS PROGRAMME

The approach with respect to conservation of wildlife is mainly by way of ensuring effective protection against poaching. Therefore, regular awareness campaign for educating the people through workshops, nature awareness programmes, guided tours and telling them about the significance of wildlife conservation is required and the same is needed to be taken up every year. The field staff of the Wildlife sanctuary has been carrying out awareness campaign among the masses but more emphasis is needed to make people understand about the basic values of eco system services, wildlife conservation and other benefits, which they are getting from the Wildlife sanctuary. Every year awareness campaign is carried out among the people under different schemes implemented by the State and Centre Govt. regarding forest and wildlife conservation. The primary focus of awareness is to involve the Panchayat representatives/local populations which include local Praja Mandals, registered youth clubs/Yuvak mandals, schools, mahila mandals as they are directly dependent on the forest resources. The activities like cleanliness campaign, interaction programmes, painting, essay writing, quiz and various other activities are being organized in the nearby schools including primary during Wildlife Week Celebration and other forestry related celebration days i.e, World Environment day, International Snow Leopard Day, etc. Other activities like random awareness, cleanliness campaign, nature trail walks and plantation drives are also organized on the days related to



Environment & Forest festivals with Schools, local governing bodies i.e. panchayat,,Yuvak and Mahila mandals.



Awareness programme with locals on wildlife conservation

3.12.2.1 WILDLIFE WEEK

Wildlife week is celebrated annually during first week of October and for the celebration of this week various activities are carried out by the forest department by involving school students and local community. Activities like cleanliness drives, slogan writing, painting, quiz competition, cycling etc. are carried out in the sanctuary. The well performing students were awarded by Honourable Chief Minister during state level wildlife week celebrations.



Wildlife Week celebration 2024 with students of GMS & GPS Chasak



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

3.12.3 PASTURE IMPROVEMENT

The sanctuary has a vast area under alpine pastures, which is visited by the migratory as well as hereditary graziers during the summer every year. As per present scenario there is sharp decline in the visits of migratory graziers in the Wildlife Sanctuary. Although the Hon'ble Supreme Court of India prohibited many activities including grazing in the sanctuary, yet the problem of grazing is yet to be settled, as the rights of the local as well as migratory graziers have not been settled. It will take some time to sort out this conflict. The pasture improvement activities had been taken up in the past in a limited way and it need to be extended further with removal of unpalatable grasses and bushes selectively for the protection and dissemination of indigenous grasses scientifically and execution of soil conservation measures in the slips and nallahs.

3.12.4 CENSUS OPERATION

The census of the rare and endangered species especially and other important wild animals and avian species in general is necessary to monitor their population in the wild. Census techniques are not available for all the species and new census/estimation techniques are being developed by WII, India. Therefore, the Wildlife Institute of India, Dehradun can be requested to provide knowledge on census methodology and training to the field staff so that the process can be completed at least once in a year.

In previous years Survey/Census was conducted during 2018-19 only and after that no survey were conducted because of Covid19 pandemic and non-allocation of funds. Further, during the year 2024-2025 Survey/Census for pheasants and other mammals was conducted during the month June-2024 and November-2024. Census reports are annexed as **Annexure-XXVI**.



Staff of Sechu range conducting Census in Sechu Tuan Nalla WL Sanctuary



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

3.12.5 IDENTIFICATION OF WATER HOLES AND SALT LICK SITES

There are numerous natural water holes in the Wildlife sanctuary. The wild animals and domestic livestock probably use majority of these jointly. In such a situation, there is every chance that the infection of contagious diseases may spread from domestic animals to wild animals and *vice versa*. Therefore, it is necessary that the possibility of constructing and maintaining the waterholes for the wild animals near to their habitat is needed to be explored where domestic livestock doesn't reach often. Apart from this, the natural salt licks are also available in the Wildlife sanctuary. However, these are very rare in the rocks and it is imperative that such sites to be identified and few supplemented artificial salt licks sites at lower altitudes can be developed for better sighting of wildlife that in return will also boost tourism in future as most of saltlicks are at higher altitudes.



Salt licking by Himalayan Ibex at Shidhani Dhar
Photograph by: Sh. Rajinder Kumar, Forest guard

3.12.6 CATTLE TREATMENT & VACCINATION

Inoculation against possible cattle diseases is required for the domestic cattle, sheep and goats passing through the sanctuary during the migratory period. The inoculation is carried out by the Animal Husbandry department as per norms. However, it needs to be ensured that the inoculation has been carried out from time to time at the main entrance points in the sanctuary and for ensuring the same forest check posts are needed to be created. Therefore, by doing the same and ensuring proper correspondence with the Animal Husbandry Department is required, so that actual field report of vaccination and cattle treatment can be compiled and the



compiled data be kept at the disposal of the Animal Husbandry Department so that the infection does not spread to the wild animals.

Sechu Tuan Nalla Wildlife Sanctuary has numerous alpine pastures which are the grazing grounds for migratory grazers during the summer season. These grounds are grazing grounds for numerous domestic livestock like Churi (Cow species), sheep and goat. During their stay, the domestic livestock are being lifted by carnivorous animals and their excreta gets mingled with grass and water etc. which is ultimately duly consumed by wild animals. In this way new alien disease can spread in the wildlife Sanctuary.

Therefore, it is proposed that all the domestic livestock in the eco-sensitive zone be inoculated..

3.12.7 PROHIBITION OF WEAPONS

There is a complete ban on carrying of weapons inside the sanctuary area. The necessary sign boards of do and don'ts inside the sanctuary are already placed. However further awareness shall be taken up regularly. No new NOC for purchasing the Gun/Gun License has been given to any resident of the villages nearby the Wildlife Sanctuary. However, there are some people who are having the licensed arms and the record of the same is maintained and the list of the same is given below:

Sr. No.	Name and Address of Arms Holder	License No.	Gun No.	Remarks
1.	Bhakat Ram S/O Sh. Sukhu Ram R/O Vill. Twan	53/PNG/94	14689	SBBL-12 Bore
2.	Babu Ram S/O Sh. Kanthu Ram R/O Vill. Hillu Twan	91/ PNG/92	R38410F	DBML
3.	Jeet Singh S/O Sh. Kunjang R/O Vill. Hillu Twan	55/ PNG/94	14687	SBBL-12-Bore
4.	Doodo Ram S/O Sh. Sunamjeet R/O Vill. Hillu Twan	19/ PNG/99	HPM13814	SBBL-12-Bore
5.	Gormi Dorge S/O Sh. Sunam Chhiring R/O Vill. Hillu Twan	20/ PNG/2000	20254	SBBL-12-Bore
6.	Gian Chand S/O Sh. Suraj Ram R/O Vill. Udeen	37/PNG/83	15CHR	SBML
7.	Madan Lal S/O Sh. Chandi dass R/O Vill. Udeen	8/cba/2/(14)12	NR38410F	DBML
8.	Ram S/O Sh. Bhani Ram R/O Vill. Chasak	7/PNG/1990	225963	SBBL-12-Bore
9.	Nanak Chand S/O Sh. Brij	55/PNG/04	225463	SBBL-12-Bore



	Lal R/O Vill. Chasak			
10.	Hoshiar Chand S/O Sh. Dharam Dass R/O Vill. Chasak	26/PNG/74	3280/73	SBBL-12-Bore
11.	Ramkrishan S/O Sh. Ram Lal R/O Vil. Chasak	123/PNG/07/03	689CHR	SBML
12.	Lobhi Ram S/O Sh. Bhag Chand R/O Vill. Chasak	30/PNG/03	540	DBML
13.	Doulat Ram S/O Sh. Birbal R/O Vill. Chasak	14/PNG/82	54375	SBBL-12-Bore

3.12.8 IDENTIFICATION OF CORE AREAS

There are some specific areas in the Sanctuary where the wildlife is in abundance. Such areas are to be treated as core areas. The sanctuary can be developed with special emphasis on the protection, natural breeding and proliferation of Snow leopard, brown bears and Musk deer which exist in the sanctuary in good numbers. The core area of Snow leopard, brown bear and Musk deer needs to be identified and developed as per management practices of the species. Some areas where the wildlife is in abundance are given below:

S. No.	Range and Block	Beat	Area	Remarks
1.	Saichu	Saichu	Shidhani Dhar	Biodiversity rich area of the sanctuary. Musk deer and Brown bear are sighted commonly.
2.			Gul Dhar	Rich habitat for Marmot and Royle Pika and wild flora.
3.			Harvin Dhar	Rich habitat of Musk deer, Brown bear & Monal
4.			ChasakBhatori Dhar	Rich habitat of Himalayan Ibex and Brown bear. Also rich in medicinal herbs.
5.	Saichu	Twan	Jammu Dhar	Rich habitat of Himalayan Ibex, Brown bear and Monal. Also rich in medicinal plants
6.			Trunda Dhar	Most no. of Snow Leopard, Musk deer and Brown bears are sighted in this area. Other species like Red fox and Himalayan ibex are also recorded there.
7.			Choglu Dhar	Rich habitat of Himalayan Ibex and Brown bear. Also rich in medicinal plants
8.			Esh Dhar	Rich habitat of Himalayan Ibex, Musk deer and Brown bear. Also rich in



				medicinal plants
9.			Hillu Dhar	Rich habitat of Himalayan Ibex and Brown bear. Also rich in medicinal plants

3.12.9 ENGAGEMENT OF WILDLIFE WATCHERS/ INFORMERS

The field staff has been carrying out the protection and management duty of the sanctuary on regular basis. However, during the summer season, the graziers pass through the sanctuary to their grazing grounds. More vigil is required for the protection of wildlife. Moreover, the Forest Guard of the beat cannot go to the sanctuary in the high alpine pastures alone during emergency. He needs at least two /three persons with him for patrolling and other duties in the remote and inaccessible areas. Therefore, people from the adjoining villages with a vent of wildlife conservation attitude can be engaged as watchers/anti-poachers in the sanctuary for at least six months in a year. Their services can also be utilized for launching awareness campaigns regarding wildlife conservation and its importance. Hence, in return it will generate employment opportunities to the villagers.

3.12.10 CONSTRUCTION OF BRIDLE PATHS AND BUNKERS

The most area of the Wildlife sanctuary is inaccessible and located at higher altitudes. Moreover, it is very far from field staff headquarters and they cannot come back to their Head Quarter son same day. For proper monitoring and vigilance of wildlife, it is necessary to have paths and shelters at appropriate places during patrolling in the sanctuary. The natural sites like caves and overhangs can be improvised in the shape of bunkers where the staff can halt for the night. The paths and bunkers need to be maintained every year as these are damaged and blocked with debris due to the heavy snowfall during the winter season. Attached as **Annexure-X and XXVII**



Bunker in Chasak Bhatori Dhar Photograph By: Sh. Sanjeev Singh HPFS



3.13 ADMINISTRATIVE SET UP

The sanctuary is being managed by the Divisional Forest Officer, Wildlife Division Chamba. There is one Range Forest Officer (wildlife) located at Sechu, who supervises Sechu Tuan Nalla wildlife sanctuary in the Tribal area. The Sechu Tuan Nalla Wildlife Sanctuary has been divided into one block and two beats. The Deputy Ranger at Sechu is in-charge of Block (whole of the sanctuary area) and two beat in charge forest guards posted at Sechu and Tuan beats. However, the administrative set up of the sanctuary is given as under:-

Sr. No.	Name of the Wildlife Sanctuary	Designation of the forest officer	No.	Headquarter
1	Saichu-Tuan Nala	D.F.O.	1	Chamba
		Range Forest Officer	1	Sechu
		Block Officer	1	Sechu
		Forest Guard	2	Sechu Sandhari

3.14 COMMUNICATION

As on today, means of communication to the sanctuary have been improved to great extent as compared to the earlier times, but still majority area of the sanctuary is out of network communication. Messages can be delivered through the mobile network of BSNL & the Jio network which is working in the area. The road communication is through up to Tuan and Chasak village during the summers only, but the whole sanctuary gets disconnected with rest of the world due to heavy snowfall during the winters. The mobile network vanishes beyond the Tuan and the Chasak-Bhatori Village. Mobile network facility is imperative to have an efficient communication system for better management and protection of wildlife of the sanctuary.

3.15 SUMMARY OF THREATS TO WILDLIFE

Sanctuary has water sources, flora, fauna which needs to be conserved and protected. At present, the most likely threats to protected area are illegal NTFP extraction, encroachment, logging, fire, grazing, hunting etc. These threats need to be mitigated for conservation and preservation of biodiversity of the protected area.

3.15.1 GRAZING

Grazing by migratory and hereditary graziers not only poses serious threat to the habitat but also there are chances that the infection of contagious diseases may spread among the wild animals from the domestic livestock. No disease or mortality was noticed in the past but the fact needs to be studied / established and prevention on this score must be taken by way of inoculation of domestic livestock and better animal husbandry practices. As mentioned earlier, the grazing has been prohibited by the orders of Hon'ble Supreme Court of India but the rights of the migratory graziers have not been settled yet. As discussed above, this is a serious threat to the wildlife and needs to be addressed on high priority.



3.15.2 PASTURE STATUS

The biotic pressure on alpine pastures is more than their carrying capacity. It is the matter of concern that unpalatable grasses have invaded the grazing grounds due to excessive grazing. However, keeping in view the orders of Hon'ble Supreme Court of India, the matter can be taken up with the government and efforts should also be made to provide alternate grazing areas outside sanctuary. The geological and normal soil erosion over the years has also played a role in decreasing the extent of pasture lands. Simultaneously the efforts must be carried out by wildlife managers to tackle such pastures for immediate treatment by mobilizing resources for this purpose.

3.15.3 HUMAN WILDLIFE CONFLICT

Sechu Tuan Nalla wildlife sanctuary is surrounded by a number of villages on its southern and south western sides. Grazing of cattle and collection of NTFP by Nomadic graziers and fringe villages increase the chances of human wildlife conflict, as a result of which local people are not supportive to conservation of wildlife. Forest department (especially frontline staff) are not getting proper support from local communities, therefore management of human wildlife conflict should be the priority for management of any PA. Details are given in Human Wildlife conflict management plan.

3.15.4 DISEASES TRANSMITTED THROUGH DOMESTIC CATTLE/ COMMUNICABLE DISEASES

Wildlife disease is one of the major protection issues for a sanctuary. In Sechu Tuan Nalla Wildlife Sanctuary the chances of infection from the cattle of adjoining villages and migratory graziers cannot be ruled out. The following areas have been listed sensitive as well as key sites on account of common sites where the wild animals as well as domestic animals feed /graze frequently. Therefore, this area needs to be sanitized, so that the disease from domestic animals does not get transmitted to the wild animals in the vicinity. Further, the sites nearer to habitats or Goths (where the migratory graziers camp during nights), it is necessary to vaccinate the herds of sheep and goat regularly to avoid the transmission of possible diseases.

3.15.5 POACHING

Poaching is one of the effective direct threats to the existence of wildlife. But due to remoteness of the sanctuary in the inner Himalayas, this factor does not have any significant impact upon the wildlife. No incidence of poaching has been detected during the last 15 years. However, the offences of poaching during heavy snowfall, when the wild animals venture to the lower elevation and near the habitation in search of food, cannot be ruled out. These cases are perhaps not reported / detected for want of evidence and due to existence of strong unity and affinity among the local community as they never disclose anything against anybody easily. To curb this tendency, patrolling with better communication system and accessibility in the sanctuary has to be increased with engagement of watchers of right temperament and development of secret and effective information system.



3.15.6 FOREST FIRE

The chances of occurring forest fires are more in the winters before snowfall. During this period people from adjacent villages burn their grazing lands (Ghasnis) to have more grass in the coming season. Fire incidences also take place when nomadic graziers cross sanctuary area, although such incidences are rare. Regular patrolling along with deployment of fire watchers are carried out during both the summer and winter seasons. Construction of water bodies, cleaning of bridle paths, inspection paths are also done during the season. Besides this regular fire awareness campaigns/ workshops are also conducted to make people aware about the loss during forest fires. These activities help in combating with fire incidence. The list of fire prone areas is given as **Annexure-XII**.

3.15.7 INSECT ATTACK AND PATHOLOGICAL PROBLEM

No study in this regard has been carried out in the past. However, from the field experience of the staff, it has been reported that no insect attack has taken place on the vegetation in the past. This is perhaps due to the existence of the sanctuary in the high mountains. However, the interaction between domestic cattle and wild animals cannot be ruled out, which may result into some contagious diseases. But this aspect has not been ascertained yet. Remains of salt given to the domestic live stock in the pastures may act as a carrier of some pathogenic disease to the wild animals if they lick that salt.

3.15.8 SHRINKING HABITAT

To some extent, the habitat is getting depleted due to shrinking of area. Some of the factors behind the shrinking of habitat are adverse climatic factors, unchecked soil erosion, uncontrolled biotic interference overtly or covertly, invasion of unpalatable grasses, creepers and bushes.

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CHAPTER-IV
THE PROTECTED AREA
AND
THE INTERFACE
LAND USE SITUATION

4.1 EXISTING SITUATION IN THE ZONE OF INFLUENCE

The sanctuary has high mountainous peaks towards the northern, eastern and southern direction. As one goes in the western direction, the elevation goes on decreasing. The Sechu Tuan Nalla Wildlife Sanctuary is spreading over at height 8200 feet to 18500 feet. However, with the pace of development and good connectivity by roads in the area, there is considerable amount of decrease in the age old migration to lesser harder area down below in the planes under compelled circumstances of hardships and non availability of medical and other life saving facilities in the area. The Zone of influence of sanctuary can be considered to be the notified eco sensitive zone which follows more or less the sanctuary shape. There are as many as 5 villages are located in the zone of influence and one inside the sanctuary. The socio-economic character of these villages is largely oriented towards agriculture and livestock rearing. They are dependent on the sanctuary for fulfilling their basic needs. The professional poachers from outside the areas hardly ventures during the winter season in the sanctuary area. In totality, the human population is less in the zone of influence thus exerts less biotic pressure on sanctuary.

4.1.1 VILLAGE INSIDE/OUTSIDE THE SANCTUARY AREA

Prior to rationalization of the boundaries of sanctuary, the detail of villages existing within the sanctuary along with population is given as under:-

Sr. No.	Name of Village/ Hamlet	Geo Co-ordinates		Population	Remark
		Latitude	Longitude		
1.	Hillu	76 ⁰ 36.13"E	33 ⁰ 01'08."N	55	Located in Eco sensitive zone
2.	Twan	76 ⁰ 37'05"E	33 ⁰ 01'47"N	60	Located in Eco sensitive zone
3.	Chiroti	76 ⁰ 36.21"E	33 ⁰ 01'17"N	26	Located in Eco sensitive zone
4.	Kali Chho	76 ⁰ 36.52"E	33 ⁰ 01.39"N	18	Located in Eco sensitive zone
5.	Sandhari	76 ⁰ 35'43"E	33 ⁰ 00'32"N	19	Located in Eco sensitive zone
6.	Murch	76 ⁰ 35'52"E	32 ⁰ 56'31"N	47	Located inside the Sanctuary area
Total:				225	

The whole of the population of 6 villages formally living inside the sanctuary was tribal. Except Murch village rest five of these villages have been excluded from the sanctuary area and have been included into the Eco-sensitive Zone. The villagers have small land holdings. They grow maize, phullan, pea, barley, potato and pulses in their small land holdings. They rear



sheep, goats and cattle for the agriculture needs. Apart from agriculture and marginal horticulture, a few of them run small shops of daily needs. Some of them are Govt. employees serving in the lower areas. In general, the villagers are very simple and tough. Their standard of living is increasing day by day and they have an education facility up-to HSC at GSS School Sechu. Govt. PHC Health Institution is located at Sechu. The infrastructure existing in the ESZ of Wildlife sanctuary and the Govt. employees living there could be used to have a direct bearing with the existence of wildlife in the sanctuary and they can also be mobilized usefully and can exert their influence on the locals and the tourists in the wildlife conservation activities.

The Murch village is still located inside the PA. And local people are directly dependent on Sanctuary area for their basic needs. The local population are very supportive to the wildlife staff and render help in management and protection of wildlife. Any conservation initiative will not be successful without involving local people, so various awareness programme needed to be carried out that will help in involvement of local people in management and protection of the sanctuary. Various eco-development and skill development programmes/training like pickle making, Guide porter training, stitching, knitting etc. are provided to local residents of ESZ to generate alternative income source and reduce the dependence on the resources of Sechu Tuan Nalla wildlife sanctuary. Regular awareness programmes for locals, students/youth are required to get their support.

Sources of income for local people in the area are livestock (sheep/goat) farming, agriculture, collecting medicinal plants for sale, and tourism. Local people are directly dependent on resources such as fuel wood for their livelihood. Creating employment opportunities for local people will help in promoting sustainable livelihoods. Non-Timber Forest Products (NTFPs)/medicinal plant cultivation on private land or community land is one of the most lucrative potential income-generation activities because the area has a unique ecological character and favours high value medicinal plants. There are considerable prospects for the production of pulses, green vegetables and fruits in the area. Efforts are required to realize these potential developments. Off-farm employment and income opportunities in this region are inadequate. Local resources and traditional skills based on enterprise potentials have not been adequately identified and assessed. Potential exists in handicraft production, livestock based production and traditional skills that need to be explored and promoted.

4.1.2 ETHNIC IDENTITIES

The villagers living in the Eco-sensitive Zone area embrace Hinduism and Buddhism and are known as Pangwals and Bhots respectively, they have a pastoral base of economy. They have a rich cultural identity and their attire give them particular identity. However, with rise in standard of living due to sale of pulses, potatoes and marginal horticulture and increased education, general life style of communities is changing. They only wear their traditional dresses on specific occasion like marriages, deaths and worship local gods and deities.





Village Murch (Inside Sanctuary)

4.1.3 ECONOMY AND OCCUPATION OF VILLAGERS LIVING IN THE ECO-SENSITIVE ZONE AREA

Economic condition of local people is not well but there has been considerable increase in their income with improved agriculture and horticulture practices. They meet their annual requirement of food by practicing agriculture and horticulture on the small land holdings. The average production of food grains and fruit as per estimate of Agricultural Department is given as under:-

Sr. No.	Crop	Agricultural crop sown in hectares, per Kg, Qtls, Ton in HilluTuan region	Agricultural crop sown in hectares in Sechu Region
1.	Pea	12.50hec / 875 Qtl	70 Hec/4900 Qtl
2.	Potatoes	3.50hec/870 Qtl	40hec/2000 Qtl
3.	Rajmah	2.50hec/62.5 Qtl	10hec/250 Qtl



4.	Barley	2.0hec/5.042 Qtl	8hec/20.168 Qtl
5.	Wheat	1.0hec/40 Qtl	8hec/280 Qtl
6.	Buck Wheat	1.5hec/1.43 Qtl	5hec/7.15 Qtl
7.	Vegetables	1.5hec/0.45 Qtl	2.5hec/0.27 Qtl
8.	Other Vegetables	0	2.5hec/0.475 Qtl

The phototropic period of the crop is quite long due to the severe temperate conditions prevailing in the area. The crops grown are harvested in the months of June-July and September-October. Local folkshad been living with nature in complete harmony along with their livestock, sheep and goats. A few of them practice beekeeping for their domestic consumption and not on commercial scale. Collection of NTFP activity has been stopped due to the order of Hon'ble Supreme Court of India dated 14.02.2000. However, they sell pulses, apples, wool and woollen blankets, sheep and goats and from these earnings make purchases of oil, grocery, cloth, utensils and other things from Killar, Kullu & Chamba. The sale amount is just sufficient to provide them basic needs of livelihood and meet the requirement of education of their children. There are number of government schemes for their upliftment i.e., free medicines, free books and uniforms to students, housing subsidy, family and old age pension etc.

4.1.4 IMPLICATION OF LAND USE

The cattle rearing are the chief profession of the majority of the population and it is impossible to delink the dependency of the people on the forest resources. The quantity and quality of the livestock has to be determined on the carrying capacity of the forests and the available fodder on the private holdings. Private land can be tilled in a better way so that the nutrient loss is less sheet erosion of top soil is arrested. The grazing land around the village have lot of biotic pressure where plantations of species fit for fuel and fodder can be raised to reduce the pressure on the main protected area. The pasture land along the corridor of migratory graziers leading to Lahaul Spiti can be improved by rotational closure and planting of improved palatable grasses. But with the banning of all activities in the wildlife sanctuaries by the order dated 14.02.2000 of Hon'ble Supreme Court of India, the whole scenario has changed.

4.1.5 PROTECTED AREA MANAGEMENT AND ITS IMPLICATIONS

The wildlife wing of the forest department will rehabilitate the degraded forest land and help the natural regeneration area by artificial sowing and planting. The inspection/census paths will be constructed and the old one will be repaired annually to have better monitoring of wildlife and different habitat management works in the sanctuary. By developing trekking facility in the form of paths, inspection huts, bunkers, the tourists will also be attracted towards the sanctuary. All the above activity will generate employment to the local people and



research on wild animals can also be carried out for better management. At present no non-government agency is working in the area. It is the Forest Department which had been undertaking different livelihood activities aimed at increasing the income of the people living in the vicinity of sanctuary

4.2 THE DEVELOPMENT PROGRAMMES AND CONSERVATION ISSUE

4.2.1 GOVT. AND NON GOVT. PROGRAMMES AND THEIR IMPLICATIONS FOR THE PROTECTED AREA AND ZONE OF INFLUENCE

At present, there is no Non-Govt. agency working for the development of sanctuary area. The wildlife wing of the Forest Department is undertaking different activities aimed at improving the forests habitat conditions, making efforts to educate the masses regarding Wildlife Conservation and to promote Eco Tourism. For the involvement of non government agencies, local bodies like Panchayats and other institutions like schools, Yuvak Mandals, Mahila Mandals etc. are being persuaded to take part in wildlife conservation activities. To ensure more participation some eco developmental works are also being taken up in the surrounding villages.

At present only three major Govt. programme/schemes i.e. CAMPA KOL DAM, CSS and TASP under which various activities are being executed in Sechu Tuan Nalla wildlife sanctuary area. Details of various activities executed are as under:-

Sr. No.	Major Activities	Minor Activities
1.	Infrastructure Development	C/o Building, Road, Bunker, Camping Sites and Paths etc
		Maintenance of existing Building, Road, Bunker, Camping Sites and Paths etc
2.	Habitat improvement	Plantation work
		Soil and Moisture Conservation works (i.e. C/o and Repair of Check Walls/Check Dams, C/o and Repair of Water Ponds,
		Maintenance of Nurseries
3.	Capacity Building/Training/Research & Monitoring	Wildlife Survey and Census(i.e. Estimation of Flora and Fauna)
		Training to Field staff
		Capacity building of local communities i/c local guides in management and development of eco-tourism, anti poaching and census etc,



4.	Wildlife Protection and Conservation Activities	• Deployment of anti-poacher and anti-grazers
		• Deployment of Fire Watchers
		• Hiring of Vehicle for patrolling and nakas
		• Development of Camping sight for Antipoaching Camps
		• Ration To Patrolling to Staff upto R.O. level
5.	Education and Awareness Generation	• Wildlife week and other awarenessprogramme
		• Publicity material
6.	Wildlife Tourism Management	• Installation of dustbins/garbage cane and rest benches etc.
		• Signages
		• Deployment of camping sites etc.
7.	Field equipment and other amenities to staff	• Purchase of Field jackets, Drone, Shoes, Camping kit etc.
8.	Office expenses	• Purchase of Stationery items
9.	Community Development through Participation	• Community welfare activities (Providing LPG, Pressure cookers, induction, etc)
		• Strengthening livelihood of local communities
10	Human-wild animal Conflict	• Training to field staff and local people about Human Wildlife Conflict

4.2.2 ECONOMY

As already mentioned, people are financially self-sufficient to some extent. The level of investment in rural development programmes has remained comparatively low. One of the reasons for this is the low density of population and difficulty in executing works in these areas because of tough terrain and inaccessibility of areas. The production of cash crops in the area and other development schemes of the Govt. are helping the local people to improve their monetary status to some extent.

4.2.3 PROBLEMS FACED BY PEOPLE AND EFFECT ON THE MANAGEMENT OF PA AND ZONE OF INFLUENCE

So far as the management of Wildlife is concerned, it does not have any implication for the local public. People however, show resentment when there is man- animal conflict or some damage to the livestock or crops by the wild animals. Particularly common



leopard, Black Bear, Brown bear and Langur constitute man-animal conflicts for which people are quite apprehensive. Local people as well as migratory graziers also show resentment when they are restricted to graze their cattle in the sanctuary area especially during summer season. However, scientific management as well as awareness programmes can help in managing conflicts between the public and wildlife.

4.3 TRAINING

Imparting training to the field staffs is also an important part in carrying out field working in the Wildlife Sanctuary. Necessary refresher courses for various level of functionary of the wildlife sanctuary will be imparted at various institutions to develop skilful field staff for professional management in the wildlife sanctuary. Experts from various Wildlife Institutes as well as NGOs will be requested to organize such camps within the sanctuary to acquaint field staff with modern census techniques, Forest and Wildlife Acts, rescue operations, modern wildlife surveillance gadgets and any other techniques necessary for the management of Wildlife Sanctuary.

4.4 GPS ENABLED DEVICES FOR FOREST GUARDS

Necessary global positioning systems (GPS) devices will be provided to all the field staff i.e. beat in charge Forest guards, Block Officers and Range Forest Officers. This will consolidate the field working system and staff will know the exact positions of nesting places, caves/ crevices where mammals have given birth to their new born. The latitude and longitude as well as the exact height of the place including the map of the route followed can be drawn with the help of GPS devices and these GPS devices also play essential role during Wildlife Survey/Census operations.

4.5 IDENTIFICATION OF MANAGEMENT ISSUES AND MANAGEMENT SOLUTIONS

Management issues:-

1. Most of the area is permanently snow covered.
2. Working period is limited.
3. The terrain is mountainous and the area is mostly inaccessible.
4. Local herders graze their livestock in alpine areas
5. Lack of awareness among the local community
6. Poor Connectivity and network communication

Management Solutions:-

1. We are planning to purchase 3 solar panels Range for betterment of electricity and working of Range.
2. Planning to create more awareness among the local to aware about wildlife and their importance in their life.





5.1 THE VISION

“To be a well protected sanctuary in the Western Himalayas free from any adverse human pressures, with an undisturbed; well protected ecosystem that is a home to a variety of flora and fauna and to develop as a center for wildlife tourism providing a rich and hassle-free experience to eco tourists”.

5.2 OBJECTIVES OF MANAGEMENT

The objectives of management of Sechu Tuan Nalla Wildlife Sanctuary are enumerated as under: -

- To develop a harmonious relationship between wildlife and people for peaceful co-existence.
- Improvement of Habitat for different wildlife species.
- Protection against threat to wildlife.
- Conservation of biodiversity.
- Ecological Development for livelihood.
- Sustainable Eco-tourism.
- To develop capacity-building for front line staff and local community through training and nature education programmes. (Eco-tourism activities shall be taken as per guidelines on sustainable Eco-tourism in forest & WL areas 2021 issued on dated 5th October 2021 by MOEF&CC)

5.3 PROBLEMS/ CONSTRAINTS IN ACHIEVING THE OBJECTIVES

Since the sanctuary is located in the remotest area of Sechu valley of sub division Pangi, it is very difficult to implement the management practices in the very harsh climate. The working window is very limited and ranges from May to October. The skilled workers have to be imported from Churah& Chamba, which is quite far and makes the implementation of different operation expensive. The remoteness, lack of sufficient bridal/ inspection/ census paths and non-existence of shelters in the far-off places during the night in the inaccessible areas make regular monitoring of work difficult.



Sr. No.	Objective	Problems/Constraints
1	To develop a harmonious relationship between wildlife and people for peaceful co-existence	• Location of villages: These are surrounded by sanctuary area from almost all sides. • No alternate route available for the movement of migratory graziers outside sanctuary area. • Lack of knowledge about wildlife conservation values among local people • Lack of community participation in the management of sanctuary
2.	To observe habitat for any significant changes (Long Term Ecological Monitoring)	• Insufficient scientific data • Limited working season
3	Protection against threat to wildlife	• No communication facility (phone network) inside the sanctuary area. • Sanctuary remains inaccessible during November to April due to heavy snow fall • Insufficient nos. of patrolling huts/watch towers/anti poaching huts inside sanctuary area. • Patrolling and monitoring system is not appropriate and needs improvement • Insufficient human resources
4	Conservation of biodiversity	• Insufficient scientific data • Frontline staff posted in the sanctuary does not have required trainings for wildlife management
5	Ecological Development for livelihood	• Lack of awareness and sense of belongingness among local community.
6	Eco-tourism.	• Lack of interpretation centre for nature education • Lack of knowledge about wildlife conservation values among local people as well as field staff • Insufficient infrastructure
7	To reduce Man-Animal Conflict	• Lack of awareness about wild life. • Unregulated Grazing. • Dependence of local people on natural resources.



8	To enhance the capacity of frontline staff and local community for better management of wild life and to build a dialogue between all stake holders.	• Shortage of specialized resource persons for knowledge exchange and guidance • Lack of awareness and sense of belongingness among local community.
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5.4 MAJOR CHALLENGES FOR THE MANAGEMENT

The sanctuary is facing many challenges and the summary of the same is as under:

- **To provide alternate forests for local people outside sanctuary:** Prior to Hon,ble Supreme court order dated 14.02.2000 in IA No. 548 in civil Writ Petition No. 202/95 “which prohibited cutting/ removal of grass, collection of minor forest produce, grazing etc.” local people were totally dependent on forests for collection of grasses, minor forest produce, grazing etc. Prior to this order, these communities were having traditional rights in the forests of the sanctuary. In present scenario, there is always a situation of conflict between front line staff and the communities on above mentioned prohibited activities.
- **Tough terrain and harsh weather conditions:** Tough terrain and harsh weather conditions prevailing in the sanctuary make it difficult for wildlife managers to manage the sanctuary. Almost whole of the sanctuary area remains under snow from Nov-May. Therefore, the working period in the area is very limited.
- **Inadequate capacities:** Frontline staff posted in the sanctuary does not have required training for wildlife management. Department does make some efforts for in house training programmes on specific issues. However, scientific management of the area requires staff to be equipped with different skills for protection, management as well as long-term monitoring.
- **Anthropogenic pressures:** There is biotic pressure of the villages of the ESZ of Wild life Sanctuary as they graze their livestock inside the sanctuary limits. However, the pressure is less during winters when the area is covered under snow from November to May.
- **Scientific database and monitoring:** Limited scientific study has been done in the sanctuary area along with the information gathered by locals and field staff. However, this information generated is not consolidated into a database due to various topographical and communicational factors. Similarly, there is no adequate system for monitoring of Wildlife sanctuary in longer term.
- **Community participation:** Due to lack of awareness about wildlife conservation, public participation is almost negligible in the management of PA. There is a lack of long-term vision in PA management and people participation is purely opportunistic depending



upon availability of funds. There is need to formulate a mechanism so as to link the communities for better protection and management effectiveness of the sanctuary.

- **Inter-state boundary:** Sechu Tuan Nalla Wildlife Sanctuary borders with U.T. of Ladakh. Interstate coordination regarding wildlife conservation is nil.
- **Awareness:** There is no regular system of nature education programs for the communities and the entire awareness program are done according to allotted funds.

5.5 SWOT ANALYSIS

STRENGTH:-

- 1) Wildlife heaven
- 2) Religious places nearby
- 3) Natural & Cultural richness
- 4) Traditional hospitality
- 5) Pollution free environment

WEAKNESS:-

- 1) Dependency of local people on natural resources of the sanctuary
- 2) Harsh weather condition
- 3) Tough terrain
- 4) Lack of proper awareness among the community

OPPORTUNITIES:-

- 1) To provide better opportunities to the visitors to enjoy its natural beauty.
- 2) To develop an ideal destination for nature lovers.
- 3) To promote as an adventurous destination.
- 4) To conduct awareness camps.



THREATS:-

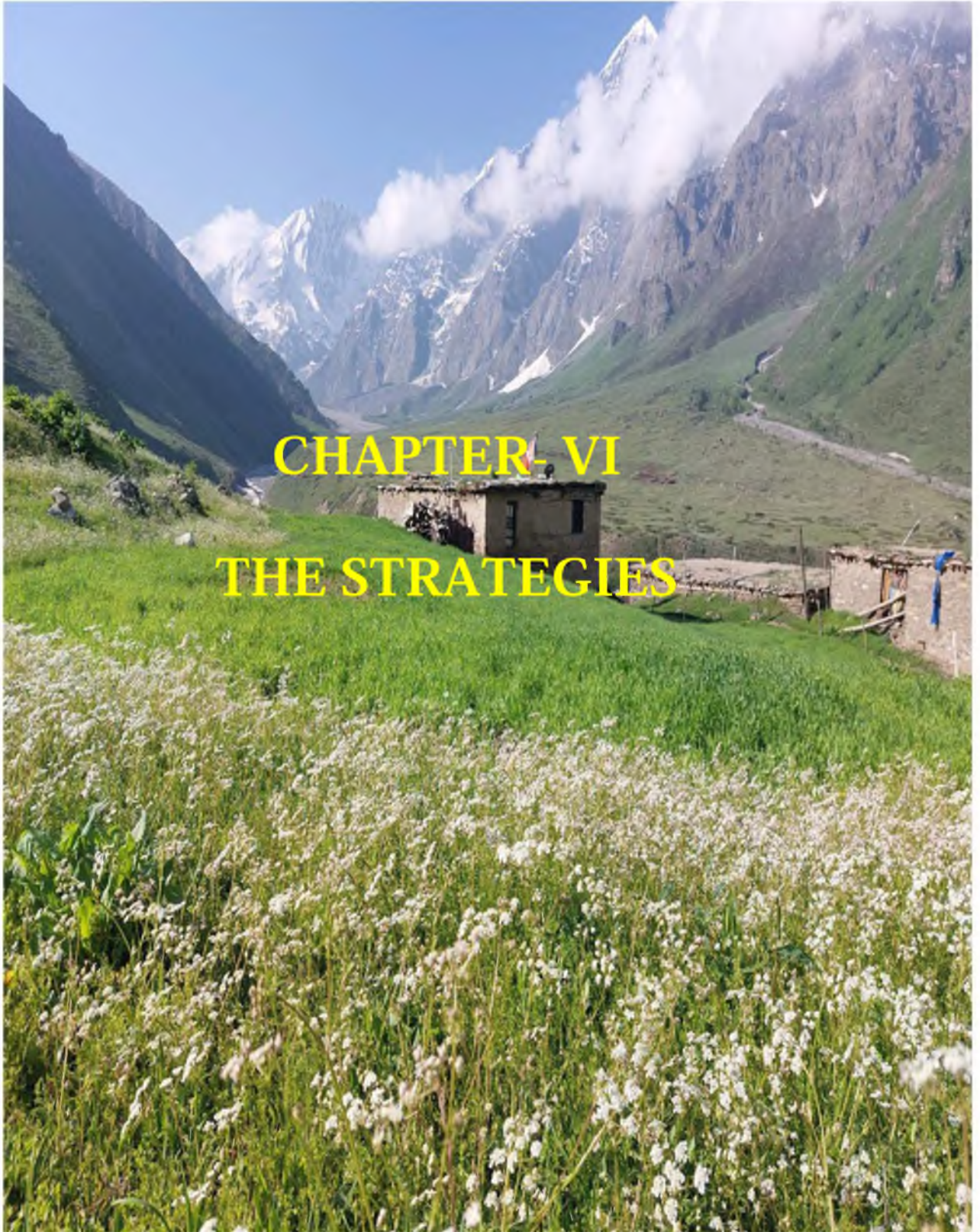
- 1) Lack of co-ordination between community and department.
- 2) Poaching
- 3) Illegal NTFP collection
- 4) Pasture status
- 5) Shrinking habitat
- 6) Absence of baseline information about wild life flagship species of the sanctuary.
- 7) Grazing



Raja ka Dera, Shidhani Dhar- Sechu Tuan Wildlife Sanctuary
Photograph by : Sh. Rajesh Chauhan RFO



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)



Sechu Tuan Nalla Wildlife Sanctuary holds a unique biodiversity comprising high altitude floral and faunal species. Keeping this in mind, the proposed strategies are focused on securing the ecological balance and integrity of this area and also the connectivity to this vast landscape. This will require building better understanding about the ecosystem and putting in place a mechanism which could provide intensive management, long-term monitoring of the area and generate support of the local communities for the management of wildlife sanctuary. Major strategies for future management of the Wildlife Sanctuary are provided as below:

6.1 BOUNDARIES

The sanctuary is located between 32°-11'-40" and 32°-13'-16" E longitude and 76°-24' and 77°-03'-33" N latitude. It falls in Pangti Sub Division of Chamba Distt. The Sechu Tuan Nalla Wildlife Sanctuary falls under the administrative control of Wildlife Division Chamba. The limits of the Sechu Tuan Nalla Wildlife as per the latest Notification after rationalization is FFE-B-F(6) -11/2005-II/ Sechu Tuan Nalla Wildlife Sanctuary dated 07.06.2013 under Section 26(A) of the Wildlife (Protection) Act, 1972 is as under-

NORTH: From point 5856 Mtrs. up to 6072 Mtrs. along the State boundary of Jammu & Kashmir and Himachal Pradesh.

EAST: The main ridge, commencing from point 6072 Mtrs. of Zanskar (Jammu & Kashmir) State boundary separating the watershed of Sechu Nalla and Miyar Nalla along Urgose Pass and up to Ghordhar Pass 5105 mtr.

WEST: From near Baihali Jot 6302 Mtrs. to Malanu point 5233 Mtrs. up to Sidhani Nalla along the ridge and then along Sidhani Nalla up to point 2727 then along Chasak Nalla up to Bhator to Mtrs., Kulma Jot to via 3923 Mtr. height, 3434 mtr. height then boundary of Khud PF on ridge, 4666 Mtr. height, Dibri on ridge, 4639 height, 3730 Mtr. height, Mini Jot, Hud nal, 5488 Mtr. height, 5681 Mtr. height, 6142 Mtr. height, 5271 Mtr. height upto 5856 Mtr.

SOUTH: From Ghordhar Pass 5105 Mtr. to Duphao Jot at point 6070 Mtrs. along the ridge, then upto Baihali Jot at point 6302 Mtrs.

Ecological Boundaries

The Sechu Tuan Nalla Wildlife Sanctuary is surrounded by Pangti Forest Division and LahualSpiti Forest Division and UT of Ladakh. The Eco-sensitive Zone of Sechu Tuan Nalla Wildlife Sanctuary was notified by Ministry of Environment, Forests and Climate Change New Delhi vide Notification No. S 3193 dated: 28 September 2017 (**Enclosed as Annexure-V**). Extent and boundaries of Eco-sensitive Zone.-

- The extent of Eco-sensitive Zone varies from 0 meters to 1 kilometer from the boundary of Sechu Tuan Nalla Wildlife Sanctuary



- No Eco-Sensitive Zone towards North, South and Eastern sides is due to inter-State boundary with UT of Ladakh and high altitude areas
- The area of the Eco sensitive Zone is 46.45 sq. km.

6.2 ZONATION

Zonation is an essential strategy for deciding management aspects and local people's participation. A zone is a specific management area distinguishable on account of its objectives. Separate zones need to be created because some of the management objectives may not necessarily be compatible with each other. Zones cannot be managed in isolation and must relate to the functions of other zones and they must fulfill the overall objectives of Protected Area management. Management zones must be large enough to achieve the objectives proposed in that zone. The management zones need not be fixed in space or in time. Management interventions commensurate with the objectives of each zone are essential. Based on the specific management interventions required on account of its objectives the following zones are being proposed in Sechu Tuan Nalla Wildlife Sanctuary for achieving the objectives:

1. WILDERNESS ZONE/ CORE ZONE:

In this zone the area is more or less secure. The area supports alpine pastures, dense forests of different conifers and some broad leaved species. This area is proposed to be managed to continue its pristine status by intensive protection and long-term monitoring.

2. BUFFER ZONE:

Eco Sensitive Zone of Sechu Tuan Nalla Wildlife Sanctuary notified by Government of India.

3. RESTORATION / CONSERVATION ZONE

(a) **Rehabilitation Zone:** This zone consists of areas where the degradation level is comparatively higher due to anthropogenic pressure. Degradation of natural ecosystem is principal cause for losses of biodiversity and ecosystem functions. This zone is facing tremendous pressure mostly from local people and few migratory graziers. Local people are putting extra pressure on these areas by cattle grazing and collection of non timber forest produce. The objective of this zone will be to restore these areas which would mitigate the negative effects of degradation.

(b) **Species specific conservation zone:** This zone consists of the conservation plan of five flagship species (Snow leopard, Himalayan Brown Bear, Musk Deer, Blue Sheep and Himalayan Ibex) of Sechu Tuan Nalla Wildlife Sanctuary. Based on their relative abundances and distribution, as these are habitat specialist species, five species (Snow leopard, Himalayan Brown Bear, Musk Deer, Blue Sheep and Himalayan Ibex) have been identified as flagship species for Sechu Tuan Nalla Wildlife Sanctuary.



4. ECO-TOURISM ZONE/ TRACTS

This zone will be used for eco-tourism activities. The objective of this zone will be to regulate the inflow of eco-tourists to the sanctuary by involving local people, thereby generating direct and indirect livelihood options for them and generate support for long-term conservation of the area. In this zone various activities which involved nature trails, sightseeing, adventure trekking, biodiversity nature trails, glaciers tours, bird watching, religious trails, photography, conservation awareness programmes etc. will be taken up.

5. HUMAN WILDLIFE INTERFACE MANAGEMENT ZONE

Human wildlife conflict refers to the negative interactions between human and wild animals, with undesirable consequences both for people and their resources. Human wildlife conflict is caused by competition for natural resources between human and wildlife. In many regions, the number of these conflicts has increased in recent decades because of human population growth and the transformation of land use. In this zone different management aspects to minimize the human wildlife conflict situation will be discussed.

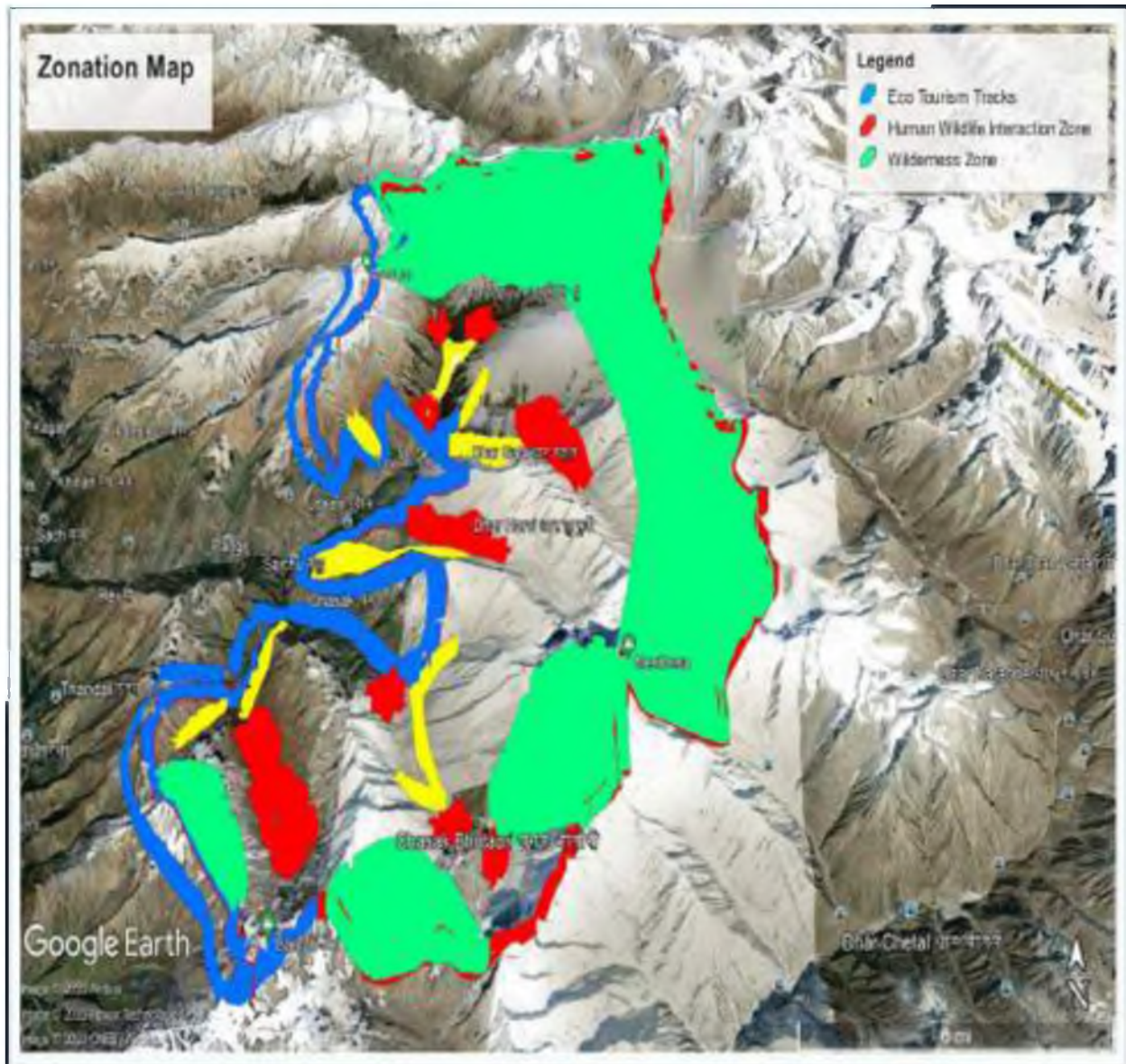
6. ADMINISTRATIVE ZONE

Range Forest Office cum residence of RFO Sechu Tuaa Nalla Range, HQ of Block Officer Sechu, Forest Guard Quarters, FRH at Sechu etc. This zone would be managed with perspective of carrying out office work, provision of accommodation for survey, research activities and holding meetings between staff of forest department in order to carry out Protected Area Management activities.

6.3 ZONE PLANS

Zones identify the areas where various strategies for management of the sanctuary will be used to accomplish objectives for achieving the desired future of the Protected Area. Within each zone, the management prescriptions should be reasonably uniform but may differ in type or intensity from those in the other zones in order to accommodate multiple objectives.





Zonation Map Of Sechu Tuan Nalla Wildlife Sanctuary

6.3.1 WILDERNESS ZONE PLAN / CORE ZONE PLAN

This zone needs complete protection and just a minimum of restorative management intervention to secure its objectives. The forests/pasture areas in this zone should be managed as to retain these in their pristine status and there will be no interference for development in this zone. The managerial interference here would only be protection oriented and the habitat should be regularly monitored.



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)



Landscape of Sechu Tuan Nalla Wildlife Sanctuary
Photograph by: Dr Kuldeep Singh Jamwal, HPFS

6.3.1.1 OBJECTIVES

1. To give top priority to protection, conservation and preservation of species in their natural habitat.
2. To allow minimal external influences and undertake such habitat management interventions that are absolutely essential.
3. To undertake need based habitat restoration activities such as soil and moisture conservation activities in the prone areas.

6.3.1.2 PRESENT STATUS

The Wildlife Sanctuary supports alpine pastures, dense forests of different conifers and some broad leaved species. This zone possesses intact undisturbed vegetation and perfect habitat for wildlife.



6.3.1.3 RECOMMENDED STRATEGIES/ PROGRAMME OF ACTIVITIES

a) Work under Programme of Protection:

Effective protection to the wild animals against poaching, grazing, fire and other natural hazards shall be provided. This shall be achieved through establishment of adequate number of anti-poaching camps, increased patrolling, enhanced communication facilities, and monitoring further details are given in Protection Plan (para 6.5.1).

b) Work under Programme Habitat Monitoring:

This part will primarily focus on biodiversity conservation and thus needs complete protection with a minimum restorative management intervention to secure its objectives but with extreme caution so as to keep the area as pristine as possible. The zone will be kept for Long Term Ecological Monitoring to observe any significant changes in the habitat and its influence on the species.

- 1) A complete survey in this zone should be conducted in order to identify the gaps and possible augmentation activities.
- 2) Similar survey should also be taken to identify potential soil conservation and water regime development areas.
- 3) Further details related to these activities are given in habitat enrichment plan.
- 4) Landscape approach to wildlife management.

All animals move across the landscape to varying extents in order to acquire the resources necessary for survival: food, water, protective cover and mates. Man made barriers can affect each of these movement pattern and may pose a threat to the long term persistence of wildlife population. Disruption of habitat connectivity is a major impact of human activities on plant and animal populations and one of the leading causes of the biodiversity crisis.

The best solution to addressing the issues of habitat loss and fragmentation is to prevent it from occurring by preserving existing blocks of un- fragmented habitat. Creating corridors or linkage provides the means for animals to move between blocks of habitat while supporting natural levels of:

- (a) Individual movement for needed resources (food and water etc.)
- (b) Movements to breeding, birthing, summer and winter habitats.
- (c) Dispersal and colonization of vacant habitat.
- (d) Gene flow.



- (e) Seasonal migration.
- (f) Population movement in response to changing climate.

In the past, some biodiversity conservation efforts have tended to focus on individual, local environmental challenges on smaller land areas, specific sites, or specific populations, often taking an opportunistic approach and without an eye to the broader landscape. Landscape management is an evolving concept in the conservation of biological diversity, in which conservation means much more than simply protecting a species or an ecosystem within a confined area.

Sechu Tuan Nalla Wildlife Sanctuary together with the areas to its East side Lahaul Spiti forest division area, on north western side Pangri Forest Division and on the North Side the sanctuary forms the boundary with the Ladakh union territory and south eastern side Lahaul Spiti area form a single landscape by a forest corridor which provides good shelter for many rare and endangered wildlife species. Therefore, conservation value of this landscape is immense for the conservation of the full range of species found in this region.



Location map of Wildlife Sanctuary

Efforts should be made to bring different wildlife managers and all stakeholders together to secure this landscape and develop effective conservation measures for the critical habitat across this landscape.

Sechu Tuan Nalla Wildlife Sanctuary houses many threatened species of flora and fauna. Concrete efforts should be made to declare this area as critical wildlife habitat.

b) Research & Monitoring:

For Sechu Tuan Nalla Wildlife Sanctuary available literature and ecological research data is not sufficient. Regular research and monitoring should be done on periodic basis.



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

Details related to research and monitoring have been given in relevant chapter (Chapter IX - Research, monitoring and evaluation).

d) Work under Programme Infrastructure development:

For effective patrolling and other management activities construction of watch towers/ anti-poaching huts/bunkers are proposed. Further details are given in Infrastructure development plan (para 6.5.3).

6.3.2 RESTORATION/CONSERVATION ZONE PLAN

- (i) Rehabilitation zone plan
- (ii) Species specific conservation zone plan

6.3.2.1 REHABILITATION ZONE PLAN

6.3.2.1.1 OBJECTIVES

1. To identify degraded areas inside the Sanctuary
2. To restore these degraded areas through scientific/ managerial interventions.
3. To improve the habitat quality for different species.

6.3.2.1.2 PRESENT STATUS

Due to anthropogenic pressure, habitat in the Wildlife Sanctuary is slowly degrading. The areas comprising ChasakBhatoriDhar, Sechu Dhar, Tarunda Nalla and TopiunDharare vulnerable due to impact of illegal grazing and collection of non timber forest produce. The management problem in these areas is overgrazing of grasses by domestic livestock. Overgrazing is the removal of grasses from an earlier grazing event at a rate faster than the plant recovers from. The forests/pastures in the sanctuary are potential habitat of many species; therefore, proper management is vital for protecting the biodiversity of sanctuary and achieving the objectives of the management plan.

6.3.2.1.3 RECOMMENDED STRATEGIES

- Identify the drivers of degradation such as heavy grazing, exploitation of NTFP.
- Stop the abuse by eliminating or strictly reducing these drivers.
- Protect the area from further degradation.



- If necessary, re-introduce native species to help restoration of area.
- Efforts should be made to close these areas on periodic basis.
- Every year 5-10 hectare area will be taken up for plantation of native species of grasses in these areas. Use native species like Angleton grass (*Dichanthium aristatum*), Spear grass (*Heteropogon contortus*), Fescue grass, (*Festuca spp.*), Creeping bent (*Andropogon pulmis*), Barijhaan grass (*Pennisetum orientale*), Marvel grass (*Dichanthium annulatum*), *Lotus corniculatus*, *Trifolium spp*, *Medicago denticulate* etc.
- Efforts should be made for site/ faunal species specific plantations.
- Removal of invasive weeds (if any) along the traditional grazing areas of graziers.
- The areas where degradation level is high, staggered contour trenches will be constructed and native spp. of grasses will be planted on the lower berm of the trenches to stop soil erosion.
- Bioengineering measures/Vegetative structures will be constructed in the areas prone to soil erosion.
- Plant shrubs of nitrogen fixing species to improve soil fertility.
- Plantation of fodder trees in the village land/ agriculture land.
- Efforts should be made to provide alternate grazing sites outside sanctuary.
- Efforts should be made to provide alternate livelihood to the villagers.
- Public awareness programmes.

6.3.2.2 SPECIES SPECIFIC CONSERVATION ZONE PLAN:

6.3.2.2.1 SNOW LEOPARD (*Uncia uncia*) CONSERVATION SUB PLAN

According to International Union for Conservation of Nature and Natural Resources, Red list of Threatened Animals (IUCN), the snow leopard is classified as “Vulnerable” under Schedule I of the Indian Wildlife (Protection) Act, 1972 as amended in 2022. In addition, like other big cats, is also listed in Annexure I of Convention on International Trade of Endangered Species, which makes the trading of animal body parts illegal by the signatory countries. Wildlife species that are listed in Schedule I of the Indian Wildlife (Protection) Act,



are considered to be “endangered/vulnerable species and rare” and accorded highest protection under country’s laws.



Family of Snow Leopard captured in Trap Camera in Sechu Tuan WL Sanctuary

HABITAT & DISTRIBUTION

Snow Leopards live in the high mountainous regions of central and Southern Asia. In India, their geographical range encompasses a larger part of the western Himalayas, including the Union territory of Jammu and Kashmir and Ladakh, Himachal Pradesh, Uttarakhand, Sikkim and Arunachal Pradesh in the eastern Himalayas- A priority global region of WWF. The Government of India have identified snow leopard as flagship species for the high altitude Himalayas.

Snow leopards prefer steep, rugged terrains with rocky outcrops and ravines and usually found at an elevation of 3000-5000 Meters or higher in the Himalayas. Such habitats provide good cover and clear view to help them sneak up on their prey.

During November- December of the year 2018 –2019 camera traps were placed in different location of Sechu Tuan Nalla Wildlife Sanctuary to know the status of presence of Snow Leopard and other illusive mammals. It was for the first time that this illusive big cat also known as Grey Ghost was camera trapped from the Tarunda Dhar. In the subsequent years the location of camera traps were changed and the snow leopard was again seen in camera traps installed and the presence of snow leopard in Sechu Tuan Nalla Wildlife Sanctuary is established. Once the family of three members of Snow leopard, was also trapped. Since than many times the snow leopard has been captured in camera traps proving that the top predator is thriving well in this sanctuary. Recently in the winters of 2024, the Snow Leopard has again been camera trapped.



CHARACTERISTICS AND ACTIVITY PATTERN:

The snow leopards are considered medium sized cats standing about 24 inches at the shoulder and weighing around 30 -55 kg. Their exquisite, smoky-grey fur is patterned with dark- grey to black rosettes which helps to camouflage them against rocky slopes. The species usually mate between January and March, a time when both the sexes mark their territories intensively leaving signs such as scrapes, feces, urine and scent –spray in the prominent locations along their travel routes. The animal is most active during at dawn and dusk. Like most of the species of the cat snow leopards are solitary animals, though sometimes male and female pairs might be seen together during the mating season.

FOOD HABITS:

The predator distribution coincides with its principal prey species. Estimating the consumption of any particular prey type by carnivores depends upon the reliable analysis of diet. The analysis of scats (Reynolds and Abeischer 1991, Chundawat and Rawat, 1994) is one of the most reliable thoroughly used techniques that have become fundamental tools in carnivore research and conservation.

What snow leopards eat varies depending on their location, but the cat most often hunts wild sheep, goats and even marmots. Three most important prey species of the snow leopards are the blue sheep (also known as Bharal), the Asiatic/Himalayan Ibex, and the argali (another wild sheep species). Availability of wild prey is the most important factor that determines if an area can be suitable for the cats. Snow leopards hunt a large animal every 8 – 10 days on an average. There is a slight difference of predation pattern of males and females. Snow leopards are opportunistic predators and sometimes hunt Livestock such as sheep, goats, horses and young yaks, especially the stragglers that get left behind in the pastures.

RECOMMENDED ACTIONS:

For conservation and management of snow leopard population, information on its ecology, population status, habitat use, behavior, activity and movement patterns, food habits and breeding activity in the negatively/positively affected areas is necessary. Other measures suggested for improving snow leopard conservation efforts are as under:

Protection:

Entire potential habitat of Snow Leopard needs to be thoroughly combed at least twice in a year. Combing operations should be strictly prohibited during breeding season. For confirmed habitats combing operations should be done at least three times in a year.



Research and monitoring of snow leopard: it is important that the population estimates and seasonal wildlife movement be monitored to study the trend in the overall population so that conservation efforts can be planned and implemented on the landscape level.

Mitigating Human snow leopard Conflicts:

Human conflicts: In general it is important to understand the causes of conflicts, as they can be often manifestation of habitat degradation due to over harvesting of natural resources by humans. Conservation education efforts can help enhance the understanding of the value sustainable use of natural resources and importance of wildlife and help in mitigating conflicts.

Wildlife grazing and its impact on local vegetation and wildlife: rotational grazing can be worked out and implemented with local support. This will need working with the communities and sensitize them.

Support for local people to improve their livelihoods: Without an improvement/alternative for the livelihoods of the local people, it is hard to conserve natural resources which directly and indirectly affect the habitat of Snow leopard and other wild animals. For this reason, species conservation needs livelihood improvement programme, such as livestock (sheep/goat) farming, agriculture, cultivating medicinal plants for sale, and eco-tourism can act as alternative sources of income for local people around the Wildlife Sanctuary. Local people are directly dependent on resources such as fuel wood for sustaining their livelihood. Creating employment opportunities for local people will be helpful in promoting sustainable livelihoods. Non-Timber Forest Products (NTFPs)/medicinal plant cultivation on private land or community land is one of the most lucrative potential income generation activities because the area has a unique ecological character and favours high value medicinal plants. There are considerable prospects for the production of pulses, green vegetables and fruits in the area. Efforts are required to realize these potential developments, as Off-farm employment and income opportunities in this region are inadequate. Local resources and traditional skills based on enterprise potentials have not been adequately identified and assessed. Potential exists in handicraft production, in livestock based production and in the area of traditional skills that need to be explored and promoted.

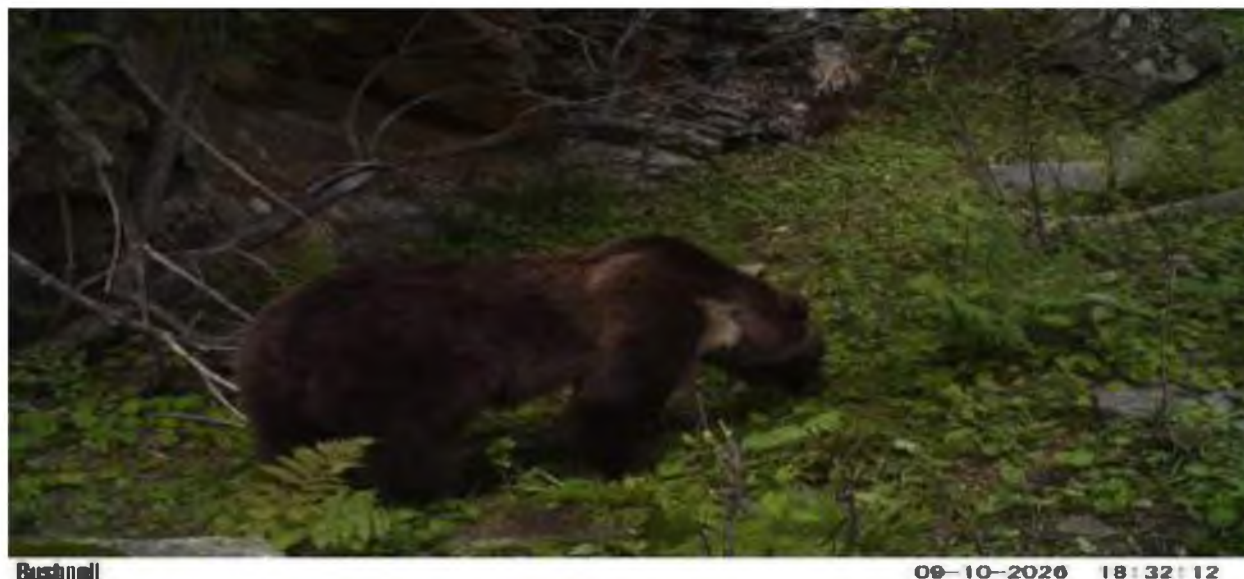
Infrastructure and capacity building of field staff: It is important to deploy trained staff in the required strength in the protected areas. Continued on job training needed on the different fronts such as : wildlife monitoring, wildlife law and legislation and at the same time infrastructure is required to be developed in the Wildlife Sanctuary as there are limited buildings/huts and bunkers for the stay of staff to perform different activities required for proper monitoring of species.

Awareness and involvement of local people: Any conservation initiative will not be successful without involving local people. Various eco development programmes that reduce the dependence of local people on the resources of Sechu Tuan Nalla Wildlife Sanctuary



and strict protection measures are the two main strategies to conserve the species and their habitat. Regular awareness programmes for locals, students/youth are required to get their support.

6.3.2.2.2 HIMALAYAN BROWN BEAR CONSERVATION SUB PLAN



Himalayan Brown Bear captured in Trap Camera installed in Sanctuary

The Himalayan brown bear is listed as “Vulnerable” in the Red Data Book (International Union for Conservation of Nature and Natural Resources, 1969), but not listed as “threatened” in the 1996 Red list of Threatened Animals (IUCN, 2006). It is also listed on Annexure I of CITES (GOI, 1992) and on Schedule I of the Indian Wildlife (Protection) Act, 1972 as amended in 2022. Wildlife species that are listed in Schedule I of the Indian Wildlife (Protection) Act, are considered to be “endangered species and rare” and accorded highest protection. Among the four species of bear in India, the Himalayan brown bear (*Ursus arctos*) is least distributed and occurs in very low densities in the alpine region of the Greater and Trans Himalayan zones in India

HABITAT PREFERENCE:

It is rare and usually encountered between 2800m to 4800m elevation. The species prefers grassland areas with shrubs. Population of brown bear is largely confined to the western and north western Himalayan regions in India. The Himalayan Brown Bears occur in rolling uplands, alpine meadows, scrub and sub-alpine forests in Sechu Tuan Nalla Wildlife Sanctuary. The potential habitat areas of brown bear in the Wildlife Sanctuary include Shidahani Dhar, Harvin Dhar, Sechu Dhar, Gul Dhar, Kichlunch Dhar, Hillu Dhar, Tarunda Nalla and Jambu nalla.



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

ACTIVITY PATTERN:

The activity pattern *i.e.* digging, feeding, moving and resting of Himalayan Brown Bears within Sechu Tuan Nalla is as follow: They are active mainly during daylight hours in summer and monsoon and also less active during winter (before hibernation) when *Prunus* sp., a principal winter food is scarce. The day time activity is maximum in the afternoon (15:01-18:00 hours), followed by morning and evening. They are seen maximum times within 0 to 500 m from water sources (Raj Kishore Mohanta and N.P.S. Chauhan).

FOOD HABITS:



Brown Bear feeding on dead Yak in Sechu Tuan Nalla WLS

Understanding food habits is important to implement bear conservation and management and to assess bear distribution and habitat use (Mac Hutcheon & Wellwood 2003). The survival of bears and their physiological activities are governed by the availability of food items and dietary components in their habitat. Both plant and animal are preferred by brown bear in their diet in all the seasons. Animal matter comprised insects, ants and unknown items including hairs, bones, jaws, teeth and claws in the bear diet. Plant matter comprised 10 plant species, but also included 58.3% unknown plant material. Known species included seeds of *Prunus persica*, *Prunus cornuta*, fruits of *Rhamnus virgatus*, *Viburnum cotinifolium*, *Berberis aristata*, and Guchhi Mushroom (*Morchella esculenta*) jau (*Hordeum vulgare*), bhareesh (*Fagopyrum esculentum*), phullan (*Fagopyrum emarginatum*), maize (*Zea mays*), and fruits of jammu (*Prunus cornuta*), kamulu (*Berberis aristata*) and *Rhamnus virgatus*. Other plants preferred by Himalayan Brown Bears are: *Rumex nepalensis*, *Chaerophyllum reflexum*, guchhi *Morchella esculenta*, *Impatiens scabrida*, *Taraxacum officinale*, *Geranium*



pratensis, *Potentilla argyrophylla*, *Stellaria media*,
Stachys melissaefolia and *Geum elatum*, *Chaerophyllum reflexum*,
Nepeta laevigata, *Origanum vulgare*, *Typhonum seginatum* and *Gege elegans* (Bipan C. Rathore & N.P.S. Chauhan)

RECOMMENDED ACTIONS:

For conservation and management of Himalayan Brown Bear population, information on its ecology, population status, habitat use, behaviour, activity and movement patterns, food habits and breeding activity in the affected areas is necessary.

Protection:

Entire potential habitat of Himalayan Brown Bear needs to be thoroughly combed at least twice in a year. Combing operations should be strictly prohibited during breeding season. For confirmed habitats combing operations should be done at least three times in a year.

Himalayan brown bear research:

There is little knowledge about the population trends, habitat, threats and problems associated with the Himalayan Brown Bear, and there is inadequate research and monitoring of the food, population and habitat of this species. This issue should be addressed by further research and studies throughout the Himalayan Brown Bear's habitat in the area. Population monitoring will be done annually in selected areas by using Silent drive count method. Location for monitoring will be selected on the basis of direct/indirect evidences observed during patrolling of areas.

Habitat monitoring and the need for habitat restoration:

It is believed that the Himalayan Brown Bear is vulnerable to anthropogenic threats, which limit the viability of the population and preclude its expansion. Furthermore, its habitat range is not fully known and the extent and quality of the brown bear population is unknown. Due to increasing populations of livestock, habitat is believed to be disturbed, fragmented and shrinking. Some pastures have been degraded by heavy livestock grazing. Apart from over-grazing, there is over-exploitation of natural vegetation for medicinal and aromatic plants. In general, there is a lack of a habitat evaluation programs and a lack of monitoring and management strategies. Additionally, there is very little information on the existing and potential biological corridors for brown bears in the sanctuary. Potential corridors are increasingly vulnerable to habitat degradation and there is an urgent need for the monitoring, protection and where necessary, restoration of these corridors. Therefore it is necessary that habitat should be monitored regularly for any changes in composition of vegetation. It is suggested that initially base line data may be collected by involving professionals from Wildlife Institute of India/other scientific institutions and proper training should be given to field staff for future monitoring on five yearly bases. It is also suggested that degraded areas should be surveyed properly during patrolling and gaps may be identified and shrub/ herb species should be planted to increase the food source for Himalayan Brown Bear.



Reduction in human-brown bear conflict:

Human-brown bear conflict is identified as one of the major problems in ensuring the long-term conservation of the Himalayan Brown Bear. Although not frequent, livestock loss has been associated with brown bears, providing the potential for conflict. Conservation awareness activities are lacking in the remote parts of the Himalayan Brown Bear's distribution range. Further, the people are not aware of the methods and techniques that can be used for the reduction of loss/damage. The damage caused by the brown bear to human livelihoods has meant that in general the local people are not aware regarding wildlife conservation. Human-wildlife conflict in the area could be mitigated by awareness programmes among local people for the need for conserving bio diversity of the sanctuary. The introduction of incentive programmes and the involvement of local people for alternative income generation activities that do not enhance the human-wildlife conflict are required.

Support for local people to improve their livelihoods:

Without an improvement in the livelihoods of the local people, it is hard to conserve the natural resources comprising of various floral and faunal species. For this reason, species conservation needs livelihood improvement programmes. Sources of income for local people in the area are livestock (sheep/goat) farming, agriculture, collecting medicinal plants for sale, and eco-tourism. Local people are directly dependent on resources such as fuel wood for their livelihood. Creating employment opportunities for local people will be helpful in promoting sustainable livelihoods. Non-Timber Forest Products (NTFPs)/medicinal plant cultivation on private land or community land is one of the most lucrative potential income-generation activities because the area has a unique ecological character and favours high value medicinal plants. There are considerable prospects for the production of pulses, green vegetables and fruits in the area. Efforts are required to realize these potential developments. Off-farm employment and income opportunities in this region are inadequate. Local resources and traditional skills based on enterprise potentials have not been adequately identified and assessed. Potential exists in handicraft production, in livestock-based production and in the area of traditional skills that need to be explored and promoted.

Awareness and involvement of local people –Any conservation initiative will not be successful without involving local people. Various eco development programmes that reduce the dependence of local people on the resources of Sechu Tuan Nalla wildlife sanctuary and strict protection measures are the two main strategies to conserve Himalayan Brown Bear. Regular awareness programmes for locals, students/youth are required to get their support.

6.3.2.2.3 MUSK DEER CONSERVATION SUB PLAN:

Musk deer is a member of the family Moschidae. It is most threatened species and listed in schedule I of Wildlife (Protection) Act, 1972. Musk deer are small solitary, cryptic and



primitive deer like ruminant. They inhabit forested mountain habitats between 2,000 m and tree line and also alpine scrub and meadows.



Musk Deer

Photograph By: Sh. Rajinder Kumar, Forest Guard

HABITAT PREFERENCE:

Musk deer generally are found in areas above 2000 meter with a slight seasonal variation and mainly used areas with tree cover mixed with shrubs. Deodar forests having thick shrubs are the main habitat of musk deer. Therefore, to maintain the habitat of musk deer shrubs are extremely important as a refuge from predators and as a source of food Habitat preference.

RECOMMENDED ACTIONS:

Protection:

Entire potential musk deer habitat needs to be thoroughly combed at least twice in a year (Spring/Summer and autumn). For confirmed habitats combing operations should be done at least three times in a year. Care should be taken that no combing operation will be carried out during breeding season of the species.



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

Population Monitoring:

Population monitoring will be done annually in selected areas by using Silent drive count method. Location for monitoring will be selected on the basis of direct/indirect evidences observed during patrolling of areas.



Musk deer captured in Trap Camera installed in the sanctuary

Habitat Monitoring:

Musk deer is a selective feeder; therefore it is necessary that habitat should be monitored regularly for any changes in composition of vegetation and extent of ground cover. It is suggested that initially base line data may be collected by involving professionals from Wildlife Institute of India/other scientific institutions and proper training should be given to field staff for future monitoring on five yearly basis.

Habitat improvement:

Musk deer uses ground cover as an anti-predator strategy; musk deer rely primarily on concealment to avoid detection. Female musk deer hide their newborn in dense ground cover vegetation to protect them from predators. Therefore, in those areas dense ground cover has to be maintained. It is suggested that these areas should be surveyed properly during patrolling and gaps maybe identified and shrub species should be planted to increase the ground cover and food source for musk deer.



Awareness and involvement of local people:

Any conservation initiative will not be successful without involving local people. Various eco development programmes that reduce the dependence of local people on the resources of Sechu Tuan Nalla Wildlife Sanctuary and strict protection measures are the two main strategies to conserve musk deer. Regular awareness programmes for locals, students/youth are required to get their support.

6.3.2.2.4 BLUE SHEEP (*Pseudois nayaur*) CONSERVATION SUB PLAN

Biology and Status:

Blue Sheep are a medium sized caprid inhabiting steep slopes in the Trans Himalayas. The species is characterized by a short stocky body (Wang and Hoffman 1987) especially adapted for survival in the rugged Trans Himalayan terrain. The pelage consists of short hair ranging from brown to slate blue (Schaller 1998) their body colour enables them to camouflage themselves against the back ground of blue-grayish rock typical to their habitat (Wang and Hoffman 1987).

Biology:

General characteristics: Females and males are similar in appearance; with difference only in the dorsal stripe, that is black in males and grey in females and shorter horns of females (Schaller 1998). The species has unique adaptations including stocky body, developed pectoral region, stout legs and feeding habits that allow it to the rugged terrain of the Trans Himalayan region. Local altitudinal movements enable it to utilize the seasonal changes in vegetation structure and density.

Status:

Major threats are localized over hunting and excessive competition from livestock grazing that can lead to habitat degradation across its natural range (Harris 2014). Accordingly, the species is listed as species of least concern in the IUCN Red list 2014, while local concerns have caused it to be listed as Schedule I species in the Wildlife Protection Act (1972) of India.





Blue Sheep Male

Habitat:

Blue Sheep inhabit open grass covered slopes in mountains from 2500-5500 M AMSL near cliffs and areas that provide easy escape from predators (Schaller 1977). The species successfully utilize resource poor habitats that are inhospitable for other wild species. The habitat of the species is characterized by low temperature and rainfall and poor vegetation growth. The species prefers open grasslands interspersed with shrubs and avoid patches with dense vegetation (Schaller 1998). During winters the species descends into valleys or use southern aspects of their habitats along ridgelines with lesser snow (Schaller 1998).

Feeding Ecology and Behaviour:

During the summer it mainly feed on the alpine graminoids (grasses) (*Poa alpina* and *Poa pratensis*) probably constitute an important part of their diet. During winters they browse on the thorny clumps of *Astragalus* SP. And they may supplement their diet with Alpine willow, lichens and mosses (Roberts 1977). Blue sheep are gregarious with group sizes ranging from 5-400 individuals. The wide range of herd size depends on season, population size, habitat condition, hunting pressure and disturbance (Schaller 1998).

Threats:

The species does not currently face any serious threats to its long term survival in its natural habitat; however, it is vulnerable to competition from livestock, disease threats trophy hunting and poaching (Harris 2014). Major threats are localized over hunting and excessive competition from livestock grazing that can lead to habitat degradation across its natural range (Harris 2014).



RECOMMENDED ACTIONS:

Protection:

Entire potential blue sheep habitat needs to be thoroughly combed at least twice in a year (Spring/Summer and autumn). For confirmed habitats combing operations should be done at least three times in a year. Care should be taken that no combing operation will be carried out during breeding season of the species.

Population Monitoring:

Population monitoring will be done annually in selected areas by using Silent drive count method. Location for monitoring will be selected on the basis of direct/indirect evidences observed during patrolling of areas.

Habitat Monitoring:

Blue sheep show a yearlong preference for gently sloping, grass covered amphitheatre basins and show no changes in seasonal use of habitat type or slope steepness. In the autumn sheep prefer slopes with southerly aspect, but shift to east and southeast facing slopes in response to spring snowstorms. The alpine rangelands in Himalaya provide a wide range of habitat mosaics supporting unique arrays of biodiversity and ecosystem services. Transhumant pastoralism is one of such service that has thrived here for centuries (Bhasin 2013). In the last few decades, changes in the live stock holdings, loss of traditional grazing patterns and knowledge of systems (Farooquee and Nautiyal 1999) have greatly affected the wildlife especially the ungulates (Namgail et al. 2007). Blue sheep being a selective feeder, therefore it is necessary that habitat should be monitored regularly for any changes in composition of vegetation and extent of ground cover. It is suggested that initially base line data may be collected by involving professionals from Wildlife Institute of India/other scientific institutions and proper training should be given to field staff for future monitoring on five yearly basis.

Habitat improvement:

Blue sheep practice two anti-predator strategies. They almost always remain near cliff, in preparation to run toward rugged slopes to avoid danger with female leading the retreat (Wang and Hoffman 1987). Also they give sharp alarm calls to warn fellow members of the herd (Schaller 1977). It is suggested that these areas should be surveyed properly during patrolling and gaps maybe identified.

Awareness and involvement of local people:

Any conservation initiative will not be successful without involving local people. Various eco development programmes that reduce the dependence of local people on the resources of Sechu Tuan Nalla Wildlife Sanctuary and strict protection measures are the two main strategies



to conserve blue sheep. Regular awareness programmes for locals, students/youth are required to get their support.

6.3.2.2.5 HIMALAYAN IBEX (*Capra sibirica hemalayanus*) CONSERVATION SUB PLAN

Biology and Status:

The Himalayan Ibex is a subspecies of the Siberian ibex, a type of wild goat that roams the mountain ranges around the world and locally called as Tangrol.

General characteristics:

The Himalayan Ibex is characterized by its large size, distinct coat colour, and curved horns. These features make it well-suited for camouflage and survival in high-altitude environments. They are easily recognised by the curved horns and beards. The male Size is 103–132 cm in body length and weighs 60–130 kg. the Female Size is 85–100 cm in body length, weighs 30–56 kg. The females horns are relatively small in comparison to the male measuring about 27 cm long. The horns of a fully grown male is entirely black and measures about 115 cm and in some cases can grow to 145 cm. Females are grey brown and have dark markings on their legs. Both males and females have a dark dorsal stripe running down the length of their back.

Status:

In India major threats are localized over hunting and excessive competition from livestock grazing that can lead to habitat degradation across its natural range. Accordingly, the species is listed as species of least concern in the IUCN Red list 2014, while local concerns have caused it to be listed as Schedule I species in the Wildlife Protection Act (1972) of India.



**Group of Himalayan Ibex in Shidhani Dhar of Sechu Tuan Nalla Wildlife Sanctuary
Photograph by : Sh. Rajinder Kumar Fgd**



Habitat:

The Himalayan ibex inhabit steep, rocky cliffs and alpine meadows at elevations ranging from about 2000 meters to 6000 meters above sea level. Their range stretches across northern India (especially in Ladakh and Himachal Pradesh), Nepal, and parts of Pakistan and Tibet. Himalayan ibex are well-adapted to harsh environments, where they rely on rocky terrain for both shelter and safety, as their agility allows them to climb steep slopes to evade predators. During summer, they typically migrate to higher altitudes for grazing, while in winter, they descend to slightly lower elevations to avoid heavy snowfall. They are generally found in areas with a sparse human population, though their habitat is increasingly threatened by poaching and habitat loss.

Feeding Ecology and Behaviour:

They are usually found in small herds, that number about 50 together. In winter, they come down to lower elevations in search of food as the mountains get covered in snow. In summer they move back upward as the snow melts. Himalayan Ibex is a herbivore whose diet consists of alpine grasses and herbs. In summer and spring grasses and sedges form the majority of their diet, while in winter they consume tall herbs and the twigs of trees like juniper and willow. Heavy snow on the mountains brings down the Himalayan Ibex near warmer pastures, but it also brings its predator as well.

A comprehensive conservation plan for the Himalayan ibex would involve several key components:

The Himalayan ibex (*Capra sibirica hemalayanus*), a species of wild goat found in the mountainous regions of the Himalayas, is a unique and important species in the ecosystem. It inhabits the high-altitude, rugged terrains of northern India, Pakistan, and parts of Nepal. Developing a conservation plan for the Himalayan ibex involves addressing several key factors that influence their survival. Here's an outline of what a typical conservation plan might include:

1. Habitat Protection and Restoration

- **Identifying Critical Habitats:** The Himalayan ibex primarily inhabits rocky, steep cliffs and alpine meadows at elevations ranging from 2,800 to 6,000 meters. It is important to map and protect these critical habitats from encroachment, deforestation, and human development.
- **Preventing Habitat Degradation:** Address threats from overgrazing by livestock, unregulated tourism and climate change, which can lead to habitat loss and fragmentation.



- **Corridor Protection:** Identifying and maintaining migration corridors that connect fragmented habitats would allow for gene flow between populations and reduce inbreeding.

2. Monitoring and Research

- **Population Surveys:** Conducting regular surveys to monitor the population size, distribution, and health of the ibex. This could help assess the effectiveness of conservation efforts and adjust strategies accordingly.
- **Ecological Studies:** Understanding the ibex's behaviour, diet, and interactions with other species in its ecosystem can provide valuable insights for targeted conservation.
- **Climate Change Impact Studies:** Assessing how changing climate conditions, such as warming temperatures and shifts in precipitation patterns, affect the ibex's habitat and food sources.

3. Anti-Poaching Measures

- **Stronger Enforcement:** Increasing patrolling and monitoring in key habitats to deter poaching, which is a significant threat due to the value of ibex horns and meat.
- **Community Involvement:** Encouraging local communities to participate in conservation efforts by offering alternative livelihoods, such as eco-tourism, and educating them about the importance of preserving ibex populations.

4. Human-Wildlife Conflict Mitigation

- **Livestock Management:** Since ibex may sometimes come into conflict with local livestock, educating communities on better livestock management practices and introducing non-lethal deterrents could reduce the negative interactions.
- **Conflict-Resolution Programs:** Offering compensation or assistance to farmers or herders who suffer losses from wildlife predation can help foster coexistence between humans and the ibex.

5. Community Engagement, Sustainable Tourism Management and Education

- **Local Support:** Engaging local communities in conservation efforts by educating them about the importance of the Himalayan ibex in maintaining the health of the ecosystem.
- **Eco-Tourism Development:** Promoting sustainable eco-tourism that highlights the ibex and its habitat can generate revenue for local communities while increasing awareness and support for conservation. Tourist activities should be controlled and regulated to minimize human impact.



- **Tourism Fees for Conservation:** Charging a small fee from visitors, which can then be reinvested into conservation efforts for the Himalayan ibex.

6. Public Awareness Campaigns

- **Raising Awareness:** Through media, workshops, and educational outreach, highlight the importance of the Himalayan ibex in the ecosystem and the need for its protection.
- **Involving Schools:** Implement educational programs in schools to teach young people about wildlife conservation and the role of the Himalayan ibex in the ecosystem.

Overall, the conservation of the Himalayan ibex will require a holistic approach that integrates habitat protection, research, anti-poaching efforts, community participation, and climate adaptation strategies. International cooperation and active engagement from local communities are critical to the success of the conservation plan.

6.3.2.2.6 BIRDS, AMBIBIANS AND REPTILES CONSERVATION PLAN

Sechu Tuan Nalla Wildlife Sanctuary is very rich in bio diversity and it is imperative that wildlife managers should focus on the conservation of each and every species found in the area. Till now, no specific scientific data about floral and faunal species is available. So, it is recommended that proper scientific study about birds, amphibians, reptiles and even indicative species of flora and fauna be got conducted and the recommendations/ suggestions may be incorporated in the management plan during the midterm evaluation of the same.

6.3.3 ECO TOURISM ZONE/ TRACTS PLAN

6.3.3.1 OBJECTIVES

- To increase the inflow of eco-tourists to the WLS without affecting the main objective of conservation.
- To involve local people in tourism activities, thereby generating direct and indirect economic activities for them.
- To provide hassle-free, low volume and truly enriching experience of wilderness to the visitors
- To create awareness about wildlife conservation among masses.

6.3.3.2 PRESENT STATUS

There is a heavy potential of eco-tourism in this area having unique and aesthetic view of whole area. In this area at least four trekking routes have been identified viz; rekking Route from ChasakBhatori to Gul Dhar, Trekking Route from Twan to Twani Dhar (Pass),



Trekking Route Chiroti Ash Dhar & trekking route Sechu to Harvin Dhar. The area is worth exploring as the area is having rich biodiversity, high mountainous, alpine pastures, small streams, holy lakes and natural water falls. At present there are two Inspection huts at Sechu and other near village Tuan and one Forest Rest House at Chasak Bhatori. These facilities can be availed for ecotourism activities. As the infrastructure mentioned above is situated in the ESZ of the sanctuary, so, there is a scope to develop this area by providing some temporary eco-friendly infrastructure like camping sites, eco huts, bunkers, rain shelters, trek routes etc. It must be ensured that eco-tourism activities should be done with the participation of local people for which a local committee or society will be formed and all ecotourism activities should be executed by that committee/ society only.

6.3.3.3 RECOMMENDED STRATEGIES

- Before starting eco-tourism in the sanctuary, carrying capacity of the area must be evaluated.
- Formation of local eco-tourism society/ committee.
- By eco-tourism, impact of human activities on PA will be high. Therefore, regular patrolling should be done.
- Sanctuary literature (brochures/pamphlets) should be printed.
- The popular treks should be maintained and monitored on a regular basis.
- Proper waste management system should be established.
- Regulatory measures to ensure social, cultural and environmental sustainability as well as safety and security of tourists.
- Installation of proper signages and detailed instruction at some prominent places.

Further details regarding ecotourism management, capacity building of staff and community, infrastructure development etc. are given in chapter VII- Eco Tourism, Interpretation and Conservation Education.

It must be ensured that all eco-tourism activities to be executed in the PA are as per the provisions of Wildlife (Protection) Act, 1972 as amended from time to time, Guidelines for sustainable eco-tourism in forest and wildlife areas-2021 F. No. 1-57/2014 WL (part-8) Dated: 29th October 2021 issue by Government of India Ministry of Environment, Forest and Climate Change (Annexure XXVIII) and Amendments in Revised Eco-tourism Policy-2017'



as 'ECO-TOURISM POLICY 2024' Notification No. FFE-B-C (15)-1/2024 Dated: 29.10.2024 issue by Govt. of HP (Annexure XXIX).

6.3.4 HUMAN WILDLIFE INTERFACE MANAGEMENT PLAN

There are mainly three villages viz; ChasakBhatori, Hillu Tuan and Sechu in the vicinity of sanctuary. Crop depredation by wild animals, grazing of cattle and collection of NTFP by Nomadic graziers and fringe villagers increase the chances of human wildlife conflict, as a result of which local people are not supportive to conservation of wildlife. Staff of Wildlife Wing is not getting proper support from local communities, therefore management of human wildlife conflict should be the priority for management of any PA.

6.3.4.1 OBJECTIVES

- To assess the human wildlife conflict situation in surrounding areas of PA.
- To suggest various actions to mitigate human wildlife conflict.
- To strengthen the infrastructure required for managing human wildlife conflict.
- To involve the local people in management of human wildlife conflict on the principals of participatory approach.

6.3.4.2 HUMAN WILDLIFE CONFLICT - SENSITIVE AREAS

As discussed earlier, common sites where the wild animals as well as domestic animals feed / graze frequently and the sites nearer to habitats or Goths (where the local resident graziers camp during nights), are vulnerable sites for human wildlife conflict. However, during winter period, the chances of human-wildlife conflict increase near villages, when wild animals migrate from higher reaches to lower elevations in search of food and water.

6.3.4.3 RECOMMENDED STRATEGIES

The Human wildlife conflict is a resultant of various aspects of the natural resource degradation as well as societal stratification. Very often damage caused by the wild animals directly affects the poor, marginalized rural communities living next to the wildlife sanctuary.

Crop Depredation:

There is a complete ban on the hunting of wild animals and because of this ban, the number of wild animals has been increasing in the area. The resource-deficient villagers need to resort to labour intensive measures of crop protection and such actions mostly result in disproportionate cost of raising crops by the poor and marginal villagers. The villagers often use



retaliatory measures of harming/killing the wild animals of which there is hardly any record or report. The depredation enhances dramatically when there is an increase in the number of livestock as well as the area under cultivation close to the PA; when there is a decline in the availability of the natural food; when there is an increase in the number of large wild herbivores due to “conservation measures”. In all these circumstances, the crop depredation or killings of livestock are escalated exponentially. The top crop damaged is mainly barley, wheat, potatoes, peas and top crop raider are Asiatic black bear and Himalayan Brown Bear.

Livestock Depredation:

Due to harsh weather conditions especially during winters wild animals migrate towards lower elevation resulting in human wildlife conflict. The wild animals intrude into agriculture fields as the crops raised are more palatable, and they are located in easy locations. The domestic livestock is very easy prey for the wild animals. Crop raiding incidents problem is more severe than livestock killing.

Compensation:

There is a provision of providing compensation to the person whose sheep, goats or cattle have been killed by the wild animals. Similarly, State Government through other departments is also providing compensation for the damage to agriculture and horticulture crops. In future, the situation can be quite alarming as the damage done to their crops by the wild animals is enormous. This may also adversely affect the acceptance of the conservation ideas among the locals. (Notification annexed at **Annexure XV**)

6.3.4.4 RECOMMENDED ACTIONS

Proactive Actions:

- 1) To prevent the damage by the wild animals.
- 2) The villagers are already using deterrents such as making sounds, beating drums or putting up a scare crow in their fields. The Wildlife wing staff and the local villagers need to put up a combined defence against the human-wildlife conflict.
- 3) There is a need to undertake action research on human-animal conflict so that preventive guidelines are made in consultation with the villagers.
- 4) Regular census of ungulates and carnivores in the wild will give an insight into the prey-predator relationship. This will also help understand the carrying capacity of their habitats.
- 5) To increase the availability of food, plantation of wild fruit trees should be done in the forests areas.



- 6) A Joint Rapid Action Team (a mix of Territorial and wildlife staff) is suggested to be constituted to manage the incidents.
- 7) Fencing of the cultivated land at strategic points.
- 8) Proper waste management is very important to avoid attracting wild animals to human settlements and to prevent wild populations being augmented and artificially sustained by human induced food availability. Each stage of waste handling should be addressed, from collection to transportation to disposal. It is suggested that through various awareness programmes, local people and civil authorities should be encouraged taking this issue seriously. Proper waste disposal is the key strategy to reduce the conflict.
- 9) Awareness activities at different levels, for instance in schools or in village level meetings should be held regularly. These programmes are essential for building local capacity in conflict resolution and increasing public understanding of human wildlife conflict. Educating rural villagers in practical skills would help them to deal with wild animal species and to acquire and develop new tools for defending their crops and livestock.

Reactive Actions:

- 1) When the damage by the wild animals has already been done.
- 2) Compensation for damage to livestock must be given timely as per rule.
- 3) The future of human wildlife conflict resolution lies as much in the involvement of the local communities in the wildlife habitat management.
- 4) Vide Notification No. FFE-B-A (10)-1/2009 dated 18/09/2018; guidelines for dispensing compensation for life/property losses during human wildlife conflict have already been issued by state government (**Annexed as Annexure XV**) which should be strictly followed.

People's participation:

Resolving human wildlife issues becomes difficult without active support from the local communities. It is recommended that to increase the involvement of local stakeholders a Village level response team involving local youth from the vulnerable areas should be formed. Initially these youth should be trained to handle various issues of human wildlife conflict. Following responsibilities may be given to local youth after initial training:

- Managing the agitated locals to maintain safe distance from the animal.
- Communicating with the forest tranquilization team on time in respective ranges.
- Wherever possible, first aid to small injured animals and birds.



- Medical help to injured villagers in the conflict situation.

Infrastructure requirement:

For effective dealing of human wildlife conflict incidences and preventive measures various equipment's and other infrastructure like transportation vehicle, communication etc. are necessary requirement.

6.3.5 BUFFER ZONE

The buffer Zone of Sechu Tuan Nalla Wildlife Sanctuary is created for the purpose of shock absorbing of various biotic and anthropogenic pressures. In this regard, it is prescribed that the eco-sensitive zone notified for Sechu Tuan Nalla Wildlife Sanctuary notified, vide number S 3193, dated the 28 September 2017 shall act as the buffer zone. The Buffer Zone shall be regulated as per eco sensitive zone notification of Sechu Tuan Nalla Wildlife Sanctuary as well as the Eco-Sensitive Zone master plan that is to be prepared by the Monitoring Committee constituted under the notification. In this regard, it is prescribed that activities in this area are classified into prohibited, regulated and encouraged as per the notification. The same is mentioned in Chapter XIII of Eco Sensitive Zone.

6.3.5.1 RECOMMENDED STRATEGIES/ PROGRAMME OF ACTIVITIES IN BUFFER ZONE

a. Eco development activities for villages in the buffer zone

There are numerous villages in the buffer zone of the eco sensitive zone as mentioned in Chapter 4. It is essential to galvanize support of villages in the cause of conservation. In this regard, it is prescribed that chosen villages may be provided with their requirements as per PRA exercise conducted. It is prescribed to undertake entry point activities in villages to earn their goodwill and trust. These activities may be in the form of solar lights, LPG cylinders and involvement of villagers as nature guides which may be further modified as per the result of PRA exercise. An individual micro plan for villages shall be prepared on the basis of PRA exercise which shall mention in detail the activities to be carried out as part of eco development.

b. Awareness drives among the village population inhabiting the buffer zone

The buffer zone has good potential of wildlife awareness and education. In this regard, guided treks, bird watching, competitions and other awareness programs can be conducted for the groups in buffer zone so that they are made aware of wildlife potential. This may be done on days of importance in calendar year like World Environment Day, World Wildlife Day, Earth Day etc. As the boundaries of sanctuary are heavily intertwined with villages, there is also a need to make public aware of boundaries and restrictions on grazing.



c. **Eco tourism related arrangements for visitors visiting the sanctuary**

As prescribed by MoEFCC guidelines for sustainable eco-tourism in forest and wildlife areas dated 29th Oct 2021, there is a need to promote home stays managed by local communities on non-forest land. As sanctuary has a great potential of tourism, there can be capacity building of local community in hospitality and eco-tourism linkages can be made with trek routes in Sechu Tuan Nalla Wildlife Sanctuary given its unique landscape and pasture areas. The detailed eco-tourism activities to be carried out shall be given in Chapter VII.

6.4 THEME PLANS

Several objectives and their strategies fall in the non-zone category or strategies which are common to all zones e.g., Fire protection, maintenance of waterholes, maintenance of snags, protection of caves, overhangs, talus, anti-poaching etc. It is essential to distinguish such azonal requirements and a sub-plan for each of such requirements needs to be prepared to ensure comprehensive treatment that refers to the entire area across the zones. Such sub plans are called Themes plans. Some of them identified in the sanctuary are as follows:

1. Protection Plan
2. Habitat Enrichment Plan
3. Infrastructure Development Plan
4. Eco-Development Plan
5. Wildlife Health Management Plan

6.4.1 PROTECTION PLAN

6.4.1.1 OBJECTIVES OF PROTECTION PLAN

- To maintain environmental/ecosystem stability of Sechu Tuan Nalla Wildlife Sanctuary.
- To protect the vast variety of flora and fauna of Sechu Tuan Nalla wildlife Sanctuary which represent the remarkable biological diversity and genetic resources.
- To strengthen the infrastructure.
- To involve the local people in protection of Sechu Tuan Nalla Wildlife Sanctuary on the principals of participatory approach.

6.4.1.2 POSSIBLE THREATS:

Following are possible threats:

- Grazing/ NTFP collection



- Diseases transmitted through domestic cattle / Communicable diseases
- Forest Fire
- Poaching

6.4.1.3 CONSTRAINTS

- 1) Inadequate infrastructure and logistics support
- 2) Lack of proper communication system and technologies.
- 3) Harsh weather condition.
- 4) Dependency of local people on natural resources.

1) INADEQUATE INFRASTRUCTURE AND LOGISTICS

The office & residential buildings available at range headquarters and block headquarters are sufficient but some of the buildings being old require immediate maintenance. Infrastructures inside the sanctuary are almost zero. Insufficient watch towers, patrolling huts/anti-poaching huts, patrolling vehicles makes it more difficult to manage the sanctuary.

2) LACK OF PROPER COMMUNICATION SYSTEM AND TECHNOLOGIES

Presently the staffs are mainly located at Sechu and Udeen as infrastructure is developed prior to the rationalization of the sanctuary. Mobile / Phone connectivity is up to Tuan and Sechu. There is no mobile connectivity inside the sanctuary area. The wireless communication may prove very useful in such areas for better management. Hence, the option of the wireless communication has a very high relevance. Possibility of installing wireless network may be explored.

3) HARSH WEATHER CONDITIONS

The cold temperature conditions are more prevalent in the area. During the winter season subzero conditions are also witnessed.

4) DEPENDENCY OF LOCAL PEOPLE ON NATURAL RESOURCES

The people of Chasak, ChasakBhatori, Murch, Tuan and Hillu, Sechu and nomadic graziers are dependent on the sanctuary for various NTFPs including medicinal plants, fuel wood, fodder and cattle grazing. Therefore, reducing the dependency of the people from the sanctuary by providing them with alternate options should be one of the prime objectives of the management.



6.4.1.4 THREAT ASSESSMENT:

Threats	Overall Status	Remarks
A. Grazing / NTFP collection	High	People from Zone of influence mainly nomadic graziers are dependent on the resources of Wildlife sanctuary.
B. Communicable diseases	Low	A number of cattle population in villages situated along the boundary of Wildlife sanctuary & nomadic graziers
C. Forest Fire	Low	Location of fringe village's Ghasnis (private pastures) Dependence of locals from Zone of influence, nomadic graziers on the resources of Wildlife sanctuary.
E. Poaching/Hunting	Low	As a result of human wildlife conflict.
F. Climate Change	Not assessed	Budgetary provision have been made for future studies.

6.4.1.5 PLAN OF OPERATION

Before discussing strategies to be adopted for better protection of PA, it is pertinent to mention here that all maps of the sanctuary must be geo referenced up to compartment level with ground truthing of the same in the field. Boundary pillars must be erected along the boundaries and full detail of each boundary pillar i.e. no. of boundary pillar, location, geo coordinates, reference point (if any) must be depicted in boundary pillar register as well as in compartment history files and beat manual.

6.4.1.5 (A) - GRAZING/NTFP COLLECTION

Fringe villages people are dependent on the resources of Wildlife sanctuary. During the grazing season the villagers take their cattle and sheep to graze within the sanctuary. The areas viz; Chasak Bhatori Dhar, Sechu Dhar, Topiun Dhar, Chogullu Dhar are vulnerable from illegal grazing. The dependence of local people on medicinal plants of the sanctuary area can not be ruled out.

Strategies to be adopted:

- Group patrolling
- Strengthening of Infrastructure/communication system



- Awareness programmes
- Regular checking at strategic point
- Eco development activities (details are given in Chapter VIII)
- Wildlife Protection Maps

There is a great need of preparing the Wildlife Protection Maps, which should indicate the hot spots of the Sechu Tuan Nalla Wildlife Sanctuary, topography, water/salt points, the vegetation type of these wildlife hotspots, concerned trekking routes, availability of patrolling huts and other related information.

6.4.1.5(B)- COMMUNICABLE DISEASES

Wildlife disease is a major protection issue. In Sechu Tuan Nalla Wildlife Sanctuary the chances of infection from the cattle of adjoining villages and migratory graziers cannot be ruled out. The following areas have been listed sensitive as well as key sites on account of common sites where the wild animals as well as domestic animals feed /graze frequently.

Sr. No.Location.

- 1) ChasakBhatori Dhar.
- 2) Chogullu Dhar.
- 3) Gal Dhar
- 4) Harvin Dhar.
- 5) Sechu Dhar
- 6) Topiun Dhar

Therefore, these areas need to be sanitized, so that the disease from domestic animals does not get transmitted to the wild animals in the vicinity. Further, the sites nearer to habitats or Goths (where the local graziers camp during nights), it is necessary to vaccinate the herds of sheep and goats regularly to avoid the transmission of possible diseases. Further details are given in Wildlife health management plan (Para 6.5.5)

6.4.1.5(C)- UNREGULATED TOURISM

There is very less tourism activity due to lack of amenities and poor connectivity. Trekkers and pilgrims visit up to the Tuan Gompa and ChasakBhatori but they remain outside the sanctuary area. In future the tourist influx cannot be ruled out as road connectivity and



communication is improving in the adjacent areas of the wildlife sanctuary. The Problems of garbage and noise pollution, damage to vegetation by locals and other tourism-generated pressures need to be addressed on high priority in the times to come.

Possible negative impacts:

The negative impacts of such kind of tourism can gradually destroy environmental resources on which it depends. Negative impacts from tourism occur when the level of visitor use is greater than the environment's stability to cope with this use within acceptable limits of change. Uncontrolled tourism poses potential threats to many natural areas. It can put enormous pressure on an area and lead to impacts such as soil erosion, increased pollution, natural habitat loss, increased pressure on wildlife species and heightened vulnerability to forest fires.

Noise pollution

It causes distress to wild animals in the area and also leads to displacement of Wild animals.

Solid Waste and Littering

Waste disposal is a serious problem and improper disposal can be a major threat to the natural environment, lake, rivers/ Nallas, scenic areas etc.

Sewage

Unregulated tourism often leads to increased sewage pollution. Wastewater pollutes Nallah and other water sources damaging the flora and fauna and also very dangerous to mankind.

Extraction of fuel wood

This area is having many high altitude threatened floral species including Betula & Junipers. Use of these species as fuel wood poses a threat on the existence of these species.



Collection of NTFP



Jungli lehsun (*Fritillaria roylei*): Photograph by: Dr. Kuldeep Singh Jamwal, HPFS



Nag Chatri (*Trillium govanianum*): Photograph by; Dr. Kuldeep Singh Jamwal, HPFS



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)



Dhooop (*Jurinea macrocephala*): Photograph by; Dr. Kuldeep Singh Jamwal, HPFS

This sanctuary is a home to very rare and threatened plant species including *Bergenia stracheyi*, *Jurinea dolomiaca*, *Juniperus communis*, *Rheum australe*, *Podophyllum hexandrum*, *Polygonatum verticillatum*, *Fritillaria roylei*, *Aconitum heterophyllum*, *Picrohiza kurroo* and *Selinum tenuifolium* etc. Illegal extraction and trade of these plants during this period cannot be ruled out. Hence, this is a serious threat to the bio diversity of this area.

Physical impacts:

Attractive landscape sites, such as high altitude pastures, lakes, mountaintops and slopes, are often transitional zones, characterized by species-rich ecosystems. Typical physical impacts include the degradation of such ecosystems. The ecosystems most threatened with degradation are ecologically fragile type of areas, which are present in this sanctuary.

Strategies to be adopted:

- 1) Deployment of extra frontline staff from other sanctuaries during this period
- 2) Information regarding wildlife sanctuary must be displayed at vintage points.
- 3) Group patrolling
- 4) Strengthening of Infrastructure/communication system



- 5) Installation of dust bins along the tract and disposal of garbage in eco friendly manner should be ensured.
- 6) Regular cleanliness drives should be organised with local civic bodies, NGOs etc.
- 7) It should be ensured that proper sewage disposal will be done by the authorities responsible for it.
- 8) Do's and don'ts of sanctuary area must be displayed at strategic points.
- 9) Regular checking at strategic point
- 10) Awareness programmes

“Tourism has the potential to increase public appreciation of the environment and to spread awareness of environmental problems when it brings people into closer contact with nature and the environment”.

6.4.1.5 (D) - FOREST FIRE

Fire sensitive areas:

The following areas in the wildlife sanctuary area sensitive to fire hazards, and needs to be taken care of so that there is minimum loss to the habitat as well as to the wild life itself.

Sr. No.	Name of area.	Area in ha.
1.	Chasak Bhatori Dhar.	4000
2.	Chogullu Dhar.	3138
3.	Gal Dhar	2227
4.	Harvin Dhar.	5620
5.	Sechu Dhar	608
6.	Topiun Dhar	11969

Strategies to be adopted:

- During fire season fire sensitive areas must be patrolled by the frontline staff intensively.
- Introduction of modern firefighting tools and training of staff and labor in their use.



- Construction of new fire lines.
- Construction of water harvesting structures/ Kaccha water ponds in the sanctuary area.
- Regular cleaning of roads, bridle paths and inspection paths.
- People's Participation – As almost all the fires result from human activity, the involvement of people is essential for improved prevention and control.
- Regular meetings/ awareness programmes among local community are essential.

Fire fighting operations:

During the fire season the following shall be done:

- Once fire is detected all hands must proceed to fight the fire, irrespective of range/jurisdictional boundaries
- Range headquarter should have enough spare sets of equipment like fire rakers, small axes, sickles, water bottles etc.
- Proper reporting of fire incidents will be ensured.
- Fires watch huts/Gang huts/ Watch towers will be established at vantage points. Each watch point will be managed by three-four fire watchers. Fire watchers will be provided with mobiles/Walkie Talkie and fire resistant kits during fire season.
- There is a need to develop a rapid response system in case of outbreak of fire.
- Record of fires needs to be maintained regularly.
- Development of extension programme to educate villagers and visitors about fire.
- Sign boards with suitable messages will be displayed at all prominent places in the Wildlife Sanctuary.





Fire awareness campaign at Sechu

6.4.1.5 (E) - POACHING/ HUNTING

Ban on hunting has been of great help to the wildlife. Poaching in the sanctuary area is almost nil and no case of poaching has been reported during last so many years. However following actions are recommended:

- Group Patrolling and Reporting: This aspect of the wildlife protection needs very effective strengthening through patrolling by the wildlife sanctuary staff.
- Unlike traditional patrolling by one Forest Guard, it is recommended that at least two Forest Guards along with one or two casual workers / local people provided with maps and GPS devices should form one patrolling party and conduct three or four long patrols in a month.
- Full reporting on every patrol including collection of biological information is to be ensured.
- The biological and other information collected during patrolling must be organized and compiled.



- In addition to preventing wildlife crime, these patrolling reports may be very useful for the evaluation of management effectiveness and for monitoring habitats and population of target species.
- A well-accomplished Nature Awareness programme involving school children and locals can arouse public opinion in favour of wildlife conservation.

Anti-Poaching Operations:

- Winter season (November-March) is more sensitive period, therefore more intensive operations are required in these months.
- Wherever possible local people/youths should be involved in anti-poaching operations.
- Reward to persons: A reward is recommended to be given to a person or villager who renders assistance in the detection of an offence or apprehending the offenders. A reward is also recommended to front line staff for doing outstanding job in protection of wildlife.
- Capacity building of Frontline staff: Some of the suggested courses for Forest Guards, Dy. Rangers, and Forest Rangers are:
- One week module on Identification and prevention of illegal trade in wildlife, its derivatives and parts.
- One week module on intelligence gathering, investigation and prosecution of wildlife offence cases.
- One-week module on Wildlife (Protection) Act, 1972 and its application: This course will help develop standard Performa for booking forest and wildlife offences under IFA and WPA, such as Search Warrant, Seizure Memo, BailBond, Case Diary/DR etc. for the entire state. This will help in making prosecution of cases simple and will reduce the chances of technical errors in filing offence cases in the court of law.
- One week module on human wildlife conflict, Nature Conservation Education, and provisions of wildlife compensation.

CRIME SCENE SEARCH

If a wildlife crime has been committed, an important starting point to the investigation is searching for evidence at the scene of the crime. The following steps are recommended:

1. Isolate scene with rope or tape.
2. Keep written notes or audio recordings.
3. Take photo.
4. Sketch area and position.



5. Search for evidence.
6. Take footprints of animals and human in the area.
7. Collect evidence.
8. Search for wounds or marks on the animal.

How to search for evidence

Use one of the methods given below to maximize efficiency:

1. Start searching point -to-point in a straight line.
2. Divide area into quadrants. Search one quadrant at a time.
3. Cover the area in a spiral manner.
4. Send your men from point to point and then back again
5. Send your men in a radial manner from the centre of a supposed circle.

Collection of evidence from crime scene

Collecting evidence from the scene of a crime has to be done in a scientific and precise manner in order for the evidence to have some use in the final investigation. The following evidence is commonly available at poaching site

Foot print/pugmark

- ◆ Photograph print before taking impression.
- ◆ Put glass on the print.
- ◆ Your eyes must be at 90° to the print in order to avoid parallax error.
- ◆ Fill print with plaster of Paris.
- ◆ Dry collect the cast.

Blood

- ◆ Collect blood from animal's body using a dropper into a test tube. Seal it tight with a cork.
- ◆ If blood is found on soil, collect blood with soil in a test tube and seal it.
- ◆ Collect soil without blood from the scene.

Hair

- ◆ Use forceps to collect hair for evidence.
- ◆ Do not bend hair while collecting.
- ◆ Collect hair from the root if possible.
- ◆ Place in a plastic bag (not paper envelope).
- ◆ Seal and label it.

Fire arms

- ◆ Use gloves to pick up the firearms.



- ◆ Do not insert any object in to barrel of the gun.
- ◆ Note position of lock, hammer and catch and do not change it.
- ◆ Note if gun has been fired or not.

Finger print

- ◆ Photograph fingerprints before lifting them.
- ◆ If fingerprint tape is available use, it to collect print.

Bullet

- ◆ Take out bullet from animal's body without scratching it. Place it in a paper bag. Seal it and label it.
- ◆ Cartridge cases found outside should also be collected in paper bags, sealed and labeled.
- ◆ In case bullet is embedded in hard object, cut around the bullet and place the whole block in a paper bag. Seal it and label it,

Photograph

A photograph is useful evidence. On it should be date, time, place of incident, brief description, name & signature of photographer along with location details (latitude, longitude). Always place a case no or some other identifier in each picture along with ruler or something that references size.

Conducting a Criminal Investigation

Once the evidence on the scene of the crime is collected, the next step is to conduct a criminal investigation into the crime. Remember that for an investigation to start, a crime need not have been committed and this could be the beginning of an effort to foil the crime. For simplicity you can divide the investigation into five phases.

Intelligence gathering

- ◆ Try and identify the suspects.
- ◆ Through various sources, determine the scope of activity of the suspects.
- ◆ Documents and validate all the intelligence information gathered.
- ◆ Analyse the intelligence reports.

Decision to conduct the investigation

The final decision to conduct the investigation must be taken after the background intelligence has been analysed. At this stage, you can decide to close the case if background information so indicates.



Planning the investigation

- ◆ Is there sufficient manpower?
- ◆ Who will supervise the investigation?
- ◆ Who will co-ordinate the investigation and serve as the “team leader”?
- ◆ How many investigators/officers are available to provide for surveillance, evidence analysis, technical support?
- ◆ Is the equipment available adequate and well maintained?
- ◆ Are there arrangements for the storage of evidence?

Implementing the plan

Always remember to:

- ◆ Stay flexible.
- ◆ Continue to update your intelligence.
- ◆ Continue to identify your defendants, suspects and charges.
- ◆ Gather, label, analyse, evaluate and secure your evidence.
- ◆ If needed obtain and execute arrest warrants, summons, search warrants.
- ◆ Conduct interrogations, take confessions in presence of two independent witnesses.
 - ◆ Produce in court within 24 hours.
- ◆ Release synopsis of the investigation to the media.
- ◆ Prepare and submit your evidence.
- ◆ Brief lawyer.

Evaluate your results

Ask yourself what finally was accomplished. Evaluate if investigation has been a deterrent to future illegal activities and if, due to the case, more update and accurate intelligence is available.

B. Prosecution Procedures

Search/Seizure

The power of entry, search, arrest and detention are conferred under section 50 of the WPA. Police officers not below the rank of Sub-inspector have also been authorized under this section.

Investigating officer should search the suspect, his premises and his vehicle. If prima- facie evidence of contraband is found, seize them and place them in safe custody. Then arrest the suspect. A receipt of such said articles be prepared and copy thereof be given to such person in the presence of two or more independent witnesses, and whose signatures should be obtained. The arresting officer should forthwith communicate to such persons the full particulars of the offence as well as the grounds for such an arrest.



Production

Immediately after the arrest, the concerned officer must produce the arrested person and the articles seized, within 24 hours, before the concerned Magistrate. Any person can also help law enforcement by acting as a law Enforcement officer in case the crime is committed in front of the said individual. In this case private individuals can arrest, search and seize (u/s 41 CrPc) and file provided the offence is cognizable and non- bailable.

Non bailable/ bailable offence

Offences which are cognizable and punishable with imprisonment for three years or more are non-bailable and one which are less than three years and non-cognizable are bailable.

Conditional bail

Prosecuting officer in the event of grant of bail to an accused must ensure that the Court in its order imposes a condition that the accused shall not commit an offence similar to the offence which he is accused of. Such a condition would be deterrent for the accused to further commit such offences and expedite the cancellation of bail already granted in case the accused commits another offence under the WLPA.

Confession

Law does not permit recording a statement whether confessional or otherwise of an accused except on the presence of the designated Magistrate.

Recording statements as evidence

- Any officer not below the rank of Asst. Director of Wildlife Preservation or the Wildlife warden is authorised to record statements of witnesses as evidence.
- Statement of the witness is recorded in the presence of the accused.
- Accused is given an opportunity to put questions, if any to such witness.
- Witness to sign such statement.
- If the accused agrees then his signatures also be appended.

Complaint

A complaint is, any allegation made orally or in writing to a Magistrate, with a view to his taking action under CRPC against some person, whether known or unknown who has committed an offence. A complaint under WPA is made under Section 50(4). Such complaint can be filed only by authorized officers under section 55 of WPA. Members of the public can also file a wildlife court case by following the procedure under section 55(c).



Format of complaint

Law has not prescribed any specific format for drafting a compliant.

Contents of Complaint

Compliant must specify clearly detailed description of events, the source of the information; the enquiries made along with names of persons, places and details of the evidence collected, the instrument/weapon used.

Forensic certificate

A document certifying the species of the animal / skin / animal article or plant seized is an essential ingredient of the documents that need to be filed in the Court.

Power to file a compliant

- a) The director of Wildlife preservation or any other officer authorised on his behalf by the Central Government; or
- b) The Chief Wildlife Warden or any officer authorised on his behalf by the State Government; or
- c) Any person who has given notice of not less than 60 days, in the manner prescribed of the alleged offence. (Section 55 of WPA). The prescribed format has been appended under Wildlife Protection Rules, 1995.

Authorisation to file complaint

Complaint by an officer other than Director, Wildlife Preservation or Chief Wildlife Warden must be accompanied by a written order authorizing such officer to file the complaint.

Role of Honorary Wildlife Wardens

Para 16 of Guidelines for Appointment of Honorary Wildlife Wardens stipulates that suitable Honorary Wildlife wardens can be authorized to file complaints in courts. Honorary Wildlife Wardens should consult Chief Wildlife Warden of their state in this regard.

The following are steps in the prosecution of a wildlife criminal

- Power to enter, search any premises, vehicles, etc., and seize any wild animal article etc., Section 50 of WPA
- Power to stop, detain or arrest any person without warrant Section 50 WPA.
- Recording of statement of the witness to the offence by Assistance Director of Wildlife Preservation or by Wildlife Warden Section 50 (8)(d) of WPA.
- To produce the arrested person and articles seized before the concerned Magistrate Section 50 (4) of WPA.
- Bail / Conditional grant of bail Section 437(3) (b) CrPc.



- Authorization to file complaint Section 55 of WPA.
- Filling of complaint Section 55 of WPA read with section 190 CrPc.
- Examination of the authorized person presenting the complaint to be dispensed with Section 200 CrPc.
- Issuance of warrants/summons by Magistrate to the accused along with the copy of compliant section 204 Cr. Pc
- Recording of Pre-charge evidence Section 244 CrPc.
- Framing of charge Section 246 of CrPc.
- Accused to state whether pleads guilty or not guilty of such charge Section 246(2) of CrPc.
- Accused pleads not guilty, then witnesses whose statement had been recorded earlier to be summoned for cross examination by the accused Section 246(4) CrPc.
- Accused to enter upon his defense and produce his evidence Section 247 CrPc.
- Examination of the accused by court. Accused has right to refuse to answer such questions Section 313 CrPc.
- Submission of arguments Section 314 CrPc.
- Judgement: acquittal or conviction of the accused Section 248 Cr.Pc.

Disposal of Confiscated Specimens

An important element of a seizure is the disposal of the seized contraband. In most cases, this can be done only after the final court proceedings are completed. In other cases, especially when it is live animal, different procedures must be followed.

Options of disposal

a) Dead Specimens, parts and Derivatives:

- ❖ Donations to museums and forensic labs, for scientific research.
- ❖ Use of training and educational purposes.
- ❖ Storage.
- ❖ Destruction: This is the recommended option. Display of wildlife articles can encourage demand.

b) Live Specimens

- ❖ Return to country of origin.
- ❖ Transfer to a rescue center / Zoo.
- ❖ Return to the wild.
- ❖ Euthanasia.
- ❖ If a live animal or plant is involved, remember that the survival and the security of the animal or plant should paramount. Seizures of wildlife should be brought to the attention of wildlife officers as soon as possible. Decisions of disposal should be made in agreement with the management authority

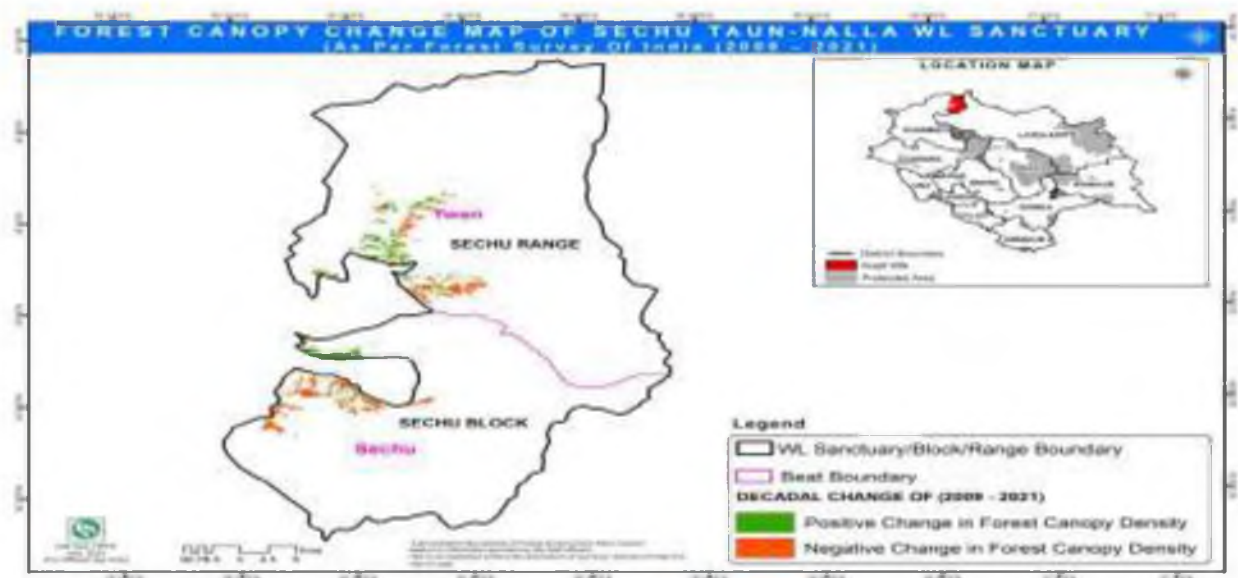


6.4.1.5 (F)- IMPACTS OF CLIMATE CHANGE

At present, no specific data is available to assess the impact of climate change on Sechu Tuan Nalla Wildlife sanctuary. However, it is expected that in future many different types of impacts on biodiversity (individual organisms, species and ecosystems) will be felt.

6.4.2 HABITAT ENRICHMENT PLAN

Habitat management within the PA is a key to effective conservation of wildlife. Active managerial intervention, including habitat restoration will be carried out in the sanctuary for development of the forest area as ideal wildlife habitat. This would include carrying out plantations, management of highaltitude pastures, soil, moisture conservation works & improvement of water availability etc.



Forest Canopy Change Map of Sechu Tuan Nalla WL Sanctuary

6.4.2.1 OBJECTIVES

- 1) To identify degraded areas inside the Sanctuary.
- 2) To restore these degraded areas through scientific/ managerial interventions.
- 3) To improve the habitat quality for different flagship species.

6.4.2.2 PRESENT STATUS

Due to anthropogenic pressure, habitat in the area is degrading. Degradation level of various areas within PA is shown in the above map. The forests in the sanctuary are potential



habitat of many species; therefore proper management is vital for protecting the biodiversity of sanctuary and achieving the objectives of the management plan.

6.4.2.3 RECOMMENDED STRATEGIES

6.4.2.3.1 HABITAT MANAGEMENT ACTIVITIES

6.4.2.3.1 (A) PLANTATIONS

Area being moderately dense to dense forest, there is no need for tree plantation in the sanctuary. However, the assisted natural regeneration can be taken up at certain places. The rocky habitats will be maintained as such. However, some native fruit tree species will be planted in the sanctuary area, as it will provide food for the rich Avian-fauna of the area. Some plantations can be carried out in eco sensitive zones to reduce the dependency of local people on Wildlife Sanctuary. Following areas need to be restocked through plantation or assisted natural regeneration technique-

Sechu Dhar, ChasakBhatori Dhar, Harvin Dhar, Topiun Dhar, Chogullu Dhar and Shidhani Dhar.

Actions to be taken:

- 1) Long Term Ecological Survey to be conducted through Himalayan Forest Research Institute (HFRI) or any other agency.
- 2) There is hardly any area available for tree plantation in the sanctuary. However, some of the degraded area can be rehabilitated by assisted natural regeneration/plantation.
- 3) Only native species of trees/ shrubs/ herbs/ grass will be planted and more emphasis will be given to assisted natural regeneration.
- 4) Efforts should be made for site/ faunal species specific plantations.
- 5) Plantation of trees/ Shrubs/Herbs/ Grasses should be site specific.
- 6) Three storey plantation model (Trees, Shrubs and herbs/grasses combined) depending upon the objective can also be developed.
- 7) An integrated approach with plantation and soil and moisture conservation will be followed.
- 8) Involvement of local people, school children, children Mahila mandal, Yuvakmandaletc. will give better results of plantation.



Following species are proposed for plantation:

Aesculus indica (Horse Chestnut)
Juglans regia (Walnut)
Cedrus deodara (Deodar)
Pinus wallichiana (Kail)
Pinus smithiana (Spruce)
Abies pindrow (Fir)
Acer pictum (Maple)
Pyrus pashia (Kainth)
Prunus padus (Bird cherry)
Salix wallichiana
Berberis (Kasmal)
Fragaria vesca (Strawberry)
Geranium wallichianum (Ratanjot)
Fragaria indica (Wild Strawberry)
Rumex (Arrow leaf Dock)
Solanum (Mullein nightshade)
Rubus panniculatus (Raspberry)
Lonicera hispida (pink honey suckle)
Native species of grasses.

6.4.2.3.1 (B) SOIL AND MOISTURE CONSERVATION WORKS - (BIOLOGICAL AND ENGINEERING):

Since, the sanctuary is being managed for conservation of wildlife, soil and moisture conservation works are of utmost importance. Engineering measures will be supplemented with vegetative measures as per site specific conditions.



Soil and Moisture Conservation Work



The overall objectives of Soil and moisture Conservation works are:

- 1) Increase percolation of water into soil
- 2) To check surface runoff
- 3) Manage and utilize run off for useful purpose.
- 4) Improving existing water resources by planting water holding species



Soil erosion in Sechu Tuan Nalla Wildlife Sanctuary
Photograph by: Sh. Akshay Kumar Forest Guard

Actions to be taken/ Recommendations:

Following actions are proposed to achieve above objectives:

- Bio-engineering measures will be preferred over engineering measures (civil works) (wherever possible).
- A plan for soil and moisture conservation works will be prepared and work will be done systematically.
- Small kachha water ponds
- Contour staggered trenches along with plantation of local grass species on their lower berm are proposed.



- Soil & Moisture conservation works are proposed in Sechu Dhar, ChasakBhatori Dhar, Harvin Dhar, Topiun Dhar, Chogullu Dhar and Shidhani Dhar.

6.4.2.3.1 (C) IMPROVEMENT OF WATER AVAILABILITY

Although, the sanctuary area has many perennial streams and many seasonal springs but some more water resources are needed to be created especially for the lean period. The type of water retention structure will depend on the site condition. As there is water deficiency the trenches and percolation ponds on higher reaches shall be made so that the water resources and nallahs remain rejuvenated throughout year. The first and foremost step to improve water availability inside the sanctuary is to have the information of all the existing water sources and be aware of their status. This could be done by identifying the perennial and seasonal water sources through intensive survey and water mapping that area using 2x2 km grid. Any Grid square without perennial sources represents a gap. The best way to fight water scarcity is by regenerating natural sources of water and then construction of artificial water holes. Another important criterion to manage water resources inside a PA is by proper site selection. Following points should be considered for any water development works –

- A gap in water supply is not in itself sufficient reason to establish an additional water source. Clear objectives must be established.
- A large number of small and widely scattered sources are better than a few large sources.
- Water development should be avoided in areas where Endemic and rare plant species are present.
- Water development may trigger erosion on steep lands and fragile soils.
- Site which has shade trees and tall shrub or grass would be favourable :(escape cover nearby)
- Sites that are likely to be disturbed frequently by livestock, local people or traffic should be avoided.

6.4.2.3.1 (D) PROVIDING SALT LICKS

Provision of artificial salt lick affect the behavior and movement of wild animal and sometimes it also helps poachers to locate the presence of the animals. Therefore, it is necessary to provide due care and protection where artificial salt licks have been provided. It is suggested that all the existing natural salt lick locations should be mapped and based on the information decision to provide new salt licks should be taken carefully. Detail of salt licks is provided as **Annexure-XIII**

6.4.3 INFRASTRUCTURE DEVELOPMENT PLAN

For the effective protection and regular monitoring, proper communication system, patrolling huts in remote areas, continuous maintenance of path and small bridges are



necessary requirements. In addition, other logistic support like tents and other trekking equipment's are also required.

6.4.3.1 LIST OF TOTAL INFRASTRUCTURES AVAILABLE AND REQUIRED Forest road/path-

Existing Situation			Proposed/Recommended action
Tribal paths/ Inspection paths/ Bridle paths			Maintenance of these paths suggested on periodic basis.
1	T/Route from C/Bhatori to Gul Dhar Pass	7.00 Km	
2	T/Route from Twan to Twani Dhar (Pass)	9.00 Km	
3	T/Route Chiroti Ash Dhar	8.810 Km	
4	T/Route C/Bhatori to Harvin Dhar	5.50 Km	
5	B/Path ChasakBhatori to Murch	3.50 Km.	
6	B/Path Twan to Tarunda	7.5 Km.	
7	B/Path Murch to C/Bhatori (via Bankhari Nalla)	3.5 Km	
8	I/Path Kali Chho to Tarunda	6.400 Km	
9	I/Path Sechu to Shidhani Dhar	7.50 Km	
10	I/Path Murch to Shidhani Nalla	2.50 Km.	
11	I/Path Sechu to Harvin Dhar	10.00 Km	
12	Foot Path from Twan to Twan Dhar (Topiun Dhar)	3.50 Km	



2. Check posts and Forest guard quarters:

Existing Situation	Proposed/Recommended action
No Check post exist in the area 2 Forest guard quarters	It is proposed to establish one check post alongwith sufficient accommodation for staff at Sechu. This check post should be equipped with telephone/ wireless system facility, CCTV cameras and fire arms. Check post should be provided with regular staff of 3-4 persons. One additional forest guard quarters

3. Patrolling Huts/ Anti poaching huts/ Watch towers:

Existing Situation	Proposed/Recommended action
No patrolling hut/ watch tower/ anti poaching hut exists in the sanctuary.	Construction of watch towers and anti poaching hut/ patrolling hut/ Bunkers with basic facility at following places are proposed: ChasakBhatori Dhar Sechu Dhar Harvind Dhar Shidhani Dhar Chogullu Dhar Topiun Dhar Jammu Nalla Tarunda Nalla Gajroond DPF

4. Office and residential complex for forest officers:

Existing Situation	Proposed/Recommended action
1 No. Range office cum residence 1 No. Block officer residence 2. Forest Guard Quarters	Special Maintenance of these buildings suggested on regular basis. One Guard Quarter is required in Hillu Tuan near I/Hut Tuan.



5. Construction of other infrastructures:

Existing Situation	Proposed/Recommended action
- No proper demarcation of beats - Insufficient signages at each entry point and along the trails	- Proper boundary with boundary pillars should be demarcated and redefined. - Effective signage like Do's and Dont's, species rich areas, trekking routes etc. should be demonstrated properly on the display at each entry point and inside the sanctuary. - Periodic maintenance of the buildings and infrastructures present in the sanctuary

6. List of total instruments and logistics available and required:

Existing Scenario	Proposed/Recommended action
Vehicles for forest staff	
One Bolero –DFO	One Patrolling vehicle needs to be purchased Bike for each forest guard These vehicles will be used for effective movement of frontline staff from Sechu to Tuan. Although the road from Sechu to Chasak has been excluded from sanctuary area, but the area on both sides of this road is inside the sanctuary.
Instruments and gadgets	
Only one desktop + 1 printer +1 scanner in Range office 4 GPS 3 binoculars 5 compass 2 Range finders 1 Laptop 2 Camera 1 Walkie Talkie 24 Trap Cameras	Wireless handsets/ walkie talkie sets for all forest guards Snow Gear instruments Sufficient Tents, sleeping bags Trap cameras Digital Cameras Drone cameras Fire resistant kits Snake handling kits Fire arms for self protection 2 New computers are too be proposed for smooth working of E-office at Sechu

6.4.3.2 STAFF WELFARE

The field staff shall be provided with jackets and shoes in a uniform manner in every year. The jackets shall clearly mention sanctuary name in order to give a professional outlook to staff and clearly identify them as sanctuary staff. It shall blend well with camouflage colour largely prescribed for forest staff.



The field staff doing good work shall be appreciated through certificates recognizing them for their works and also through other rewards in the form of cash prizes. The Divisional Forest Officer shall take decision in this regard. Such measures would give an incentive for field staff to work better with good competitive spirit and keep their motivation high.

6.4.4 ECO DEVELOPMENT PLAN

There is a lot of scope to promote the Eco Development activities in and around the sanctuary so that the following objectives could be achieved:

- To provide healthy, hygienic environment to the general public residing around the sanctuary and to improve their living conditions.
- To help the local people in ameliorating their economic status.
- To manage the human wildlife conflict in buffer area.
- To encourage ancillary occupation in the area.
- To improve the agricultural productions by adopting better techniques like terracing, soil conservation measures etc.
- To provide basic medical facilities both to human being as well as cattle.
- Detail regarding specific issues, broad strategies Etc. is in Chapter VIII

6.4.5 WILDLIFE HEALTH MANAGEMENT PLAN

The increase in human-wildlife-domestic interface increases the threat of transmission of diseases from wildlife to human-livestock and vice versa. Therefore, disease transmission has important implications not only for wildlife management, but also for public health, livestock development, and rural livelihoods. Proper surveillance programs all year round is crucial in maintaining management health plans. This will help develop databases which will help in forecasting disease outbreaks and establish early warning systems.

6.4.5.1 IMMUNIZATION

All domestic animals and livestock around the Sechu Tuan Nalla Wildlife sanctuary as well as nomadic cattle should be vaccinated against the transmissible diseases. This will prevent the transmission and introduction of diseases from wild animals to domestic and vice versa.



Sl. No	Name of Disease	Species affected	Zoonotic potential	Whether present in OIE/ World Organization for Animal Health notifiable diseases list	Vaccination schedule
1.	Foot and Mouth Disease	Cattle, swine, sheep, goats	-	Yes	Six monthly (March and September)
2.	Haemorrhagic Septicaemia	Cattle	-	Yes	Annually in endemic areas
3.	Black Quarter	Cattle	-	-	Annually in endemic areas (before monsoon)
4.	Brucellosis	Cattle	Yes	Yes	Once in a lifetime (4-8 months age female calves)
5.	PPR	Sheep, goat	-	Yes	Once in three years
6.	CCPP	Sheep, goat	-	Yes	Annually (January)
7.	Rabies	Dog, cat, cattle, sheep, goat	Yes	Yes	Annually
8.	Canine Distemper	Dog	-	-	Annually
9.	Parvovirus	Dog	-	-	Annually
10.	Sheep pox and goat pox	Sheep and goat	-	Yes	Annually (December)

Immunization Schedule for Domestic Livestock

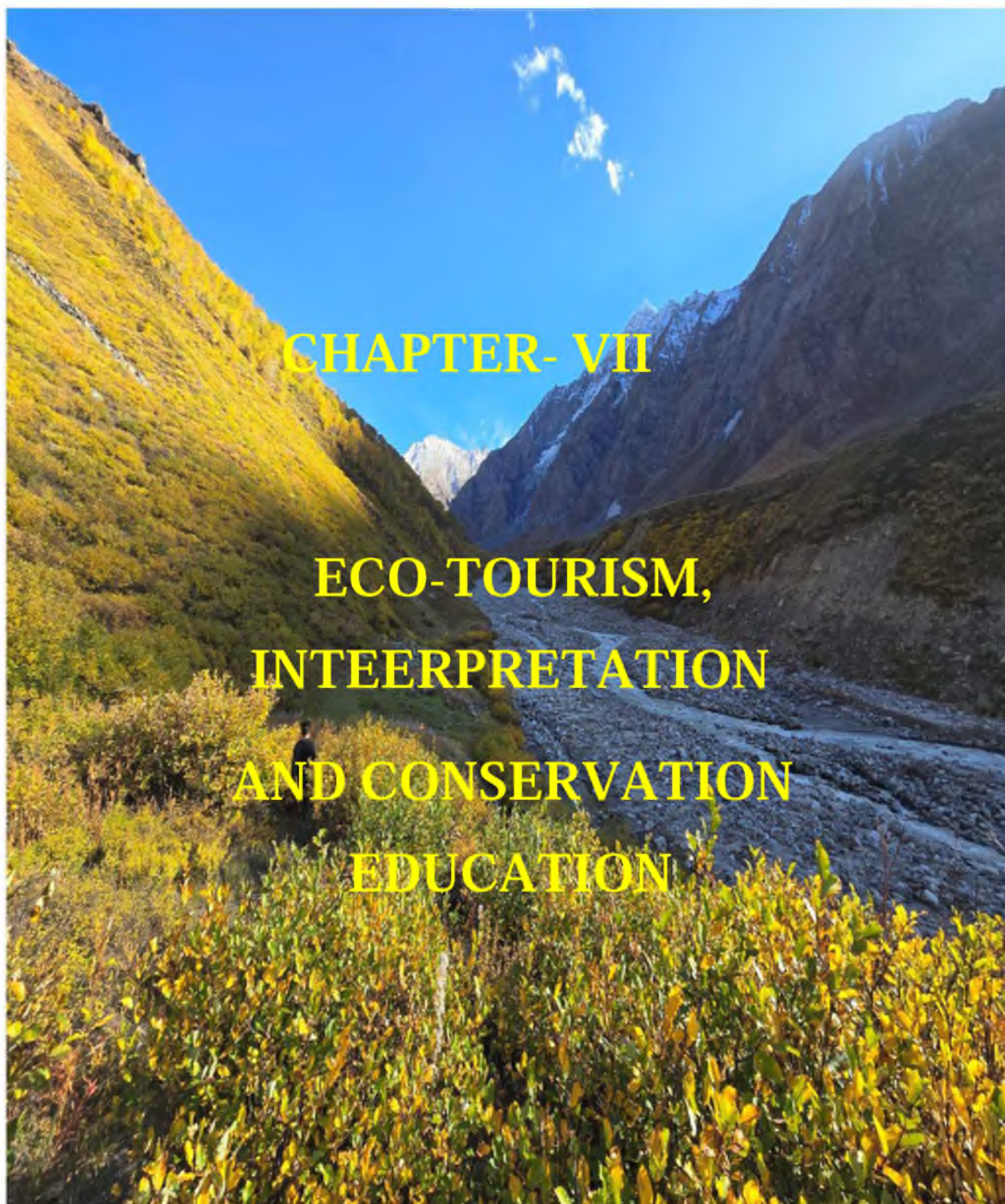
6.4.5.2 PUBLIC AWARENESS

To prevent wild animals from frequenting into human habituated areas, the communities living around the Wildlife Sanctuary should be made aware of the repercussion of irresponsible disposal of garbage and livestock carcasses.

6.4.5.3 EDUCATION AND TRAINING

All the stakeholders require education and training for at least basic public health concerns and bio-security to achieve the desired outcome. Protocols for handling carcasses, attending disease outbreaks, etc. should be made. The field personnel should be made aware of this and given at least basic training for this purpose.





The ecotourism in a very broad sense means venturing into and enjoying nature in such a way as to assure that negative impacts on the cultural and natural environment are minimized and mitigated. It is therefore responsive tourism which besides being ecologically and culturally sensitive helps the local community in realizing social and economic benefits.

7.1 GENERAL

As such there is great potential of eco cum religious tourism in this farflung area having a very unique and aesthetic view of whole of the wildlife sanctuary. The acquaintance with some of the most endangered flora and fauna, entourage to wildlife sanctuary becomes an eye opener and rarest moments of their pilgrimage. Such visitors will be the real ambassadors of wildlife conservation and eco diversity in the Himalayan region. It will also be a great boon for the development of religious cum eco-tourism to the state.

It must be ensured that all eco-tourism activities to be executed in the PA are as per the provisions of Wildlife (Protection) Act, 1972 as amended from time to time, Guidelines for sustainable eco-tourism in forest and wildlife areas-2021 F. No. 1-57/2014 WL (part-8) Dated: 29th October 2021 issue by Government of India Ministry of Environment, Forest and Climate Change (Annexure XXVIII) and Amendments in Revised Eco-tourism Policy-2017' as 'ECO-TOURISM POLICY 2024' Notification No. FFE-B-C (15)-1/2024 Dated: 29.10.2024 issue by Govt. of HP (Annexure XXIX).

7.2 OBJECTIVES

- To regulate the inflow of eco-tourists to the WLS without affecting the main objective of conservation.
- To involve local people in tourism activities, thereby generating direct and indirect economic activities for them.
- To provide hassle-free, low volume and truly enriching experience of wilderness to the visitors



- To promote local cultural significant sites.
- To promote traditional knowledge, cultural values and heritage.
- To create awareness about wildlife conservation among masses.

7.3 ISSUES AND PROBLEMS

The nonexistence of basic amenities, tough terrain, harsh weather and non-availability of trekking guides entourage the trekkers as well as wildlife lovers are some of the main bottlenecks and limitations for the promotion of tourism throughout the year which needs to be addressed at very first stage.

7.4 THE STRATEGIES

Eco-tourism in sanctuary shall focus on natural resources like the beautiful forest and alpine pastures, the precious wildlife that includes the presence of both the majestic mammals and birds, scenic views of the landscape from vantage points and trekking experience for visitors. Eco-tourism should also be promoted taking into account the existing tourist potential of Sechu Tuan Nalla Wildlife Sanctuary. In this context, zonation of eco-tourism and trek routes delineated shall focus on promoting complementary linkages with these sites to harvest maximum eco-tourism potential and enable feasibility in plans for visitors.

Any form of ecological tourism should therefore be promoted duly keeping in view the concept of ‘carrying capacity’. This should be strictly adhered to ensure minimal disturbance to wildlife, an enriching experience for the visitors and sustainable tourism. As a pre-requisite to this, there should be clearly identified entry points in sanctuary for all eco-tourism activities whereby number of visitors can be monitored and regulated. The philosophy of strategy of eco-tourism is to demarcate a clear zone for eco-tourism activities in the sanctuary and to provide a high value experience to regulated number of visitors in terms of wildlife awareness and education.



7.4.1 IDENTIFICATION OF THE ZONE

Based upon the zonation of the sanctuary area, the following tracts have been identified for the eco-tourism/ religious tourism activities:

- (i) Trek from Sechu to Harvin Dhar.
- (ii) Trek from Sechu to Raja ka Dera
- (iii) Trek from Raja ka Dera to Shidhani
- (iv) Trek from Chasak Bhatori to Gul Dhar
- (v) Trek from Tuan to Topiun
- (vi) Trek from Tuan to Tarunda
- (vii) Trek from Tuan to Chogullu



DFO WL Division Chamba alongwith staff Trek from Twan to Trunda Nalla



Trek from Chasak Bhatori to Gul Dhar

The area is worth to see being a rich forest, high mountainous alpine pasture, natural water falls, small streams, glaciers, passes and religious places. Presence of rare and threatened floral species energize the trekkers/ hiker/ pilgrims during their journey. Presence of religious places in the area gives actual peace of mind. Although a number



of wild animals are present in the sanctuary and their sighting is a matter of chance, but the chances are more here as compared to other wildlife sanctuaries in the state.

7.4.2 FORMATION OF ECO-SOCIETY/ COMMITTEE

A Society/ Committee will be constituted with the primary objective to promote and manage eco-tourism activities in the area of operation to get optimum economic returns to the local people in an environmentally and culturally sustainable way. The Society/ committee shall, for this purpose, retain the revenue receipts generated out of those government assets in its area of operation, the use of which will be allowed to the society/ committee, and utilize the same to fulfill the objectives of the society.

Role of society/ committee will be as under:

- i) To create awareness amongst the local people about the potential of eco- tourism in the area and its intimate linkages with conservation of natural resources.
- ii) To build capacity of the local people and concerned government officials in managing eco- tourism in their area.
- iii) To identify eco-trails/ tracts in the area of operation and develop infrastructural facilities along these trails/ tracts for such tourism.
- iv) To manage the infrastructure developed by the society/ committee and /or taken over by the society from other organizations under MoU if any.
- v) To develop and enforce protocols to minimize the negative impacts of traditional tourism on ecology and social fabric of the area.
- vi) To develop ways and means to attract responsible nature and adventure tourists to the identified and developed eco-trails/ tracts.
- vii) To promote cooperatives amongst local artisans for production and sale of handicrafts/ cottage level produce or any local produce to get better returns to them.
- viii) To set up branches of the society for the said purposes at such places as may be decided by the Governing Body of the society from time to time.



- ix) To assist or take assistance from and collaborate with other institutions with similar activities in India or elsewhere.
- x) To keep close liaison with State Level Eco-tourism Advisory Committee set up in the State Forest Department and work under its broad policy guidelines on the subject.
- xi) To engage persons for the purpose of the society.
- xii) To carry out all activities keeping in view various provisions of related Acts, Rules, regulations and guidelines issued by the government from time to time.
- xiii) To do all other lawful things as may be incidental or conducive to achieve the above objectives.

7.4.3 INFRASTRUCTURE DEVELOPMENT

Main tourism activities in the area could be trekking, hiking and sighting of various faunal species. Glaciers, waterfalls, dense forests and high altitude pastures are also main attractions of the area. For this purpose the basic requirement would be as under:-

7.4.3.1 TREKKING ROUTES

There are a number of bridle / inspection paths inside the sanctuary area. Regular repair/ improvement of such paths will be required on periodic basis. List of bridle / inspection paths is as under:

Sr. No.	Particulars	Length
1	T/Route from C/Bhatori to Gul Dhar Pass	7.00 Km
2	T/Route from Twan to Twan Dhar (Pass)	9.00 Km
3	T/Route Chiroti to Ash Dhar	8.810 Km
4	T/Route C/Bhatori to Harvin Dhar	5.50 Km
5	B/Path Chimi to Murch	1.50 Km.
6	B/Path Twan to Tarunda	7.5 Km.
7	B/Path Murch to C/Bhatori	3.0 Km
8	I/Path Kali Chho to Tarunda	6.400 Km
9	I/Path Sechu to Shidhani Dhar	15.0 Km



10	I/Path Murch to Shidhani Nalla	2.50 Km.
11	I/Path Sechu to Harvin Dhar	10.00 Km
12	Foot Path from Twan to Twan Dhar (Topiun Dhar)	3.50 Km

7.4.3.2 TREKKING HUTS/ CAMPING SITES

The existing camping site/ trekking hut is as following:

Sr. No.	Name of camping site	Geo Coordinates		Altitude (mtr.)
		Latitude	Longitude	
1	Camping site at Murch	32° 55' 57" N	76° 36' 29" E	3567
2	Camping site at ChasakBhatori	32° 56' 12" N	76° 36' 49" E	3637
3	Camping site at Jammu Nalla	33° 01' 40" N	76° 37' 46" E	3796
4	Camping site at Tarunda nalla	33° 02' 17" N	76° 37' 10" E	3220

Besides maintenance of already existing buildings, camping sites the following trekking huts/ camping sites are proposed to be constructed at following places:-

Sr. No.	Name of Proposed site	Geo Coordinates		Altitude (mtr.)
		Latitude	Longitude	
1	Camping site at Tarunda Dhar	33° 04' 25" N	76° 37' 38" E	3365
2	Camping site at Jammu Dhar	33° 01' 33" N	76° 39' 39" E	3460
3	Camping site at Shidhani Dhar	32° 57' 32" N	76° 32' 54" E	3689
4	Camping site at Gal Dhar	33° 00' 41" N	76° 36' 21" E	3561
5	Camping site at Hillu Dhar	33° 01' 39" N	76° 36' 11" E	3322
6	Camping site at Topiun Dhar	33° 05' 43" N	76° 39' 43" E	3520
7	Camping site at ChasakBhatori Dhar	32° 56' 13" N	76° 37' 01" E	4197
8	Camping site at Harvin Dhar	32° 58' 11" N	76° 33' 58" E	3809



9.	Trekker hut at ChasakBhatori	32 ⁰ 56' 01" N	76 ⁰ 37' 32" E	3624
10.	Trekker hut at Tuan	33 ⁰ 01' 49" N	76 ⁰ 37' 06" E	3026
11.	Trekker hut at Sechu	32 ⁰ 59' 11" N	76 ⁰ 33' 52" E	2663



Camping Site at Shidhani Dhar Photograph by: Sh. Akshay Kumar Forest Guard

7.4.3.3 RAIN SHELTERS/ RESTING PLACES AND BENCHES

Eco friendly rain shelters/ resting places will be developed along the trek routes to have a rest for a while in the lap of nature.



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

7.4.3.4 OTHER ACCESSORIES

The trekking huts have to be equipped with basic necessities like utensils, LPG connection, necessary bedding, Solar lights etc. Sleeping bags, Mattresses, Tents (Two men to six men where trekking huts are not available), Rucksacks, Snow shoes, Ice axe, Snow glasses, solar light arrangements, water bottles (2 Ltr. Capacity) & walking sticks etc. are to be provided.



Landscape of Sechu Tuan Nalla WL Sanctuary, Photograph by: Sh.Rajesh Chauhan RFO

7.4.3.5 TREK GUIDES/ HELPERS

During the trekking seasons which would be May-June to September-October, some guides/helpers will have to be engaged amongst the local residents to enable them seasonal alternative livelihood who will not only look after the maintenance of the trekking huts but also would act as guides to the tourists and assists them as and when required



7.4.3.6 INSTALLATION OF DUST BINS

Sufficient number of dust bins will be installed along the eco-tourism tracts/ trekking huts and camping sites. A proper mechanism will be developed for the disposal of solid waste and regular cleanliness drives will be organized to keep the area clean and green.

7.4.3.7 SANCTUARY LITERATURE

Brochures/pamphlets about the sanctuary will be printed for distribution to tourists. The brochure will give the trekking map of the sanctuary including trails, list of wild animals, birds and plants. It will inform the tourists about the rules to be followed in the sanctuary.

7.4.3.8 SIGNAGES

Signage needs to be developed in the sanctuary and be placed at vantage points. Some points for inclusion in the signboards are as follows:

- Name and area of the sanctuary.
- Wildlife (Flora & Fauna) found in the sanctuary.
- Significance of the sanctuary.
- Historical background of the area.
- Rules and regulations.
- Fire safety.
- Distance from famous places.
- Do's and don'ts.

It would be ideal to develop a proper signage plan by a professional agency including the location of each signboard and content and design of each signboard. The actual signage put up will be as per the signage plan.



7.4.3.9 DEVELOPMENT OF INTERPRETATION CENTRE

Nature interpretation and conservation education are integral part of eco-tourism. Interpretation centers are instrumental in changing the perception of visitors as well as those of the local community in support of conservation. Therefore, to fulfill these twin objectives, an interpretation centre-cum-souvenir shop is to be established at Sechu. The interpretation centre-cum-souvenir shop will perform the following functions:

- Create awareness about the sanctuary values.
- Inform people about the biodiversity of the sanctuary.
- Educate people to follow sanctuary rules.
- To promote cooperatives amongst local artisans for production and sale of handicrafts/ cottage level produce or any local produce to get better returns to them.
- To promote local culture

7.4.3.10 CAPACITY BUILDING

Local Eco-guides will be trained to acquaint the tourists about the sanctuary. The main skills for which they need to be trained are as follows:

- 1) Knowledge of animals, birds and plants in the sanctuary.
- 2) Wildlife interpretation skills.
- 3) Basic principles of safety while escorting the tourists.
- 4) Cleanliness and prevention of littering.

The field staff shall also be trained in these skills so that they can act as resource persons for future trainings. The staff posted in forest rest houses, inspection huts etc. shall be trained in basic hospitality skills by professionals, either private hoteliers or trainers from the Tourism Department.

7.4.4 REGULATIONS, MONITORING AND EVALUATION

The basic information about the sanctuary be displayed from the information centre/ interpretation centre. The troop size of the visitors and timing to



visit the sanctuary will be decided as per the availability of infrastructure facilities, weather conditions and subject to the conditions that there is least disturbance to wildlife. To get a feedback, proper record would be kept in the prominent places wherein the tourists can make remarks regarding the sanctuary and other observations for its development. This would also help in making more concrete efforts towards eco-tourism promotion. Proper record of the number of visitors will also be maintained. Tourists however, would be desired to create least disturbance in the sanctuary area. No weapon shall be allowed in the sanctuary area. Tourists will also be advised *not to use any kind of polyethene/ plastic and keep the sanctuary area clean and green*. For ease in management and minimizing the impact of visitors, a number of restrictions will have to be enforced in the sanctuary area from time to time. The following do's and don'ts should be followed by the visitors inside the sanctuary.

7.4.4.1 Do's & Don'ts:

a) Do's :

- Allow the flora and fauna to flourish in its natural environment
- Maintenance of Silence.
- Carry away all non-degradable litter-empty bottles, tins, polythene bags etc.and throw them in municipal dustbins only, so that they can be disposed offproperly.
- Observe the sanctity of holy sites. In case of any offerings, contact the staff of the temple committee only.
- When taking photographs, respect privacy; ask for prior permission.
- Respect local traditions.
- Follow rules while visiting the Sanctuary and cooperate with the Forest Department.

b) Don'ts:

- Do not taking away cuttings, seeds and roots etc.
- Don't use drones and cameras without permission.
- Avoid using pollutants, such as detergent, in streams or springs.
- Do not leave smoldering cigarettes or make open fires in the forests.
- Do not consume alcohol, drugs or any other intoxicant.
- Do not listen to radios, tape recorders or any other electronic entertainment equipment at high volume to avoid noise pollution
- Don't tease the Wild animals.



7.4.4.2 Eco-tourism guidelines:

- Activities permitted are trekking, bird watching, photography in the notified places, and wildlife viewing without disturbing them.
- Group activities should be encouraged.
- Guides should be selected, trained and made available to the visitors on cost.
- The tourists should be given a thorough briefing of do's and don'ts and it should be included in the guidebook.

7.4.4.3 Monitoring Eco-Tourism:

Impact of the tourism should be monitored closely by observing the visible impacts of littering, wear out of the trekking paths, degradation of the vegetation, pollution caused because of tourism etc. Close monitoring of these impacts will also help to determine the carrying capacity and accordingly the tourist number should be controlled. Feedback should be obtained from every visitor and follow-up action should be taken consistent with the management objectives.

7.4.4.4 Carrying capacity of the Protected Area

Carrying capacity of the Sechu Tuan Nalla Wildlife sanctuary defines maximum permissible footfall keeping in view the wildlife habitat. The footfall of the visitors in the sanctuary is very less. The carrying capacity limit needs to be strictly adhered to within zonation limits specified for eco-tourism in the sanctuary.

The carrying capacity limits are calculated following the MoEFCC guidelines on sustainable eco-tourism in Protected areas and tiger reserves, using the below formulations:

$$\text{Physical Carrying Capacity (PCC)} = AX \frac{V}{a} XRF$$

Where:

A= Available area for public use

V/a = visitors per km

RF = Rotation factor (no. of visits per day)

Calculation parameters



Available area for public use

Area available for use of visitors = 79.71km (detail as per **Annexure –X**)

Visitor convenience

It is assumed that for visitor convenience, there shall be maximum 5 visitors per km stretch.

$$V/a = 5$$

Rotation Factor

Rotation factor is calculated as:

$$RF = \text{Opening period} / \text{Total time spent}$$

Opening period 10 hrs (8am - 6pm) except during the breeding period (1st April to 15th June) when the opening time is 9am to 5pm

Average time spent by the visitors = 5hrs

$$RF = 10/5 = 2$$

Physical carrying capacity (PCC)

For on foot visitors

$$PCC = 79.71 \times 5 \times 2 = 797.1 \text{ visits/day or } 797 \text{ visits/day}$$

Correction factors

Three main correction factors are considered to adjust the PCC estimates:

Soil erosion (SE)

Wildlife consideration (W)

Temporary Road closure (T)

Correction factor for soil erosion (CF_{SE})

Total length of the bridle path/trekkers path/inspection path = 79.71km

Slight Erosion risk = 13.71 (Weighing factor 0.17)



Moderate erosion risk = 30 km (Weighing factor 0.38)

Severe erosion risk = 24 Km (Weighing factor 0.30)

Extremely Severe erosion risk = 12 (Weighing factor 0.15)

Correction factor (soil erosion) for on foot visitors

$$CF_{(SE)} = \frac{13.71 \times 0.17 + 30 \times 0.38 + 24 \times 0.30 + 12 \times 0.15}{79.71} = 0.28$$

Correction factor for wildlife consideration (CF_w)

Breeding seasons considered:

Herbivore species: 2 months

Pheasants: 2 months

Carnivores: 2 months

$$CF_w = \frac{6}{12} = 0.5$$

Correction Factor for Temporary Road closure (CF_T)

Paths are closed for approximately 4 months during winters and 1 month during monsoon

$$CF_T = \frac{5}{12} = 0.42$$

$$RCC = PCC \times (1 - CF_{SE}) \times (1 - CF_w) \times (1 - CF_T)$$

For on foot visitors

$$\begin{aligned} RCC &= 797 \times (1 - 0.28) \times (1 - 0.5) \times (1 - 0.42) \\ &= 797 \times 0.72 \times 0.5 \times 0.58 = 166.4 \text{ visits/day} \end{aligned}$$



Effective Permissible Carrying Capacity (EPCC)

The managerial capacity (MC) of the sanctuary is defined to be 20% considering:

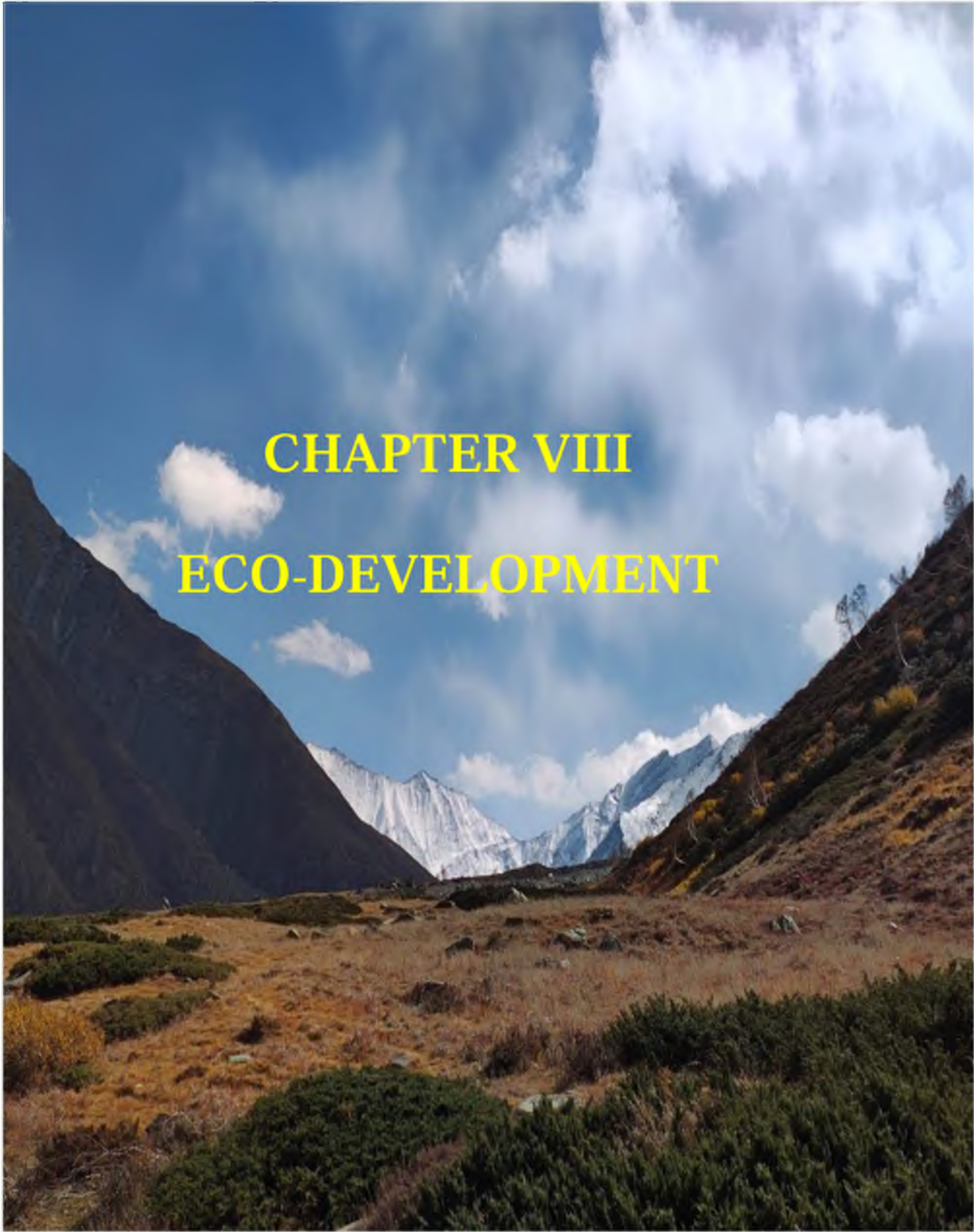
- Adequate staff trained in forest and wildlife management
- Shortages of watchtowers, monitoring mechanism

$$EPCC = MC \times RCC$$

$$= 0.2 \times 166.4 = 33.28 \text{ visits/day or } 33 \text{ visits/day}$$

The carrying capacity limits are indicative and may be revised by the Wildlife Warden of the Sechu Tuan Nalla Wildlife Sanctuary during midterm review of the management plan.





CHAPTER VIII

ECO-DEVELOPMENT



The map displays the Sechu-Tuan Wildlife Sanctuary, which is shaded with diagonal lines. It is surrounded by the Lahul Forest Division to the north and east, and the Pangi Forest Division to the west. The Eco-Sensitive Zone is indicated by a dashed line. The map includes a grid with coordinates and a legend. The legend identifies the Sanctuary boundary, Eco-Sensitive Zone, and the Lahul Forest Division. The map also shows the Pangi Forest Division and the Lahul Forest Division. The map includes a grid with coordinates and a legend.



Chamba Wildlife

Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

Fundamentally, the objective of eco-development is to utilize resources to meet human requirements and to improve and maintain the quality of human life for this and future generations. To face this challenge, development must take place in a manner that integrates biological considerations with economic, social and political factors to address both human welfare and the human environment.

8.2 OBJECTIVES

Main objectives of various Eco-development activities would be as under:

- To galvanize local community participation in conservation, protection and promotion of eco-tourism in Sanctuary.
- To improve the socio-economic conditions of the people living in the buffer zone by providing them several direct and indirect livelihood options through eco-tourism and protection activities. Further, to better their quality of life through provision of essential infrastructure and services.
- To promote formation of women's self-help group and develop their skills for enhancing their income through micro-financing support with the support of Sechu Tuan Nalla Eco Tourism Society.
- To meet various needs of local population which is directly correlated to forest dependence and wildlife through alternative energy in form of solar lights, LPG and immunization of livestock respectively.
- To increase the awareness among the local people regarding the role of forests and wildlife in general and this sanctuary in particular.

8.3 SPECIFIC ISSUES

The following are the specific issues identified to implement eco development activities:

- **Developing a feasible community based eco-tourism model:** The villages surrounding the protected area are hesitant to join eco-tourism activities as they are not assured fixed income for all seasons. The low tourist footfall during winters and monsoon is a major roadblock to this. It is a significant challenge thus to develop an economically feasible eco-tourism model that appeals to the adjacent villages.
- **No framework mechanism for CBET:** Currently, there is no society or EDC that can execute and monitor eco-tourism activities in Sechu Tuan Nalla wildlife Sanctuary. There is thus a need to include this PA in a society and formulate an EDC for undertaking community based eco-tourism activities



- **Negative Perception:** The sanctuary is highly irregular in shape, with high mountaneuos terrain and also small Eco-Sensitive Zone limited only to the western end of the sanctuay. There is a negative perception among people due to the laws and restrictions a protected area brings especially when it comes to grazing and NTFP collection. Further, the sanctuary includes highland/alpine pastures. These are the best habitats for the Hiamlayan Ibex, Musk deer, Himalayan brown bear and Monal Pheasant. The void of an amicable compromise for these habitats is a major challenge that diminishes the confidence of local community and handicaps the wildlife wing of forest department of their cooperation when it comes to eco-development activities.
- **Biotic Pressure** on sanctuary exists in the form of requirement of fuel wood, grazing etc.

8.4 BROAD STRATEGIES

The broad strategy of implementing eco development programme in the Sechu Tuan Nalla Wildlife Sanctuary shall be to formulate village wise Eco Development Committees for fringe villages in buffer zone that have been identified in the management plan and to clearly define its structure, duties and responsibilities. The main activity of eco development shall be eco-tourism and developing income generation strategies to the sanctuary dependent communities. The framework for implementing eco-tourism activities has already been discussed in detail in Chapter VII. Apart from this, other eco development activity suggested include provision of micro credit facilities for income generation activities, provision of gas cylinders for people living in zone of influence to reduce their dependence on fuel wood, provision of toilets, skilling local community in handicraft/ other livelihoods and other activities.

8.4.1 ORGANIZATIONAL STRUCTURE OF ECO DEVELOPMENT COMMITTEE

The following shall be salient features of organizational structure of the said EDC:

- The eco-development committee shall be registered under Himachal Pradesh Societies Registration Act, 2006.
- Membership will be voluntary and the Mahila Mandals and Gram Panchayats shall coordinate to include interested members into the EDCs.
- Membership Fee of Ten rupee per member per year shall be collected. It shall be free for members from SC/ST community.
- Periodicity of meeting of EDC shall be once in 3 months and Quorum for meeting will be 50 percent of total membership



8.4.2 EXECUTIVE COMMITTEE ORGANIZATION

Executive Committee of EDC: For every EDC an executive committee shall be selected comprising the following members.

- Elected Members- not more than 3 members elected by the EDC.
- At least half of the elected members should be women.
- The concerned Forest Guard, Deputy Range Officer and one representative of a voluntary agency shall be ex officio members.
- Concerned Deputy Range Officer will be the Member Secretary.
- Term of office for elected members will be two years; election for EC has to be held every two years and members can get re-elected.
- Voting Rights will be available only for the elected members.
- No voting rights for the ex officio members.
- Periodicity of meeting shall be once in 2 months or whenever needed.

President of EDC: The Executive Committee will elect its own chairperson. He/she shall also be the chairperson of the Eco Development Committee also. The Term of office of President shall be two years; can be re-elected for 2nd term; should not be continued beyond three terms.

8.4.3 FUND FLOW

Fund Flow of EDC: The following procedure shall be adopted for managing the fund flow to the EDC.

- A Joint Account, Jointly operated by the Member Secretary (Deputy Range Forest Officer) and the Chairman of the EDC shall be opened in a nearby bank.
- Executive Secretary of Sechu Tuan Nalla Eco Tourism Society shall directly send the cheque to the EDC account based on memorandum of understanding agreed to by Sechu Tuan Nalla Society and constituted Eco Development Committees that defines revenue sharing framework.
- Funds from the EDC account can be drawn only for the items of works passed in a resolution by the EDC.
- The Chairman will maintain the cash book through Member Secretary;
- Printed cash books will be supplied by the Forest Department.
- The accounts of EDC shall be annually audited by the local fund audit and also by chartered accountant.

8.4.4 ROLE AND RESPONSIBILITY OF EC

The committee will be constituted at the commencement of and at the end of every term, with the Range Forest Officer concerned acting as the Returning Officer for filling in



the quota of elected members. The executive committee will meet at least once in two months, or more often if need be. The Member-Secretary shall be responsible for convening the meetings and maintaining the record of proceedings. He shall send one copy of the proceedings to the Executive Secretary Sechu Tuan Nalla Eco Tourism Society and Range Forest Officer to keep him informed and obtain necessary guidance and approval which shall be provided by the Executive Secretary Sechu Tuan Nalla Eco Tourism Society. He or she may give directions from time to time for smooth and proper functioning of the committee which will be binding on the committee.

8.4.5 EDC DUTIES AND RESPONSIBILITIES

A general body meeting of the Eco Development Committee shall be held once in every four months to review the activities and functioning of the Executive Committee. The concerned Forest Guards will have the right to participate, but no right to vote. The Member Secretary will vote in case of a tie of votes.

The reciprocal commitments of the EDC are given below:

- The members of the ED Committee, individually and collectively, will ensure protection against poaching grazing, fires, littering and thefts of forest produce in accordance with the eco-development micro plan.
- Make other villagers aware of the importance of forests.
- Assist the Forest Officers in carrying out forestry development works in accordance with the approved eco-development plan.
- Identify volunteers and interested youth to carry out eco tourism activities
- Assist the wildlife wing and staff in regulating anthropogenic pressure especially with regard to littering

8.4.6 MEMORANDUM OF UNDERSTANDING

A memorandum of Understanding needs to be signed between the Sechu Tuan Nalla Eco Tourism Society and the Executive Committee of the Eco Development Committees constituted. The MOU contains undertaking given by EC members in the MOU to implement the eco development plan with utmost sincerity and devotion to prevent grazing inside the reserve totally or to a certain extent, to stop collection of fuel-wood, minor forest produce and small timber completely from the forests, to protect the reserve by themselves and to extend cooperation to the forest department staff in protection and conservation of the reserve especially from the multifarious threats i.e. littering, debris dumping, minor hunting etc. The agreement shall spell out clearly conservation approach to private grasslands which are prime habitat for Pheasants, Himalayan Ibex, Brown Bear, Himalayan Marmot and Royale Pikka to ensure minimal disturbance to wildlife.



8.5 PAST HISTORY OF PEOPLE PARTICIPATION IN SANCTUARY

Currently, there exists limited people participation in management of protected area. Apart from this, some members of the local community are engaged as fire watchers and anti-grazers/ anti-poachers whereas some of them are involved in soil moisture conservation works of sanctuary. There is no history of organized participation of people in sanctuary and there is absence of framework of a society or EDC that is the prime instrument of people participation in all protected areas.



Management Plan Meeting with Inhabitants of Hillu & Tuan Villages

8.6 VILLAGE LEVEL SITE SPECIFIC STRATEGIES

All the villages in the Eco Sensitive zone are listed as below:-

Name of the Village	Geo Co-ordinates
Hillu	33° 00' 203'' N 76° 0 35' 252'' E
Twan	33° 0 1' 876'' N 76° 0 37' 121'' E
Chiroty	33° 0 1' 254'' N 76° 0 36' 346'' E
Kaalicho	33° 0 1' 610'' N 76° 0 36' 831'' E
Sandhari	33° 00' 519'' N 76° 0 35' 675'' E



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

In order to understand the various needs of villagers, a participatory research analysis (PRA) is proposed to be conducted in adjacent villages of Sechu Tuan Nalla Wildlife Sanctuary i.e ESZ area. Based on the results of the PRA, an eco-development plan can be created for the said villages. This plan shall broadly include development of community assets, provision of eco-friendly energy devices, development of skill set for local community and provision of sanitation facilities.

The village level site specific strategies of eco development involving the local community shall be as follows:

- Identify entry point activities to enlist support of people
- Community asset building to create meaningful infrastructure development on village common lands Skilling of local community in vocations and livelihoods linked to forest, eco-tourism, handicrafts etc.
- Distribution of LPG/ Solar Lights etc. at subsidized rates.
- Toilets and other waste management structures
- Provision of fodder seeds and encouraging stall feeding to livestock
- Provision of books for children in villages for purpose of education
- Distribution of implements / kits for agriculture / horticulture purposes as an incentive to the local residents to make them self sufficient in their livelihood by switching over to cash crops like vegetables, fruits etc.
- Construction of fish ponds for rearing snow trout by local residents as a supplement to their resources.
- Distribution of honey bee boxes (Apiculture).
- Provision of animal husbandry facilities by distributing chicks of High yielding meat quantity, providing yaks/ bulls in semi nation facilities etc.
- Any other need of village based on the result of PRA exercise

8.7 MONITORING AND EVALUATION

All the eco-development programmes should undergo through a monitoring and evaluation mechanism. This will ensure that the progress in the right direction and also keep the on-going activities on the right track through timely corrective measures. The monitoring team should comprise of PA personnel, representatives of EDC and NGOs. Monitoring formats should be prepared regularly and submitted for regular checking. The progress of the activities will be evaluated based on set indicators of successes. The indicators shall look at the effectiveness of eco development activities in two main fronts i.e. the improvement in living standards of fringe



villages and the reduction in biotic and anthropogenic pressure on the protected area due to undertaken eco development activities.

The monitoring reports shall be made bi-annually and submitted to Divisional Forest Officer (Wildlife). He or she shall evaluate the same and take corrective steps to implement the eco development programme for better outcomes for conservation and living standards of fringe villages.



Sechu Village Photograph by: Sh. Akshay Kumar Forest Guard



CHAPTER IX
RESEARCH, MONITORING
AND
TRAINING

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Himalayan Marmot, Photograph by: Sh. Akshay Kumar, Forest Guard

9.1 RESEARCH

9.1.1 Priority Research Areas

The following are the priority research areas that are identified for the Sechu Tuan Nalla Wildlife Sanctuary:

- Research studies may be carried out according to the preferences of the researcher. Some important areas for research in the sanctuary are:
- Surveys of flora, pheasants, mammals, reptiles and amphibians, carrying capacity of the area, evaluation of eco system services, behavior and habits of mammals etc.
- Research Papers/Publication on Sechu Tuan Nalla Wildlife Sanctuary is enclosed as **Annexure- XXIII to XXV**
- Water conservation studies
- Studies on prey-predator ecology
- To conduct studies regarding food habits of important animals and impact of migratory graziers on the wildlife



- Evaluation of pastures
- Man-animal conflict
- Corridor studies and other landscape level planning studies
- Notification of Human Wildlife Conflict is attached as **Annexure- XV**

9.2 MONITORING

Monitoring of wildlife population is very important aspect of wildlife management as it reveals the results of the management. Without a clear objective, monitoring may absorb considerable time without achieving anything useful. Important conservation questions that monitoring could answer include: how are the populations of species of conservation interests is changing on a site? How are the populations of predator species changing? Where are the most important areas for a species? What are the habitat requirements of a species? How do populations respond to changes in the management? Changes whatsoever, in the habitat are manifested in the changing trends of wildlife. Since it is a slow process, the studies in this regard have to be on a long-term basis. This comprehension is imperative to arrive at effective management techniques.

a) MONITORING OBJECTIVES

The main objectives of monitoring would be as under:

- To carry out survey and census exercise of main species and monitor their relationship with habitat dynamics.
- To collect baseline data which is the basic tool around which the management of the sanctuary will revolve
- To evolve simple method for recording evaluation and observation by the field staff.

b) BASELINE SURVEY

Until and unless the basic data or the species and its number in the sanctuary area is not known, management of the sanctuary cannot take off in right direction. For this purpose, the collection of baseline data is the basic tool around which the management of the sanctuary will revolve. Without knowing the specific number of each wild life species, the prescription of the management will be aiming an arrow in the wilderness. As such the baseline survey will act as booster rocket for the management plan for better results from the sanctuary in near future. To start with the baseline survey first of all tap the available ingredients i.e. the local resources viz a viz. recording of spotting of each mammal and bird from each member of the family residing in the sanctuary area. The approximate time, date, year and place of the spotting is to be recorded from all such sources available in side and around the sanctuary area. Secondly, similar information to be gathered from the local as well as migratory graziers of the area. The record on



working plans or damages caused by wildlife stands reported to forest officials / other agencies with the specific location and detail of incidence. The sectarian as well as actarian generation aged people to be consulted or recorded separately for the presence of what kind of wildlife was seen 70-90 years back and when and where they saw or encountered with what kind of wildlife in the area. Further what their fore fathers use to tell about the availability of what kind of wild life species in the said sanctuary area should be studied.

The compilation of above information will prove an eye opener and will give a clear idea of what kind of wildlife species is presently available and what has not been spotted for how many years in the said area. If on an average hundred such resource persons have been interrogated the dominance of flagship as well as other associated wildlife of an area will a merge as a proof for the future management of the wildlife of the area. This will further make the management to go ahead with the specific techniques for the baseline survey of the area which can be adopted on the basis of the resources available. The topography and the terrain of the sanctuary area, the accessibility and inaccessibility to be prioritized on the basis on the information collected, making smaller units or grids for survey, line survey etc. will be ensured before taking off the ground level survey. Once the survey report is analyzed, it will be easy to proceed further in the right direction in preparing management plan in future.

The main target of the monitoring program is large terrestrial mammals and pheasants. Some of the methods that can be used for monitoring are described in the following sections. The techniques described can be divided into index-based monitoring techniques and absolute population estimation techniques. Monitoring by index-based techniques yields trends in populations. Monitoring must be carried out for a few years before clear population trends emerge.

The techniques described assume an even distribution of animals. Species with clumped populations or high habitat specificity, such as goral and cheer may require different monitoring techniques.

9.2.1 MONITORING TECHNIQUES FOR MAMMALS

Some mammal species are obvious and can be readily counted. However, most species are difficult to see. Some of the species of greatest conservation interest are both secretive and occur at low densities. Some of the methods of mammal census are as follows:





Himalayan Tahr Photo by- Sh. Amir Jaspa

9.2.1.1 ANIMAL ENCOUNTER RATE

In this method a network of routes is marked inside the sanctuary that is well dispersed inside the sanctuary. The routes should not follow the main trails only but should pass through the undisturbed parts of the forest where probability of encounters is higher. Each route should be about 4 to 5 km long. The total length of routes inside the sanctuary should be sufficient to give reliable results. These routes should be regularly walked at fixed hours in the morning and evening, when animal visibility is higher, and animals encountered along the route should be recorded. This exercise should be carried out regularly throughout the year, say once in a month. The encounter rate of a species is defined as follows:

Encounter rate (i) = $\frac{\text{Number of animal sighted of } i^{\text{th}} \text{ species}}{\text{Total length of routes walked X no. of times walked}}$

The encounter rate is an index of population density. If this exercise is carried out every year we can get population trends reliably. However, this exercise cannot give estimates of absolute population.



9.2.1.2 SIGN ENCOUNTER RATE



Himalayan Brown Bear Scat in Sechu Tuan Nalla WLS
Photograph by: Sh. Akshay Kumar Forest Guard

The sign encounter rate relies on sighting/ collection of animal signs. It is useful for monitoring populations, since their scats are highly visible. Sign encounter routes are laid as above. Since there is no compulsion on walking during morning hours or evening, the length of route can be increased to 10 km. The routes should be broad and clear with no vegetation growth so that scats can be spotted easily. Heavy human traffic should not be there on the routes so that scats are not trampled. These routes are also walked a number of times in a year and scats of leopard and other carnivores with highly visible scats, are collected.

Scat encounter rate (i) = $\frac{\text{Number of scats sighted of } i^{\text{th}} \text{ species}}{\text{Total length of routes walked X no. of times walked}}$

(Total length of routes walked X no. of times walked)

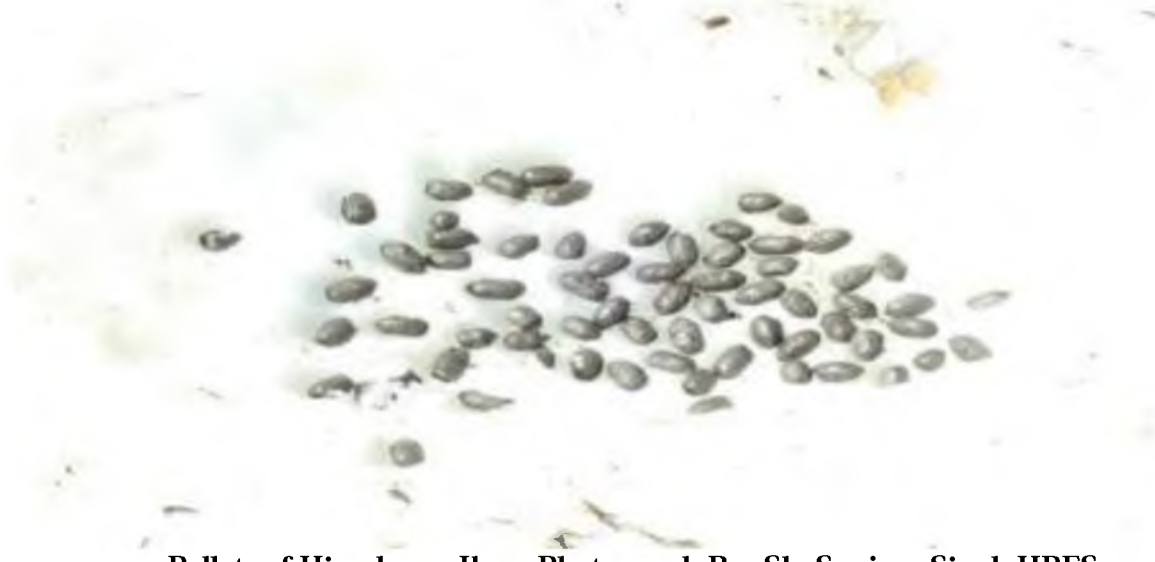
The scat encounter rate is an index of population density. It is possible to obtain population trends if this exercise is carried out every year. This exercise also cannot give estimates of absolute population. It is less reliable than animal encounter rates which relies on



direct sightings. However, it is useful for monitoring population trends in species wherein sightings are very low, such as common/snow leopards.

Leopard scats collected during the exercise can be analyzed by microscopic examination of hair of prey in the scat samples to determine the dietary pattern of leopards

9.2.1.3 PELLET DENSITIES



Pellets of Himalayan Ibex; Photograph By: Sh. Sanjeev Singh HPFS

This method is used for monitoring population of ungulates by estimating density of their dung pellets. Pellet densities are estimated by laying plots in the forest all over the sanctuary and counting the pellet groups in each plot. The pellet groups refer to the small pellets deposited during a single defecation at one place. In this method, the basic assumption is that rate of defecation is constant for the species. The plots should be laid in the same season and month every year. The number of pellet groups divided by the defecation rate gives the number of the total deer population as indicated below:

Total Deer Population= Number of pellet groups divided by Number of days for the count

This method is fairly simple but it cannot give absolute population estimates.

9.2.1.4 LINE TRANSECTS SAMPLING METHOD

Line transects sampling is used for estimating absolute densities of wild animal populations. A large number of straight lines, known as transects, are laid in the forest in a scientifically designed pattern. Each transect has a fixed length, generally 3 to 4 km, and a fixed orientation. Transects are clearly marked by marking the trees along transect in red or yellow paint. Bush cutting is necessary only if undergrowth is very thick.

These transects are walked by observers according to a specific sampling design and observations of each animal sighting are recorded. The distance of the group is estimated by



a rangefinder and a compass bearing is taken for each encounter. This data is used to estimate the perpendicular distance of the animal from transect. In this manner all transects are walked and animal sightings recorded. All transects must be walked a number of times so that sufficient observations are obtained to make reliable population estimates. If number of observations is low, reliable estimates cannot be made. Typically 5 to 10 repetitions may be necessary. It may be possible to carry out the sampling by making monthly rounds of observations without much loss of accuracy.

Line transect sampling requires a high level of training of the observers for proper recording of observations such as compass bearings and distance estimation by rangefinders. It is also a fairly laborious technique. The advantage is that it can give reliable estimates of animal populations.

Design and layout of line transects need considerable effort. These transects need to be remarked annually if they are to be used on a repetitive basis. Considerable effort is also needed in carrying out observations. Nature enthusiast volunteers from nearby towns and even youth from local villages may be invited to participate in the monitoring exercise. If necessary, labourers may be engaged for making the observations.

Long Tailed Marmot



Long Tailed Marmot, Photograph By: Sh.Sanjeev Singh, HPFS

9.2.1.5 POPULATION ESTIMATION BY WATERHOLE COUNTS

Waterhole count is a traditional method used in India for estimating wildlife populations. The waterhole count is not useful if there are extended water bodies such as perennial streams or lakes since it is difficult to count animal all along such extended water



bodies. It is carried out at the peak of summer, either in May or June, depending on the date of arrival of monsoon.

Well-camouflaged machans are built on trees near all perennial water sources including natural and artificial waterholes. Hides are made if it is not possible to have machans. A team of three persons keeps watch at each waterhole for 24 hours and records the mammals and large birds such pheasants coming to drink water at the waterhole. The total count of animals of each species for all waterholes is the population of that species. The method suffers from some uncertainties but is nevertheless a useful method for population estimation.

9.2.1.6 TERRITORY MAPPING

Mapping is best for those species that are clearly territorial such as many primates and carnivores. In mapping, the location of sightings and territorial calls are mapped. In many mammals the territory may be held by a group and thus mean group size has also to be determined. Territory mapping can be better done with the help of radio telemetry. The territory mapping for each animal can be fixed with regular field verification and use of telemetry.

9.2.1.7 PUGMARK METHOD FOR MONITORING LEOPARD POPULATION

The pugmark method has been traditionally used for estimating tiger populations in protected areas in India. It has not been regularly used for estimating leopard population but the technique can easily be used for estimating leopard populations also. Since leopard pugmarks are smaller there is greater possibility of making mistakes in identification since small mistakes in tracing can alter the shape of the pugmark. Hence greater care needs to be exercised in tracing pugmarks.

To achieve proper impressions of the pugmarks should be on a hard surface with a thin layer of fine dust. These conditions are achieved on forest roads and trails in summer. Hence pugmark census is generally carried out in the month of May.

The original pugmark method relied on tracings on glass plates, which created possibility of error while tracing. Digital cameras can be used for taking photographs that can later be converted to pugmark outlines after transferring to the computer. This can increase the reliability of the method. Alternatively there are special optical instruments that can increase the accuracy of the tracing and minimize errors.

The pugmark census is carried out over a period of a few days, generally a week. All forest roads and trails are searched intensively for pugmarks during this period.



9.2.1.8 POPULATION ESTIMATION OF LEOPARDS BY DNA ANALYSIS OF SCATS

DNA analysis of leopard scats can be used for population estimation. DNA analysis can be done by taking mucous layer covering the scat and then analysing it in the laboratory. The technique is still at an experimental stage in the country. The technique may soon become generally available, but it is definitely expensive. The technique requires collection of fresh scats (within 24 hours) and its preservation by an appropriate method. DNA analysis is carried out in specially-equipped laboratories.

9.2.1.9 CAMERA TRAP BASED MONITORING

In order to evaluate wildlife population, identify corridors and habitats, trap camera based monitoring is prescribed. In this method, the whole sanctuary is divided into 2x2 sq km grids and camera trap is laid in each 2x2 sq km grids. The said camera traps are kept stationary for a period of 30 days after which images are retrieved. The exercise is done for all such grids. The location of camera traps should be fixed such that it is at intersection of different trails or near water sources. This increases chances of wildlife sightings and offers good data. It is prescribed that after period of 30 days camera trap | locations be changed for getting meaningful data.



Red Fox (Camera Trapped in Sechu Tuan Nallla WL Sanctuary)





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10/23/2024 7:39 PM

Cudde Back

Brown Bear (Camera Trapped in Sechu Tuan Nalla WL Sanctuary)



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)



Snow Leopard (Camera Trapped in Sechu Tuan Nallla WL Sanctuary)



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)



Musk Deer (Camera Trapped in Sechu Tuan Nalla WL Sanctuary)



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

9.2.2 MONITORING TECHNIQUES FOR BIRDS



Red Billed Chough
Photograph by: Sh. Rajender Kumar, Forest Guard



Long-tailed shrike Photograph by: Sh Akshay Kumar, Forest Guard

Birds have the advantages that they are often reasonably conspicuous; have diagnostic calls or songs and many people have the expertise necessary to identify them in the field. As a result of the ease of counting them, birds are good for monitoring environmental change. Monitoring techniques for birds are as follows:



Chukor Partridge
Photograph by: Sh. Rajesh Chauhan RFO

9.2.2.1 FOOT TRANSECTS

Counts along transect lines, are useful for estimating relative abundances, as well as for estimating densities.

Line transect is a simple, easy to execute method that can help in obtaining density estimate for pheasants in India. In this method, one walks along a straight line and counts animals on both sides of the line. Line transect could be permanently marked and vegetation trimmed for the observer to walk easily and carefully look for animals. In case of temporary transects, the observer walks in a straight line using a compass on a predetermined bearing. At



least 2 or 3 transects of length ranging between 1 and 3 km to be laid in each habitat/area and walked at least 2 or 3 times in a month during the early morning hours. For every sighting, species, number, age and sex (if possible), sighting angle and sighting distance are measured. This information will be useful in calculating the encounter rates and density of pheasants in an area. This technique is best suited for pheasants. Software such as **Distance** could be used to analyse line transect data for obtaining encounter rate and density estimates.

The actual number of birds encountered on transect can act as a simple index of abundance for comparative purposes. Care must; however, be taken to ensure that the visibility in the habitat is similar during all the counts being compared. A decrease in visibility may lead to fewer birds being encountered, even though the actual number may be the same. Since visibility often changes seasonally as a function of the amount of foliage, counting in the same season is an effective way of controlling for visibility. The conspicuousness of a bird also depends on its behaviour; birds, especially males, are highly visible during the breeding season when they are singing and advertising their territories. The best season for counts is thus the breeding season, when birds are most conspicuous.

9.2.2.2 POINT COUNT

A variation of the transect count is the point count. Here the observer stands at a fixed point for a specific period and count all birds, either within a specified circle (of say 25m or 50 m radius), or as far as birds can be seen (open radius). This is actually like a transect count of length zero. Each individual should be counted just once. It is often sensible to wait 5 minutes before counting so that the birds are less disturbed. The count is for a fixed period of 3-10 minutes depending upon how conspicuous the birds are. The counts should be completed as quickly as possible to reduce the risk of double counting and allow more points to be visited. Points should be at least 200 m apart to prevent double counting. Point counts are particularly useful in areas of difficult terrain such as hills or swamps, where one cannot easily lay a straight, continuous transect.

9.2.2.3 CALL COUNTS SURVEY

This method can be used for most of the pheasants which call during morning hours in their breeding season. The counts can be made from strategic point in the habitat of the particular pheasant. The number obtained can be doubled for obtaining the estimate of breeding population.

The counts of calling males assume that all the existing males in the area will call every morning. In case of Koklass the best time to carry out this count is January to June and September to December (Gaston 1980; Young et al. 1987; Ridley 1986). Most of the observations are made during the short time period of about half an hour. For observation strategic points which allow the observer to hear the birds over as wide an area as possible, should be selected. A point on the ridge allows the observer to listen to the pheasant calls on both the sides. Observation points should be marked at an interval of about 500m to 600m. All the observers must visit their observation points on the previous evening of the survey day. They should be in position well before dawn so that all the calling pheasants are counted.



9.2.2.4 TERRITORY MAPPING

This is a standard method of counting birds in most ornithological studies, and regarded as the most reliable. The technique is based on locating singing males in an area on a map. This is done repeatedly (3-4 times) within a limited period (maybe a week, or the breeding season). A composite map is then prepared by overlaying the locations of each separate count. One can then find clusters of locations indicating territories of individual males. The number of each cluster is thus number of territorial males in the area, and assuming all of these are monogamous, one can then estimate the breeding population. An obvious limitation of this technique is its being restricted only to the breeding season and non-breeding members are left out. The technique also requires skill in identifying territories correctly from clusters (correct mapping) otherwise it can lead to interpretational errors. This would require a degree of familiarity with the general ecology of the species, which would require extra efforts. Hence this is of more limited use for a manager, than the generalized transect or point counts.

9.2.2.5 ENCOUNTER RATES

Encounter rate is the simple index for abundance estimation and is expressed as number seen per unit effort. The unit effort could be time spent in intensively searching for animals in an area or it could be the distance travelled in an area intensively searching for animals. Number seen could be based on direct evidences (sightings) or indirect evidences such as calls, droppings and other signs such as digging signs for feeding.

Survey could be done along existing roads, paths, trails, ridges, and nullas or along a predetermined bearing using a compass or GPS. If the distance travelled is measured, then one could use that as effort ($ER = \text{number seen/km walked}$). In cases when distance travelled is not known, one could use the time spent in searching that area as effort ($ER = \text{number seen/time spent}$). Indirect evidences such as calls and droppings could also be used, but one should be very careful in identification of calls of different species and calls of different individuals of the same species. Similarly, care should be taken to identify droppings or other signs of a species.

Encounter rates are good for monitoring the abundance of pheasants in an area, if done regularly (monthly/ seasonally/ annually). Comparison of ER of a species in two similar habitats located in different areas could be made. Adequate number of walks per month or season is necessary for calculating mean ER and standard errors. The technique is applicable for most of the pheasants.

9.2.3 MONITORING TECHNIQUES FOR VEGETATION

Vegetation is a major component of wildlife habitat. It is made up of a number of plant communities, which can be distinct entities or more diffuse merging slowly into each other. The value of the habitat for wildlife species is directly linked to the type and variety of plant communities and their conditions. Changes will have a positive or negative effect on the overall quality of a habitat for a particular habitat species.



Assessing and monitoring vegetation as a basis for manipulating it in tune with management objective is one of the important aspect of protected area management. It involves qualitative processes such as floristic inventory and community description as well as quantification of factors such as vegetation cover. Some of the monitoring techniques for plants are as follows:

9.2.3.1 TOTAL COUNTS OF PLANTS

Total counts seem easier than they usually are. Unless carried out methodically it is easy to miss individuals or count them twice. One approach is to grid out the entire area and systematically search each grid square, marking each individual with a flag once found. This can be very accurate and provide excellent information on distribution but is time consuming.

9.2.3.2 QUADRATES

Quadrates are the most widely techniques used for the plant census. Quadrats could be rectangular strips, square (10mX10m) or circular (10m radius). In order to monitor vegetation, sample plot based monitoring is prescribed. Sample plots of 0.1 Ha are randomly chosen in each forest type classified. The 0.1 Ha area is a square plot of 31.62m as prescribed by National Working Plan Code. The total number of trees of each species within the sampling plot to evaluate the species richness and diversity. In order to evaluate shrubs and herbs, nested quadrates within the 0.1 Ha sampling plot of 3x3m and 1x1m are laid out and similarly shrub and herb diversity is recorded.

The number of individuals of the species of interest can be counted. It is usual to only count those rooting in the quadrate. Percentage cover may be used for mat-forming species or when it takes too long to count all individuals, but it is less accurate. Percentage cover is often used when the observer can stand above the vegetation or for estimating canopy cover above the observer, but it is difficult to estimate scrub or tall herbaceous vegetation at the observer's height.

The sanctuary has little presence of weeds and invasive alien species. It is prescribed that weed presence and infestation be regularly monitored.

9.2.4 MONITORING ENVIRONMENTAL VARIABLES

It is often impossible to interpret the changes over a period of time unless there is a programme of monitoring environmental variables. Some of the environmental variables which can be measured are as follows:



9.2.4.1 TEMPERATURE

Maximum-minimum thermometers can be used to give the daily temperature range. They are best located 1.25 m above ground as this is the standard height for meteorology (and thus best for comparison with other sites).

For conservation studies, thermometers are often located in relation to the ecology of the species being studied. Recording of temperature at set intervals is very good for ecological measures of microclimate. For ectotherms in temperate areas, temperature is often critical; sward height, aspect, slope and colour may all have marked effects on the local temperature and detailed measurements can help interpret the ecology and behaviour.

9.2.4.2 RAINFALL



Shidhani Dhar

Photograph by: Sh. Rajesh Chauhan RFO

Rain can be collected in open containers, but they are likely to be inaccurate due to evaporation. For accuracy rain-gauge can be used.

$$\text{Rainfall} = \frac{\text{ml or cm}^3 \text{ of rain}}{(\text{Diameter of rim of gauge in cm})^2}$$



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

A rain gauge should be positioned such that water does not get splashed in and all the standing objects like trees etc. are four times their height away. Rain gauges are usually emptied daily at a fixed time. If visited irregularly then a little oil may be added to reduce evaporation.

9.2.5 MONITORING HUMAN IMPACT

It is often useful to be able to document human impacts such as the number of offences, number of visitors and mining in the area etc. The approach is same as in monitoring populations or environmental variables. It is necessary to find a sensible sampling regime and a repeatable way of monitoring. Without precise definition it is difficult to distinguish variation in classification from actual changes.

9.2.6 PHOTOGRAPHIC MONITORING

Photographs are a good way of documenting changes to sites. Photographs are not usually useful for documenting small scale changes for which data from Quadrates is usually preferred. Aerial photographs are invaluable for monitoring and documenting gross changes to sites, such as changes in the extent of woodland. A series of photographs may show changes imperceptible to site managers, especially when managers change. Photographs may also be valuable for legal uses although the documentation must then be rigorous. Photographs can be a very dramatic way of illustrating change and problems and are likely to be of more widespread public interest than, presenting data on changes in species composition within a quadrat.

9.2.7 RECOMMENDED POPULATION ESTIMATION AND MONITORING METHODS

The animal encounter rate and sign encounter rate technique will be used. Trails 4 to 5 km long should be laid. The trail should be walked on a fixed date once every month. The data collection on the trail should include animal encounter, animal signs and habitat parameters. Animal sign survey and animal encounter rate survey should be carried out separately. Data analysis should be done carefully.





Himalayan Goral in Sechu Tuan Nalla WLS
Photo by- Sh. Sanjeev Singh, HPFS

The pugmark method will be used for estimating leopard population. Training in the proper technique is very important to prevent the staff from making mistakes.

The line transect method will be started for population estimation in the sanctuary. Design of the line transect is very important. A well designed line transect network should be laid in the sanctuary area. The length of each transect should be 3 to 4 km. Due care should be taken in data analysis. The transect lines will be walked once a month. Training in recording the observations is very important. The staff should be well trained in making observations at the beginning of the exercise. Hired manpower may be necessary for line transect surveys since every transect needs to be walked by two people. Educated and intelligent young men should be identified and hired from the surrounding villages. Volunteers from Chamba and nearby town may also be called for the line transects exercise. Care should be taken that they are well trained.

The point count method of population estimation of bird will be used. For point count 500 m distance should be divided into 5 segments 100m each. Birds should be counted at 6 points i.e. starting point, 100 m, 200m, 300m, 400m and 500m. Observations like species, number, perpendicular distance and activity should be recorded. Data analysis should be done carefully.

The territory mapping method of counting pheasants will be followed. Due care should be taken in identifying the call, recording observation and overlaying the locations on the map.

Line transect method will be used for density estimation of pheasants. Encounter rate method should be used for relative abundance of the pheasants.



In addition to above methods, modern day tools and techniques like Trap cameras should also be used for effective monitoring of faunal species especially nocturnal ones. The modern camera trap is simply a digital camera connected to an infrared sensor which can see warm objects that are moving, like animals. When an animal moves past the sensor it causes the camera to fire, recording an image or video to the memory card for later retrieval. Camera traps can be left in the field to continuously watch an area of habitat for weeks or even months, recording the rarest events which occur in nature. Camera traps are also wildlife friendly as they cause little or no disturbance to wildlife.

For monitoring of plants circular Quadrats will be laid. Centre point of the quadrat should be fixed and observation should be taken annually on a fixed date of a particular month. Circular plots of 10m radius for trees and sapling, 5m radius for shrubs and seedlings and 1m radius for ground cover should be laid.

Monitoring of indicative species of flora and fauna (orchids, lichens, insects amphibians etc.) will be done regularly.

Schedule of survey/census:

Proposed Survey/census under Wildlife Range Sechu Tuan is as under:-

Sr. No.	Survey/Census name	Timing of survey
1	Survey of flora	Mid May to July
2	Survey of fauna	Mid May to June Mid September to Mid November

9.2.8 MONITORING DURING REGULAR PATROLLING WALKS

Animal encounters and animal signs observed during regular patrolling walks should be recorded in specified formats. The animal signs recorded shall be mainly of Black Bear and leopard pug marks and well preserved scats.

The sheet for Wildlife Monitoring- Schedule for regular and periodic observation and recording of parameter on a long term scale to show trends over time is as under:-



Species wise monitoring schedule

Sr. No.	Name of Faunal Species	Time Schedule	Monitoring Method	Geo Co-ordinates of the Species found in Wildlife Sanctuary		Identified location where population estimation will be carried out				
				Lat.	Long	No. of Animals founds	Pug Mark	Scat	Photos	Area where found
1	Western Tragopan	April-May	Call Count Method							
2	Cheer Pheasant	May-June	Call Count Method							
3	Himalayan Monal	January to March	Transect Survey							
4	Goral	February	Transect Survey							
5	Musk Deer	Late September or early October	Silent drive count method							
6	Snow Leopard	December-January	Scanning method							
7	Himalayan tahr	May-June	Scanning method							
8	leopard	February clubbed with Goral	Line Transect Survey							
9	Brown Bear	September	Line Transect Survey							
10	Himalayan black Bear	February	Line Transect Survey							



Data Sheets for Survey is as under:-

Datasheets

Call Count Survey- Data Sheet

Date: _____ Time: _____ Place: _____
 Location: _____ Latitude: _____ Longitude: _____
 Starting time: _____ End Time: _____ Transect Name: _____
 Altitude: _____ Habitat: Natural/Plantation: _____

<i>S. No.</i>	<i>Species</i>	<i>Time</i>	<i>Sighting/Call Angle</i>	<i>Distance</i>	<i>Heard</i>	<i>Sighted</i>	<i>Number and Sex</i>	<i>Remarks</i>

9.2.9 DRONE BASED MONITORING

It is prescribed to leverage drones for monitoring of wild fires, encroachments, illicit felling, mapping of invasive species, movement of wildlife etc. in the PA. This can be a novel addition to the monitoring techniques in the sanctuary

9.3 TRAINING

Training is a very important tool for capacity building and improving the professionalism of sanctuary staff. The sanctuary staffs, while carrying on their normal protection duties, also need to develop an understanding of various issues related to sanctuary management at a professional level. Capacity building in this regard can best be achieved through trainings designed for this purpose.

Improving the knowledge and capacity of the staff has several benefits. It helps them to carry out their duty with an increased understanding and awareness and hence with increased dedication. It gives them more confidence in their work. This helps them to deal with various stakeholder groups, such as local people and tourists, with more confidence. Improved skills and knowledge will improve their productivity and quality of output.

9.3.1 ON JOB TRAINING

To manage ecosystem with the basic purpose of wildlife management is a highly technical subject. Wildlife is dynamic component of the ecosystem which requires a welltrained forester to comprehend, appreciate and manage. It is highly imperative that short trainings, in house trainings, refresher courses, exposure visits etc. for the field staff are made a regular



feature, so that they keep abreast with the latest developments regarding different management techniques.

9.3.2 FORMAL TRAINING COURSES



Tranquilizer Gun Training to Field Staff

Regular training courses being conducted at wildlife Institute Dehradun impart a useful technical knowhow. The officers/officials dealing with the wildlife management will be trained. Besides this to acquaint with the latest management techniques adopted in different states on India, short training will be arranged for the officers and field staff. Some areas where training will benefit the staff are as follows:

- 1) Knowledge and identification of mammal species found in the sanctuary, habits of species, biology and ecology of important species
- 2) Identification of bird species found in the sanctuary
- 3) Knowledge of reptile and amphibian species found in the sanctuary
- 4) Knowledge and identification of plants, including medicinal plants found in the sanctuary
- 5) Soil and water conservation techniques
- 6) Sanctuary ecology, inter dependence of plant and animal species



- 7) Monitoring methods, population estimation methods
- 8) Anti-poaching skills and documentation of offence cases
- 9) Wildlife interpretation skills
- 10) Wildlife tracking and field signs
- 11) Conflict resolution skills for dealing with local people
- 12) Weapon training
- 13) Controlled burning techniques
- 14) Nursery techniques
- 15) Darting and trapping wild animals
- 16) Use of instruments such as compass, binoculars, digital camera etc.
- 17) GPS skills
- 18) Computer literacy
- 19) Field staff will be given small projects on which they should collect information from the field such as information on mammal, bird or plant species. They should make write-ups and give presentations on their project.
- 20) Training will also be imparted to local people, particularly guide and tour operators with the intention of upgrading their skills for tourism. Some training subjects are:
 - Sanctuary rules
 - Skills of dealing with tourists
 - Interpretation skills
 - Basic information on identification of species, tracks and signs, habits of species.

Professional organizations will be involved in developing and conducting training programmes. Officers of the department should also be involved in training programmes
- 21) **Training in Intelligence:** In this regard, it is proposed that wildlife staff be imparted skills in intelligence collection, coalition and analysis to understand patterns of wildlife



offences and take preventive and curative action. This involves building vulnerability maps. The Police department and WCCB can play a crucial role in this regard.

22) **Training in investigation:** The vital aspect of prosecution of wildlife offences involves investigation procedure and collection of evidences and witness statements. In this context, it is required to impart investigation skills for wildlife staff for collection of evidences, their safe custody and exhibition during trial.

23) **Training in wildlife forensics:** Wildlife forensics is critical aspect of investigation and collection of evidences. However, it is not realistic to expect that wildlife staff at range level be trained in wildlife forensics as it is a specialized field in which articles can be handled by trained professionals. In this context, it is prescribed that wildlife staff be made aware of the possibilities of wildlife forensic so that they utilize its possibilities after linking up with institutions or organizations performing such forensics.

24) **Training in prosecution of wildlife offences:** While forest officers are given powers under forest and wildlife laws to book offences, file FIR/Damage Reports and complaint to the magistrate, it is often seen that forest officers don't use the power and instead approach the police. In this context, it is prescribed that all wildlife staff be imparted training in prosecution of wildlife offences with each offence as a case study. The training shall clearly spell out the duties, role and responsibility vested upon wildlife staff in this regard.

25) **Training in Eco Development & Eco Tourism:** Currently, there is no framework of society or EDCs constituted for carrying out eco-tourism and eco-development activities in sanctuary. In this context, there is an urgent need to impart training for wildlife staff on the models of eco development and community based eco-tourism practiced in PAs of other states. It is prescribed to conduct exposure visits of staff to other protected areas outside the state to understand organizational structure of eco-tourism societies, eco development committees and ways and means of involving local community in eco-tourism activities and how benefits realized can be transferred to them.

9.3.3 EXISTING CENSUS / TREKKING ROUTES AND TRANSECTS

The existing census / trekking routes and transects meant for the census purpose are as under:-

Sr. No.	Particulars	Length
1	T/Route from C/Bhatori to Gul Dhar Pass	7.00 Km
2	T/Route from Twan to Twani Dhar (Pass)	9.00 Km
3	T/Route Chiroti Ash Dhar	8.810 Km
4	T/Route C/Bhatori to Harvin Dhar	5.50 Km
5	B/Path Chimi to Murch	1.50 Km.
6	B/Path Twan to Tarunda	7.5 Km.
7	B/Path Murch to C/Bhatori	3.0 Km



8	I/Path Kali Chho to Tarunda	6.400 Km
9	I/Path Sechu to Shidhani Dhar	15.0 Km
10	I/Path Murch to Shidhani Nalla	2.50 Km.
11	I/Path Sechu to Harvin Dhar	10.00 Km
12	Foot Path from Twan to Twan Dhar (Topiun Dhar)	3.50 Km

9.4 EVALUATION OF ECOSYSTEM SERVICES

The advantage of including the concept of ecosystem services in management is that it encourages a wider consideration of the benefits and stakeholders involved in an area. Ecosystem services are usually categorized into Provisioning, Regulating, Cultural and Supporting services which include all type of physical goods and non extractive benefits from the environment. Consideration of this range of services and of who benefits from them locally and in other areas helps to build sustainability and wider societal support for management decisions. So, evaluation of various eco-system services is must and will be got done by some professional agency.

9.5 MANAGEMENT EFFECTIVENESS EVALUATION (MEE)

Management Effectiveness Evaluation (MEE) is a useful tool to assess the effectiveness of management initiatives and to understand better what is working and what is not, and to plan any necessary changes as efficiently as possible. Normally management effective evaluation is done by regional expert committee. In addition to this it should also be done (in house) on regular basis to assess the effective implementation of the management plan.

Last Management Effectiveness Evaluation (MEE) is done in the year 2023-24 during the month of October and the recommendations and suggestions are reproduced as under.

REVIEW OF PREVIOUS IMMEDIATE ACTIONABLE POINTS:

The status of compliance of each immediate action points are discussed below:

1. Rapid surveys or estimates based on robust methods need to be conducted or made for use in the management plan that need revision before 2020-21.

Status: Management plan is in the process of Preparation and thereupon approval. and it has been re-advised to focus on the compliance of this point. It has been advised to go for data mining of different research documents on Himalayan Ecology by ISRO and other Premier Scientific Institutes to incorporate in the management Plan in addition to the assessment effort at local level as an addendum. It was apprised during discussion that the paucity of Staff and inadequate budget were the main constraints for non-compliance.



2. The state government may consider increasing the strength of the field staff and providing more field gear and vehicles for winter patrolling. Development of the capacity of the staff to carry out patrols in winter may also be considered.

Status: The progress is not satisfactory. It needs a fresh attempt to apprise the State Govt. from GOI Ministry and arranging interactive/review meeting for compliance at suitable intervals.

3. The sanctuary is located in a high-altitude area that remains covered in snow for about 6 months in a year, and the period in which management-related works may be undertaken is short and calls for relaxing procedural protocols. This requirement is time consuming. Funding support needs to be provided in a timely manner to undertake management activities in the short period of time available.

Status: The progress is not satisfactory. It needs a fresh attempt to apprise the State Govt. from GOI Ministry and arranging interactive/review meeting for compliance at suitable intervals.

MANAGEMENT STRENGTHS:

- Local communities are very supportive of the PA management, which reflects in the preservation and protection of flora and fauna due to minimal biotic interference.
- In order to have wildlife centric Management, all villages except one have been carved out by the rationalization of boundary of the PA.
- Local Institutions are so cohesive and strong that they determine the quantum of punishment for illegal activities such as poaching, destruction of Habitat in addition to measures taken under Wildlife Protection Act, 1972.
- The site is naturally protected as most of the areas are inaccessible and with snowcapped for several months.
- The biotic pressure is at very low extent due to the snow capping and remoteness.
- The Sanctuary management has placed several good signage s for awareness generation is commendable work.

MANAGEMENT WEAKNESSES:

- It has been observed that no eco-development committees exist in any of the villages in and around this PA.
- There has been no systematic assessment and monitoring of flora and fauna including climate change as per the protocol provided in the previous Management Plan.



- The perusal of the old management plan depicts that the threats have not been identified sequentially with extent of problem ranking/ SWOT analysis.
- There is no Eco-tourism Zonation.
- The beat is of very large size with only two forest guards to manage the threats of PA.
- The budget allocation is insufficient to fulfill the various objectives of Management.

IMMEDIATE ACTIONABLE POINTS:

Most of the actionable points suggested in previous MEE report not complied with.

- The Management Plan should immediately be put in place after getting approval from competent authority, as the old Management Plan (Period 2010-11 to 2020-21) is expired.
- Eco Development Committees (EDCs) should be immediately constituted in all the villages within six months and suitable financial resources on the basis of micro-plans should be explored by incorporating the need based financial resources in the APO of PA.
- Systematic assessment and monitoring of flora and fauna should be initiated in consultation and collaboration with reputed scientific institutions, and this should be incorporated in the draft Management Plan as an addendum.
- The new Management Plan should incorporate the extent of threats with problem ranking and SWOT analysis with the strategies to mitigate with as an addendum.
- Eco- Tourism zonation should also be incorporated with interpretation Centre. The centre should be Handicapped Compliant and signages should be in Braille also to bring smile on the faces of Visually Impaired Persons.
- Corporate Social Responsibility (CSR) should be explored to bridge the gap of allocation of fund in terms of technology transfer, Sturdy vehicle for swift movement/patrolling and other Infrastructure development for managing the sanctuary.
- Website should be developed in addition to linkage with other social media.

9.6 REVIEW OF MANAGEMENT PLAN

“Mid term review of the management plan will be carried out by some expert agency. The purpose of mid term review is to assess the extent to which management of PA to which the plan applies has been undertaken in accordance with the plan, including the extent to which key performance indicator targets are being achieved”.



This review will be strategic review and all the component of Management plan including Vision, Goals and Objectives will be reviewed to make it updated as per current policies, rules and requirements.

It is suggested that every year all the monitoring and evaluation data will be compiled and analyzed. Based on this analysis APO for the next year will be modified.





10.1 STRUCTURE AND RESPONSIBILITIES

In the present set up Sechu-Tuan Nalla Wildlife Sanctuary forms Wildlife Range Sechu, which is controlled by a Range Officer stationed at Sechu. There is one Block Officer stationed at Sechu, the administrative/management unit is the Beat. Beats are manned by beat forest guards. Following are the existing beats:-

Sr. No.	Name of Beat	Headquarter	Area
1.	Sechu	Sechu	21709 Ha.
2.	Tuan	Sandhari	17334 Ha.

Some of the following wildlife beats are proposed to be included in the Sechu-Tuan Wildlife Sanctuary after rationalization.

Proposed Block and Beats.

Sr. No.	Name of Block and Beat	Headquarter	Area
A	Tuan Block		
	Sandhari Beat	Sandhari	5000.00 hac.
	Tuan Beat	Tuan	15000.00 hac.
B.	Sechu Block		
	Chasak Beat	Chasak	12000.00 hac.
	Sidhani Beat	Sechu	7029.00 hac



Harvin Dhar Sechu Tuan Wildlife Sanctuary



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)



Proposed beat wise Map

The proposal has been submitted to the worthy Pr. CCF (Wildlife) Shimla, vide this office letter No. 4198 dated 22.03.2011. Then Hon'ble ACS has consented this proposal while he was on official tour of Pangi Valley during the September 2010.

Over all supervision of works is done by the Range Officer. He draws out the plan of operation and accordingly the works are executed after these are approved by the high ups. The Block Officer gets the various development works are executed through the Forest Guards. The Forest Guards, besides undertaking plantation and other infrastructure works are also the main guardians of wildlife with in their respective jurisdictions. They have to ensure the protection of wildlife by way of effective patrolling within the sanctuary and making continuous awareness campaign among the local public regarding the significance of wildlife and nature conservation. Anti poaching measures are also carried out by the Forest Guards.

Censes/ Survey operation and other related activities become a joint venture of the staff with association of local residents which makes them more and more aware and sensitized about the importance of and co-existence of wildlife with that of man.

Keeping in view the envisaged multifarious developmental activities most of the year, the staff strength is also required to be increased accordingly. Following staff is proposed for strengthening the man power in the wildlife sanctuary:-



10.1.1 SITUATION OF THE PRESENT STAFF AND FUTURE REQUIREMENTS:

Sr. No.	Post	Existing staff	Posts to be created	Remarks
1	Divisional Forest Officer, Wildlife Division Chamba	1	0	-
2	Assistant Conservator of Forests, Wildlife Division	1	0	-
3	Range Officer, Wildlife Range Sechu	1	0	-
4	Block Officer	0	2	
6	Forest Guards	2	4	
7	Class IV workers	2	16	For office, FRH, Patrolling huts

10.1.2 RECOMMENDATION:

At present, there are only two forest guards. The staff position needs to be increased for effective management of the sanctuary. It is further suggested that additional class IV workers posts may be created to strengthen the management of Sechu Tuan Nalla Wildlife Sanctuary. Before rationalization of wildlife sanctuary, the staff quarters were within the sanctuary area; however after the rationalization some sanctuary areas have been excluded. There by resulting in the exclusion of forest guard huts also. Now the position is such that the beat guard hut is almost 15 KM away from the boundary of WLS. It is recommended that these FGD huts may be handed over to the territorial Division Pangi and new forest guard hut be constructed nearby or within the suitable place in the sanctuary.

10.2 STAFF AMENITIES:

10.2.1 RESIDENTIAL ACCOMMODATION:

The staff posted in the sanctuary is provided with rent free accommodation. The existing buildings housing the staff are as under:-

Range Officer Residence	one	Sechu
Block Officer Quarter	one	Sechu
Forest Guard Hut	one	Sechu
Forest Guard Hut	one	Sandhari



10.2.2 UNIFORM AND FIELD EQUIPMENTS:

Proper uniforms and field equipments (including field gear and equipment for high-altitude climbing and trekking) should be provided to the frontline staff regularly.

10.2.3 INCENTIVES AND AWARD:

For management of PA, motivated frontline staff and stake holders are necessary requirement for effective management to ensure a dedicated work. Therefore, it is recommended that suitable appreciation, recognition, award or some incentives should be given to staff that perform outstanding duty.

10.3 EDUCATION FACILITY:

For education purposes the schools exist at following places:-

<u>Name of School</u>	<u>Standard</u>	<u>Location</u>
Govt. Sr. Sec. School	10+2 school	Sechu
Govt. Primary School, ChasakBhatori	Primary School	ChasakBhatori
Govt. Primary School, Murch	Primary School	Murch
Govt. Primary School, Udeen	Primary School	Udeen
Govt. Primary School, Hillu	Primary School	Hillu
Govt. Middle School	Middle School	Chasak

10.4. MEDICAL FACILITY:

Hospital facilities are available at Killar and Chamba. The interiors have dispensary as given below:

- Govt. Dispensary at Chasak.
- Govt. Dispensary at Hill Tuan.
- Primary Health Centre at Sechu

However, since the staff has to negotiate tough terrain and inclement weather condition and mobility is also mainly on foot; thus to meet the exigency on account of ill health in such areas it is necessary to impart basic training to the staff regarding first aid and should be



provided with the necessary kit so that not only staff but local residents can also be rendered help in hard situations.

Health support & relief from accidents insurance against accidents, injuries & such health care issues will be given to the field staff.

10.5 CAPACITY BUILDING OF THE FIELD STAFF:

The following are basic topics, which should be known by everyone in the field staff (Forest Guard, block officer and Forest Ranger) in varying degree of details and understanding:

The importance of nature conservation and Protected Area

- 1) Use of GPS, Camera traps, Drone Cameras and other modern equipments.
- 2) A few knowledge terms relevant to biodiversity conservation
- 3) Introduction and identification of local flora, vegetation/forest types
- 4) Introduction and identification of local fauna (mammals, birds, reptiles, etc)
- 5) Elementary field methods for vegetation and animal population sampling
- 6) Laws regarding forest and WL protection
- 7) Effective dealing with human wildlife conflicts
- 8) Protection measure, intelligence gathering and crime control
- 9) Patrolling and Reporting
- 10) Conducting Anti-poaching operations
- 11) Law enforcement procedures
- 12) Collection of evidence effectively for forensic examination
- 13) Maintenance of equipment and other facilities
- 14) Fires and control of Forest fires
- 15) Map-reading
- 16) First Aid and medical care



- 17) Monitoring of the impact of villages and community on the PA
- 18) Importance of local people in nature conservation
- 19) Importance of linking conservation efforts to the livelihoods of the villagers
- 20) Importance of local knowledge in biodiversity conservation
- 21) Training for the local people/ other stakeholders
- 22) Capacity building workshops for local villagers (alternative livelihoods)
- 23) Orientation and vocational training of tourist guides.
- 24) Awareness /sensitization workshop for hotel/home stay owners, shop owners
- 25) Special educative programs for school teacher and students.





11.1 Environment

The word environment is derived from a French word "environia" which means to surround. It refers to both abiotic (physical or non-living) and biotic (living) environment. The word environment means the surrounding area in which living beings live. Environment and organisms are two organized and complex components of nature. Environment controls the life of living beings including humans. Humans interact with the environment more rapidly than other organisms. Generally, environment refers to the substances and forces that surround living organisms.

Environment can be defined as the surroundings or conditions in which a person, animal or plant lives or operates. The term "environment" refers to all the elements of the physical and biological world, as well as the interactions between them. Environment plays a major role in the life cycle of humans, animals and plants as their life is highly dependent on the environment. Environment is the condition in which an organism has to survive or maintain its life process. It affects the growth and development of organisms. In other words environment refers to those surroundings that surrounds living beings from all sides and affect their lives in toto. It consists of atmosphere, hydrosphere, lithosphere and biosphere. Its chief components are soil, water, air, organisms and solar energy. It has provided us all the resources for leading a comfortable life.

Thus, environment refers to anything that is in the immediate vicinity of an object and has a direct effect on it. Our environment refers to those things or agencies that affect our daily life or activity even though we are separate from us. The environment in which man or animal is surrounded and is influenced by factors which may be natural, artificial, social, biological and psychological.

Components of the environment:

The environment mainly includes the atmosphere, hydrosphere, lithosphere and biosphere. But it can be broadly divided into two types such as (a) micro environment and (b) macro environment. It can also be divided into two other types namely (c) physical and (d) biological environment.

(a) Microenvironment means the immediate local environment of the organism.

(b) Macro environment means all those physical and biological conditions which surround the organism externally.

(c) Physical environment refers to all the abiotic factors or conditions like temperature, light, rainfall, soil, minerals etc. This includes the atmosphere, the lithosphere and the hydrosphere.



(d) Biological environment includes all biological factors or living forms such as plants, animals, micro-organisms.

11.2 What is Climate Change?



Climate Change Affecting Glaciers in Sechu Tuan Nalla Wildlife Sanctuary

Climate change refers to changes in environmental conditions such as changes in temperature and weather patterns. This is caused by many internal and external factors. Climate change has become a global concern in the last few decades. In addition, these climate changes affect life on Earth in different ways. Climate change refers to the adverse changes in the environment and its effects on the living organisms on the earth. Earth's climate has warmed over the past two million years, for which climate change and global warming are responsible. The absurd increase in atmospheric temperature causes various drastic changes in the Earth, for example, the change of seasons, delayed snowfall, excessive rainfall etc. Deforestation, burning of fossil fuels and other human activities are the most important causes of global warming, which cause changes in climate. These changes that we have made to the ecosystem are not reversible. The only thing we can do is try to make the biosphere a better place to live. Because in the coming days it is predicted that the temperature of the earth will increase day by day due to which life will end and the reason for this is Climate change. There are signs that **rising temperatures are affecting biodiversity**, while changing rainfall patterns, extreme weather events, and ocean acidification are putting pressure on species already threatened by other human activities.



11.2.1 How climate change is affecting flora and fauna:-

Apart from human interference and over exploitation of natural resources, climate change is now another global factor affecting our planet's ecosystems, biodiversity and human in many ways:-

1. Changes in climate and weather can force species to migrate to new areas.
2. Changes in climate may threaten native species, as invasive species (both predators and competitors) expand their range.
3. Species that are already threatened are highly vulnerable to environmental change, particularly vulnerable to extreme events, invasive species, disease outbreaks and further habitat loss.
4. Climate change also changes the life cycle of plants and animals. Rising temperatures reduce the survival rates of many species, leading to less food, less successful breeding, and environmental interference for native wildlife.
5. The effects of climate change in the Himalayan region are increasing the extinction rate of flora and fauna species, changing rainfall patterns, changing the duration and maturity of vegetation growth and the overall growth of crop plants.
6. Climate change destroys the environment, especially the natural habitats on which animals rely for food, shelter and other vital resources. Local plants and animals will wither or die.
7. The climate of an area affects the types of plants that grow there. Plant growth depends on rainfall and temperature. Plants may not grow well if rainfall levels are too high or too low or if temperatures are too high or too low. Vegetation influences the climate at macro and micro levels. Growing evidence suggests that undisturbed forests can help to maintain the rainfall in its immediate vicinity by recycling water vapour at a steady rate back into the atmosphere, and also through the canopy's effect in promoting atmospheric turbulence.
8. The IPCC (Inter-governmental Panel on Climate Change) cautions that malicious actions can damage biodiversity and ecosystem resilience and may also disrupt ecosystem services. Warming and increased frequency, severity and duration of extreme events will put many terrestrial, freshwater, coastal and marine ecosystems at high or very high risk of biodiversity loss.



11.3 Strategy to be adopted to cope with the effects of climate change

1. Climate change adaptation planning –Adaptation planning is a process of adjustment to the impacts of climate change, including actions taken to reduce the negative impacts of climate change, or to take advantage of emerging opportunities. Some of the most promising ways to mitigate climate change are what we call “natural climate solutions”: the **conservation, restoration, and improved management of land**, in order to increase carbon storage or avoid greenhouse-gas emissions in landscapes. We have to identify the real threat that climate change poses to species and ecosystems. How biodiversity may be affected in protected sites due to climate change needs to be identified and strategies developed to address these vulnerabilities. We have to recognize how the flora and fauna of sanctuaries are being affected by climate change and how to respond to these changes without destroying their local ecosystem.

2. Protect the habitats– Habitat loss has significant, consistently negative effects on biodiversity. Habitat loss negatively influences biodiversity directly through its impact on species abundance, genetic diversity, species richness, species distribution, and also indirectly. Land degradation is a significant contributor to climate change. Deforestation, the destruction of wetlands and other forms of land conversion can release massive amounts of carbon into the atmosphere, which may worsen global warming. Forests are perhaps most recognized for their role in regulating atmospheric gases (and therefore climate), nearly all ecosystems play a role in the storage of carbon, from grasslands and soils to rivers and oceans. There is therefore a need to protect threatened species and ecosystems with the added benefit of preserving these carbon reserves, and ensuring that they function healthily and perform this important service. Animals and their interactions increase the amount of carbon stored in soils and trees. When carbon is stored, this helps to slow down climate change, because that carbon is removed from the atmosphere. But animal populations worldwide are decreasing. There is need to control or restrict over grazing and over exploitation of the natural resources of the protected areas by the surrounding dwellers/villagers for sustainability. Aware and help them with alternative livelihood and resources. **Habitat loss** is the single greatest threat to biodiversity on Earth today and in fact it is the second largest threat to our existence on this planet next to Climate Change.

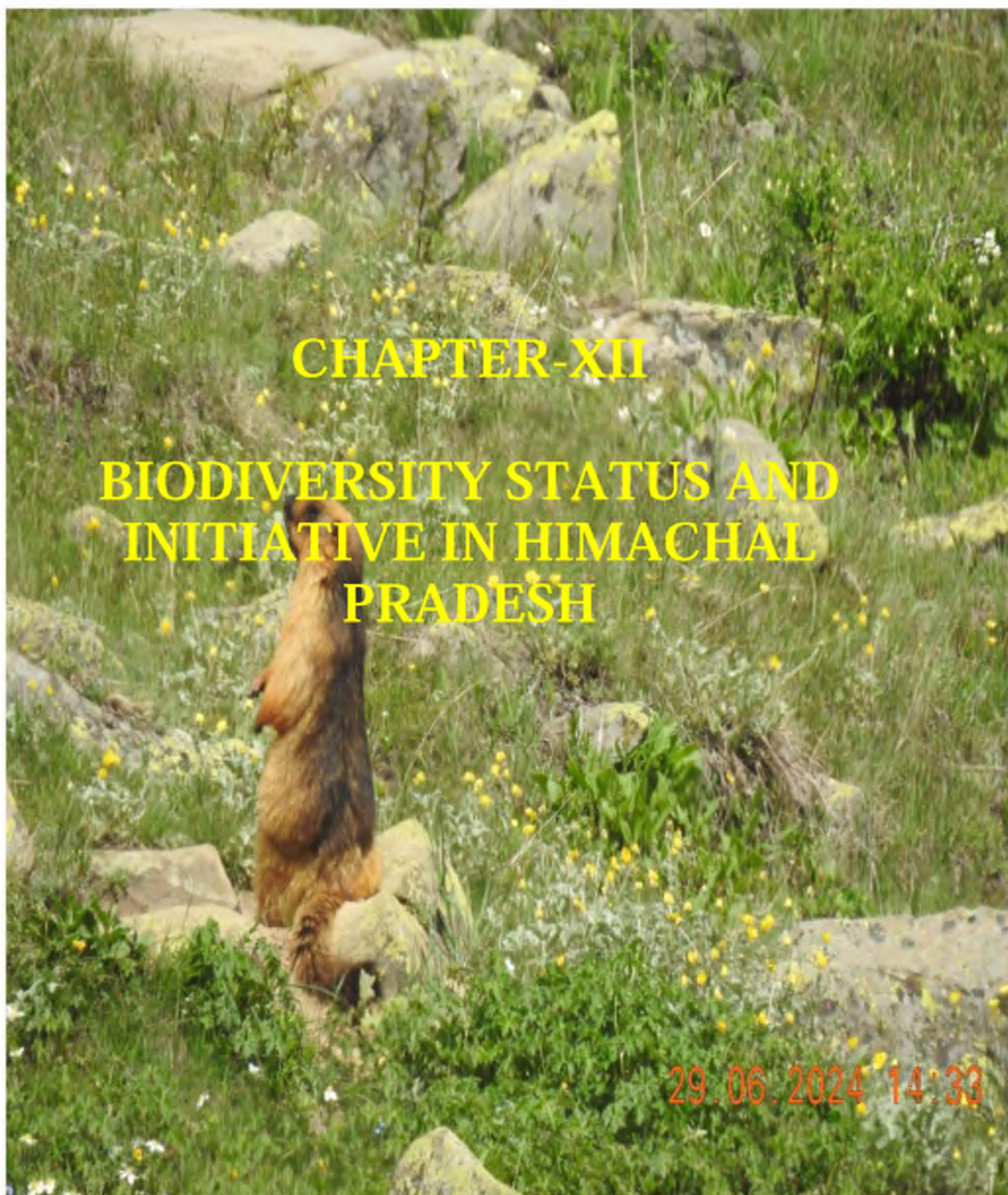
3. Scientific guidance, consultation of the experts– Biodiversity is affected by climate change at different levels from low land to high mountains and from small rivers to deep seas. Some species have become extinct while others are endangered. Extinctions can disrupt fundamental ecological processes. So from time to time requires field survey, monitoring of the biodiversity & habitat status of the protected area for updating with scientific reports by the experts (ecologists, field biologists, scientists, etc) for sustainable habitat protection and management of the protected areas. This scientific data will be



very useful for studying the impact of climate change and based on this data future planning of protected area can be done. Field staff also needs education, training, and conservation awareness.

Destroying natural ecosystems, especially various types of forests, and then trying to compensate for this loss by poor planning is an example of how our approach to mitigating climate change is causing more problems. That is why we need good and scientific planning to reduce climate impact. Regular studies especially through experts should be conducted in protected areas to study the impact of climate change.





12.1 INTRODUCTION

Himachal Pradesh is situated in the lap of North-Western Himalaya having beautiful landscapes, lush green forests, bubbling streams, emerald meadows, enchanting lakes, eternal snows, ethnic communities and colorful people. It is bounded by Tibet in the east, Jammu and Kashmir in the north, Uttaranchal in south east. Haryana in the south and Punjab in the West. It is located between 30° 22' 40" to 33° 12' 40" North Latitude and 75° 47' 55" to 79° 04' 20" East Longitudes having geographical area 55,673 km² which is 1.7% of the country's area and 10.54% of the Himalayan land mass. Himachal Pradesh is a hilly state and harbours one of the richest diversity of mountain landscapes with altitude ranging from 350 MSL at boundary along Punjab planes to 6816 MSL at Reo-Purgial in the Zaskar range in Kinnaur.

The altitude increases from west to east and south to north. The general landscape presents an intricate mosaic of mountain ranges, hills and valleys. Important mountain ranges in the State include the Shiwaliks, Dhauladhar, Pirpanjal, Great Himalaya and the Zaskar. Separated by valleys, glens and hills, there are distinct physiographic zones which run almost parallel throughout the length of the State from west to east. The state can be divided into three main topographic regions i.e. (i) the Shiwaliks, (ii) the Lesser Himalaya and (iii) the Greater Himalaya. The climate of Himachal Pradesh varies from semi-tropical to semi-arctic from place to place depending upon the altitude of the region. Varied physiographic and climatic factors have given rise to diverse natural ecosystems, namely, forests, grasslands and pastures, rivers, lakes and wetlands, glaciers etc. which is the store house of rich biodiversity.

12.2 WHAT IS BIODIVERSITY?

Biodiversity or biological diversity is the variability within and between all micro-organisms plants and animals both wild and domesticated and the ecological systems which they co- exist and inhabit. It is one of the greater wealth of the planet. It starts with genes and manifests itself as organisms, species, populations and communities which lead to the formation of ecosystems, landscapes and ultimately biosphere. Biodiversity manifests at three levels:

Species Diversity - diversity among species in an ecosystem.

Genetic Diversity - diversity of genes within a species. There is genetic variability among the populations and the individuals of the same species.

Ecosystem Diversity - diversity at higher level of organization, the ecosystem.

12.3 IMPORTANCE OF BIODIVERSITY

Biodiversity has direct consumptive value in food, agriculture, medicine and industry. Approximately 80,000 plants have been used at one time and another in the human history of which only 150 have been cultivated on a large scale. Today 10 to 20 species provide 80-90% of food requirements of the world. At one time, nearly all medicines were derived from



the biological resources. Even today, 67- 70% of modern medicine are derived from natural products. In addition to food and medicines, biodiversity provides us with many other products without which life would be difficult. Wood, fuel, fodder, clothing and shelter, material for industries are some of the examples.

Biodiversity also has aesthetic and recreational values. Biodiversity maintains ecological balance and continuous evolutionary process. The indirect ecosystem services provided through biodiversity are photosynthesis, pollination, transpiration, chemical cycling, nutrient cycling, soil maintenance, climate regulation, air, water system management, waste treatment and pest control. Conservation and sustainable use of biodiversity are therefore, fundamental to ecological sustainable development. In fact, the very survival of mankind is dependent on biological diversity i.e. plants, animals and microbes.

12.4 STATUS OF BIODIVERSITY IN HIMACHAL PRADESH

Himachal Pradesh is bestowed with distinctive floral and faunal biodiversity having aesthetic, cultural, commercial and genetic values. It is a mountainous state and have vast repository of flora and fauna having profuse variation in intra and inter-species levels. Variable treasures of the biological resources are because of its varied topography, geological formations, altitudinal ranges and climatic conditions. The range of biodiversity elements represented in the state varies from sub-tropical region to that of temperate, dry temperate and alpine region. 95% of the floral and faunal species available in the state are endemic and 5% of the other species existing are of Exotic nature.

12.5 FLORAL DIVERSITY



Jungli Pyaz (*Urginea indica*) in the Sanctuary

Floral biodiversity in the State is described under forest vegetation, medicinal and aromatic plants, diversity in agriculture crops including unexploited and lesserknown cereal crops, wild fruits and wild ornamental plants. Out of the total 47,000 plant species found in the country as many as 3295 species are reported from Himachal Pradesh. Floral wealth of the state



consists of higher plants, ferns, Mosses, fungi and lichens. There are 3120 species of angiosperms, 13 species of gymnosperms and 124 pteridophytes and 38 species of orchid.

The vegetation is a blend of Ban Oak Forest, Moist Temperature Deciduous Forest, Himalayan Alpine Pastures and Rhododendron Scrub Forest. The lower ranges have the growth of blue pine while the higher altitudes have firs and spruce. Coniferous forest dominates the mid and high hills with Oaks in depressions. In the foothills, forests are dry residuals with Sal as the predominant species. In dry localities Chir pine occur as the dominant species.

The state is rich in medicinal herbal plant wealth and people in the villages in some pockets are dependent on the medicinal herbal plant wealth for their livelihood. By the regular extraction of the plants of medicinal and aromatic utility from the forests and alpine pastures nearly 60 species of medicinal plants fall under the category of endangered species presently as per the IUCN criteria in the state.

12.6 FAUNAL DIVERSITY



Himalayan Goral in the Sanctuary

The state harbors a large faunal diversity. The fauna of Himachal Pradesh is very diverse and unique. Out of 89,451 species of animals in India, the state harbors 5,721 species of the Indian fauna which shows richness of biological resources of the state considering its small geographical area, which is only 1.7% of the country. This faunal diversity includes 649 Chordates



(77 Mammals, 447 Birds, 440 Amphibians and 83 Fishes), 4543 Arthropods (2 Bryozoa, 4362 Insects, 195 Arachnids, 11 Myriapods and 73 Crustaceans) and 412 others (60 Annelids, 73 Molluscs, 2 Acanthocephala, 132 Nematodes, 16 Rotifers, 90 Platyhelminthes, 2 Cnidaria, 3 Porifera and 34 Protozoans). Among the pheasants, with increasing altitude area are Kalij in the foothills, Koklas and Monal in the temperate and Mid-level forests, and the Snow cock in the Alpine areas. The Western Tragopan, a rare and endangered species, is confined only to the western Himalayas. Himachal Pradesh also has probably the largest population of Chir pheasants in the world. Mammals include the Himalayan ibex and long tail marmots, Himalayan squirrels and voles. Among herbivores are the Ibex, Serow, Blue sheep, Tahr, Musk deer, Ghoral and the Barking deer. A large variety of carnivores, which are either rare or of intermediate status such as Black Bear, Brown Bear, Himalayan Weasel, Yellow Throated Martin, Stone Martin and Wolf are also found here. The Common Leopard and Snow leopard is representative of the larger cats.

12.7 SOCIAL/CULTURAL LINKAGES WITH BIODIVERSITY

Biodiversity has contributed in many ways to the development of Human culture, and, in turn, human communities have played a major role in shaping the diversity of nature at genetic, species and ecological levels. Man's relation with biodiversity is as old as the evolution of man itself. He has been dependent upon the biodiversity for fulfillment of his entire livelihood needs. The people of Himachal Pradesh, a predominantly rural and agrarian State, have very strong linkages with biodiversity. The cereals, millets, pulses, the vegetables and the fruits are all plant based. The natural forests in the area provide wood for building of houses, furniture, bridges, agriculture implements, stakes for agriculture crops in addition to providing much needed fuel wood. Fiber is also extracted from many plants. Many wild relatives of domesticated plants find home in the State and this wild germplasm is highly sought after for development of high yielding and disease resistant domesticated crops. People are also dependent upon the native land races of life stock for agriculture purposes and their daily needs of milk, meat, wool and hide. A large proportion of this livestock feeds on the grasses and leaves of trees obtained from both wild and domesticated habitats. The leaf litter collected from the forests is used as bedding for the cattle and then applied to the agriculture fields as manure.

Many people of the state draw raw material from wild plant resources to make baskets, ropes, mats, leaf plates, artifacts, etc to generate income. Collection and sale of medicinal plants from the wild forms another source of income to the rural people. Wild mushrooms and Guchhii (*Morchella* sps) are the sources of alternate income of the rural people which are collected from the local forest during the fruiting seasons of the fungal wealth of the state.

No religious ceremony in the State is complete without use of plants. Many plants including 'dhoop' and 'juniper' are used as incense in religious ceremonies and many others like 'bael', 'Tulsi' etc. are used as offerings to the deities. Whereas 'barged' forms the tree of choice in religious groves in the lower belts, it is 'Deodar' that forms the main species in sacred groves in the higher hills. Gates backed with fresh leaves of local keystone species are put up to welcome guests. Such is the relevance of biodiversity to the people of the State that 'Deodar' has



been adopted as the State tree, 'Pink Rhododendron' as the State flower, 'Snow Leopard, as the state animal and 'Western Tragopan' as the state bird.

12.8 NEED FOR CONSERVATION OF BIODIVERSITY

Biodiversity of Himachal Pradesh is becoming threatened due to biotic and abiotic factors in the absence of perspective strategic action plans for conservation of the biological resources. Many species have critically a low population which is further being affected by catastrophies or over exploitation leading to the elimination of species. Due to developmental activity many species of flora and fauna have been estimated to be threatened. The percentage of the threatened species in the fragile mountaineers region has been observed comparatively much higher in the state because of the dependence of the local people on biological resources for livelihood in the state. Survival of many valuable species of animals and birds, medicinal herbs, aquatic and domesticated floral and faunal species is at risk because of the continuous and unscientific extraction and hunting etc. from their natural habitats. The situation is fast deteriorating due to continuous and indiscriminate use of chemicals as fertilizers and spray of highly toxic insecticides/ fungicides/ pesticides/ weedicides etc. in agriculture and horticulture fields, which is spoiling the soil strata as well as microbial biodiversity of the soil in the state. Introduction of Exotic species are threatening the survival of local species of terrestrial and aquatic ecosystems in the state. Incidences of forest fires are causing irreparable loss to biodiversity. Some of the floral and faunal species facing threat to their existence are list as follows.

12.9 THREATENED/ ENDANGRED FAUNA:



Musk deer (*Moschus leucogaster*), in Harvin Dhar; Photograph By: Sh. Shukardeen, Fgd.



Butterflies : Freak, Scarce Siren; Golden Emperor, Broad Banded Sailor, Banded Apollo, Ladakh Banded Apollo, Pale Jezebel.

Reptile : Yellow Monitor lizard, Indian Rock Python.

Birds: Cheer Pheasant, Monal Pheasant, Mountain Quail, Snow cock, Tragopan, Himalayan Bearded Vulture, Himalayan Golden Eagle, Laggar Falcon.

Animals : Himalayan Brown Bear, Snow Leopard, Himalayan Lynx, Himalayan Tahr etc.

12.10 THREATENED/ ENDANGERED FLORA



Himalayan Fritillary (*Fritillaria roylei*);
Photograph by: Dr Kuldeep Singh Jamwal HPFS



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

Himalayan Fritillary, Atis, Chora, Singli-Mingli, Somlata, Kaur, Karu, Banhaldi, Patrala, Dhoop, Bankakri, Chukhri, Kuth, Talispatra, Mushakbala, Pushkarmool, Ratanjot, Salampanja, Jeevak, Rishbhak, Mahameda, Ravandchini, Chiraita, Rasna, Rakhal.

12.11 ISSUE OF CONCERN

- There is a lack of information and awareness among the stakeholders about importance of biodiversity both wild and domesticated (existing vegetation and cultivated crops including pseudo-cereals) medicinal/ aromatic herbs/ plants and traditional knowledge about plant uses.
- Unscientific methods of harvesting medicinal and aromatic plants and poor control of contractors for medicinal plants collection resulting into loss of biodiversity.
- Lack of knowledge about the importance of sustainable minor forests produce (NTFP) development and related research.
- Lack of adequate funds, facilities, trained man power, long term research plans and appropriate extension facilities.
- Poor co-ordination amongst developmental plan executing bodies, local communities, and research and academic institution which is adversely affecting biodiversity conservation initiatives.
- Transformation from joint families to a nuclear family system leading towards erosion of traditional knowledge base.
- Human-Wildlife conflict resolution existing
- Use of subsidized chemicals in the form of fertilizers, pesticides, fungicides, insecticides etc. in agricultural landscapes is causing harm to soil strata and threat to micro-diversity.
- Inadequate efforts to biodiversity enterprise based enhancement for improvement of quality of life of local communities.
- Due to extreme and prolonged winter, heavy demand for fuel wood takes toll of existing vegetation, shrubs and perennial species along with their roots.
- High rate of soil erosion due to wind and water in cold deserts, flash floods in streams/Nalla in Wildlife sanctuary leads to biodiversity loss in the area.
- Transformation from diversified animal-crop system to a system of monocultures of Apple/Pea-Potatoes and keeping just jersey cows as compared to a variety of traditional life stock assemblage leading towards unrecoverable erosion of local genetics breeds and cultural diversity



- Excessive grazing by domesticated and migratory animals during spring and summer also cause a great loss to biodiversity in the area.
- Hunting is still prevalent in the state in spite of ban imposed by the Government.
- Traditional animal husbandry and traditional crops cultivation decreasing in the area.
- Destruction of habitat due to construction of large hydro electric dams, roads and buildings, industries leading to excessive land slide causing a great threat to biodiversity.
- Lack of understanding of traditional farming practices leading to erosion of agro-biodiversity in all agro climatic zones.
- Lack of policies for compensation for loss of agro-diversity due to development activities viz. roads, dams, industries etc.
- Exotic weeds, namely Lantana camera, Ageratum, Eupatorium and Parthenium spreading rapidly in both agriculture and Govt. lands.
- Danger to aquatic biodiversity due to developmental activities, introduction of numerous exotic fishing practices and use of chemicals.
- Inadequate documentation of indigenous knowledge and local traditions related to conservation and use of biodiversity.
- Inadequate information on microbial diversity and limited knowledge of beneficial microbes.
- Loss of local animal genetic resources due to low productivity of the local breeds leading to replacement of local strains.
- Inadequate information, co-ordination and adoption of appropriate technologies for propagation and conservation of health related bio-resources.

12.12 BIODIVERSITY INITIATIVES:

Biodiversity Strategy and Action Plan formulated for conservation of Biodiversity of the State and Sub-State Site (Lahaul-Spiti & Kinnaur District).

Himachal Pradesh State Biodiversity Board has been constituted for conservation and regulation of biological resources in the State.

Draft Rules framed for the State Biodiversity Board.



Prepared Bibliography of Biodiversity of North-Western Himalayas with focus on Himachal Pradesh.

Prepared literature for awareness on Biodiversity for the stake holders.

Draft of Policy guidelines for conservation of biodiversity in the State prepared.

People Biodiversity Registers in five Panchayats are to be prepared on pilot basis in the State.

Information on various facets of Biodiversity being collected and collated for formulation of a database on biodiversity.

Conversion of Pine needles biomass into briquettes and its use as fuel in the rural areas viz. a viz. income generation in the State through organization of awareness cum demonstration trainings to the farmers/farm woman, NGOs, PRIs, Self Help Groups, Mahila Mandals and IRDP families.

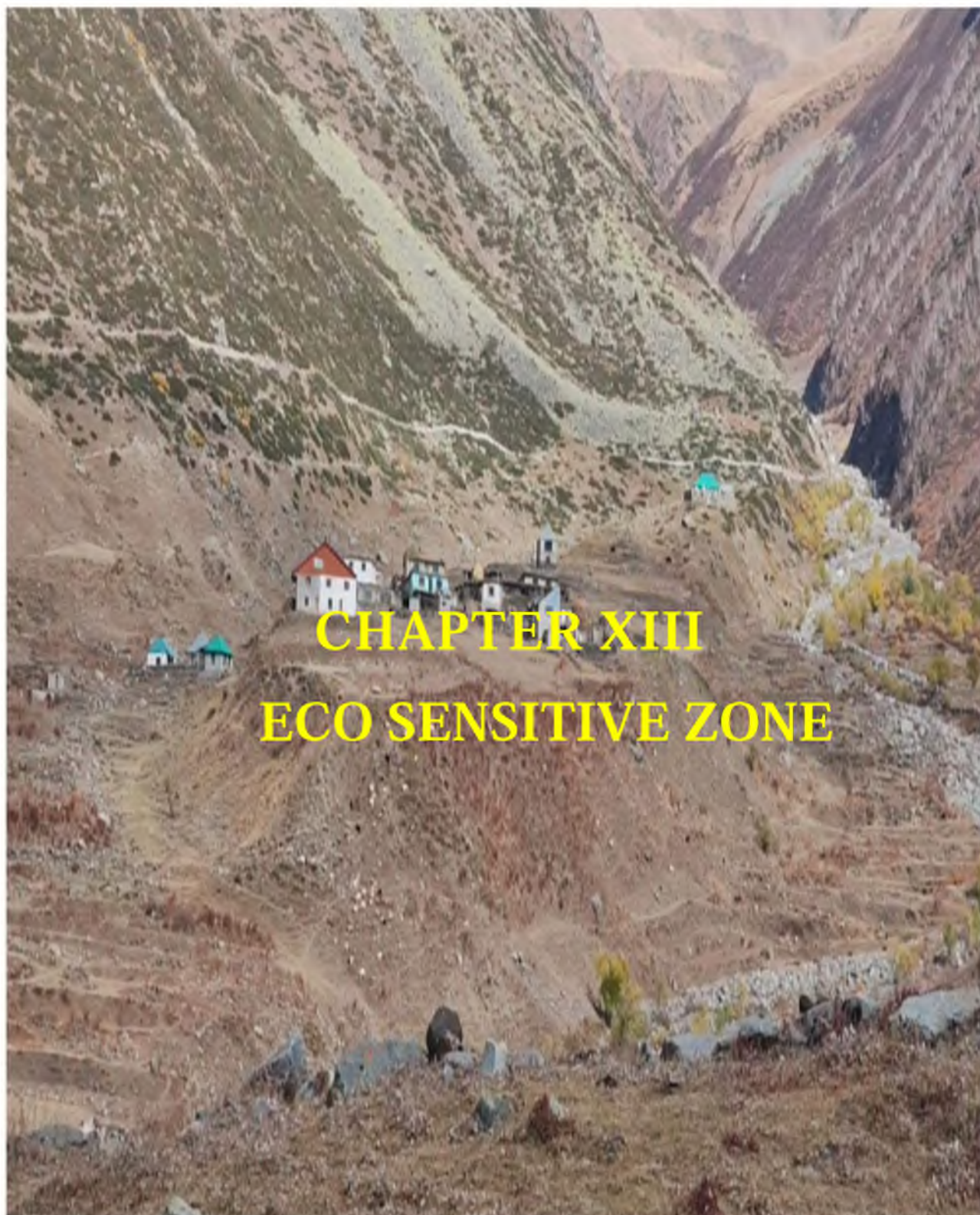
Awareness for the implementation on biological diversity Act, 2002 amongst the stake holders of biodiversity is being carried out.

Environment friendly farm practices being popularized through demonstration trainings in the state.



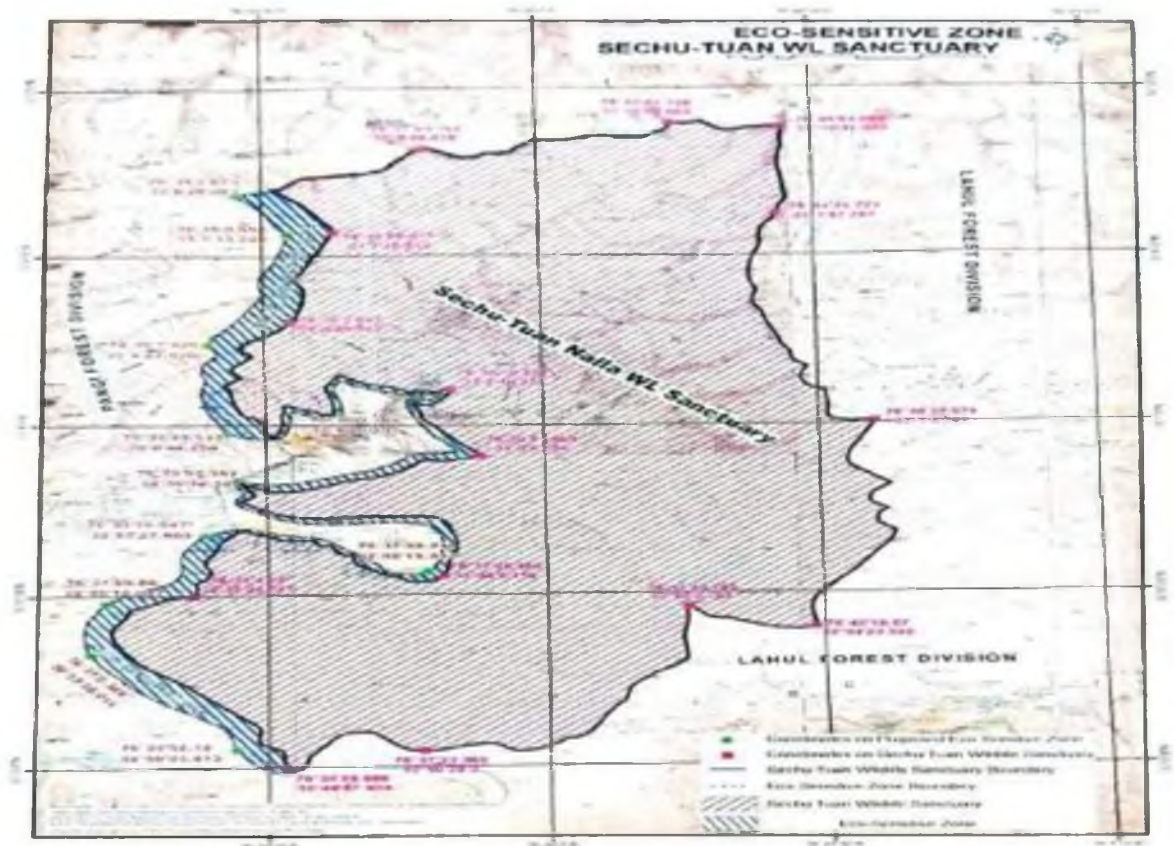
Katuki or Kaur (*Picrorhizakurroa*); Photograph by: Dr Kuldeep Singh Jamwal HPFS





13.1 ECO SENSITIVE ZONE AREA AND EXTENT

The Eco-sensitive Zone of Sechu Tuan Nalla Wildlife Sanctuary was notified by Ministry of Environment, Forests and Climate Change New Delhi vide Notification No. S 3193 dated: 28 September 2017 (**Enclosed as Annexure-III**). The extent of area as notified is shown in Map below:



Eco- Sensitive Zone of Sechu Tuan Nalla Wildlife Sanctuary

Extent and boundaries of Eco-sensitive Zone-(1) The extent of Eco-sensitive Zone varies from 0 metres to 1 kilometer from the boundary of Sechu Tuan Nalla Wildlife Sanctuary, 0 Eco-Sensitive Zone towards North, South and Eastern sides is due to inter-State boundary with Jammu and Kashmir and highaltitude areas and the area of the Eco sensitive Zone is 46.45 sq. km.



13.2 RESTRICTIVE ACTIVITIES IN ESZ

The aforementioned notification clearly categorizes activities in eco sensitive zone into prohibited, regulated and promoted activities. The table detailing same is as below:

Sl. No.	Activity	Remarks
A. Prohibited Activities		
1.	Commercial Mining, stone quarrying and crushing units.	(a) All new and existing (minor and major minerals), stone quarrying and crushing units are prohibited with immediate effect except for meeting the domestic needs of bona fide local residents including digging of earth for construction or repair of houses and for manufacture of country tiles or bricks for housing and for other activities. (b) The mining operations shall be carried out in accordance with the order of the Hon'ble Supreme Court dated the 4 th August, 2006 in the matter of T.N. Godavarman Thirumulpad Vs. UOI in W.P.(C) No.202 of 1995 and dated the 21 st April, 2014 in the matter of Goa Foundation Vs. UOI in W.P.(C) No.435 of 2012.
2.	Setting of new saw mills and wood based industry	No new or expansion of existing saw mills or wood based industry shall be permitted within the Eco-sensitive Zone.
3.	Use or production or processing of any hazardous substances.	Prohibited (except as otherwise provided) as per applicable laws.
4.	Setting up of industries causing water or air or soil or noise pollution.	(a) No new industries and expansion of existing polluting industries in the Eco-sensitive zone shall be permitted. (b) Only non-polluting industries shall be permitted within Eco-sensitive Zone as per classification of Industries in the guidelines issued by Central Pollution Control Board in February 2016. unless otherwise specified in this notification.
5.	Establishment of major hydroelectric project.	Prohibited (except as otherwise provided) as per applicable laws.
6.	Commercial use of firewood.	Prohibited (except as otherwise provided) as per applicable laws.
7.	Use of polythene bags by shopkeeper.	Prohibited (except as otherwise provided) as per applicable laws.



8.	Discharge of untreated effluents in natural water bodies or land area.	Prohibited (except as otherwise provided) as per applicable laws.
9.	Establishment of solid waste disposal site and common incineration facility for solid and bio medical waste	No new solid waste disposal site and waste treatment/processing facility of solid waste is permitted within Eco sensitive zone. Further installation of common or individual incineration facility for treatment of any form of solid waste generated from industrial process and health establishment/hospitals etc. shall be prohibited.
10.	Establishment of large-scale commercial livestock and poultry farms by firms, corporate, companies.	Prohibited (except as otherwise provided) as per applicable laws except for meeting local needs.
11.	Setting up of brick kilns.	Prohibited (except as otherwise provided) as per applicable laws.
B. Regulated Activities		
12.	Commercial establishment of hotels and resorts.	No new commercial hotels and resorts shall be permitted within one kilometre of the boundary of the Protected Area or up to the extent of Eco-sensitive zone, whichever is nearer, except for small temporary structures for Eco- tourism activities: Provided that, beyond one kilometre from the boundary of the protected Area or up to the extent of Eco-sensitive zone whichever is nearer, all new tourist activities or expansion of existing activities shall be in conformity with the Tourism Master Plan and guidelines as applicable.
13.	Construction activities	No new commercial construction of any kind shall be permitted within one kilometre from the boundary of the Protected Area or upto extent of the Eco-sensitive Zone whichever is nearer Provided that, local people shall be permitted to undertake construction in their land for their use including the activities listed in sub paragraph (1) of paragraph 3 as per building byelaws to meet their residential needs.
14.	Trenching ground	Establishing of new trenching ground is prohibited. Old trenching grounds shall be regulated under applicable laws.



15.	Discharge of treated waste water/effluents in natural water bodies or land area.	The discharge of treated waste water/effluents shall be avoided to enter into the water bodies and Efforts to be made for recycle and reuse of treated waste water and the discharge of treated waste water/effluent shall be regulated as per applicable laws.
16.	Air and Vehicular Pollution	Regulated under applicable laws.
17.	Noise pollution	Regulated under applicable laws.
18.	Extraction of ground water	Regulated under applicable laws.
19..	Felling of Trees	(a) There shall be no felling of trees on the forest or Government or revenue or private lands without prior permission of the competent authority in the State Government. (b) The felling of trees shall be regulated in accordance with the provisions of the concerned Central or State Act and the rules made thereunder.
20.	Migratory graziers	Regulated under applicable laws and as per Zonal Master Plan.
21..	Erection of electrical and communication towers and laying of cables and other infrastructures	All existing electric lines passing through the ESZ shall be adequately insulated in the time frame prescribed under the Zonal Master Plan. Underground cabling may be promoted.
22.	Widening and strengthening of existing roads and construction of new roads.	Shall be done with mitigation measures, as per applicable laws, rules and regulation and available guidelines.
23.	Fencing of existing premises of hotels and lodges.	Regulated under applicable laws.
24.	Collection of Forest Produce or Non-Timber Forest Produce (NTFP).	Regulated under applicable laws
25.	Drastic change of Agriculture system	Regulated under applicable laws
26.	Commercial extraction of surface and ground water.	Regulated under applicable law.
27.	Movement of vehicular traffic at night.	Regulated for commercial purpose under applicable laws.
28.	Introduction of Exotic species.	Regulated under applicable laws.



29.	Commercial Sign boards and hoardings.	Regulated under applicable laws.
30.	Protection of hill slopes and river banks.	Regulated under applicable laws
31.	Infrastructure including civic amenities.	Shall be done with mitigation measures, as per applicable laws, rules and regulation and available guidelines.
32.	Open Well, Bore Well etc. for agriculture or other usage	Regulated and the activity should be strictly monitored by the concerned authority.
33.	Solid Waste Management.	Regulated under applicable laws
33.	Eco-tourism.	Regulated under applicable laws
C. Promoted Activities		
34.	Ongoing agriculture and horticulture practices by local communities along with dairies, dairy farming, aquaculture and fisheries.	Permitted under applicable laws for use of locals.
35.	Small scale non polluting industries.	Non polluting industries termed as White Category as per classification of industries issued by the Central Pollution Control Board in February 2016 and non-hazardous, small-scale and service industry, agriculture, floriculture, horticulture or agro-based industry producing products from indigenous materials from the Eco-sensitive Zone shall be permitted by the competent Authority.
36.	Organic farming.	Shall be actively promoted.
37.	Adoption of green technology for all activities.	Shall be actively promoted.
38.	Cottage industries including village artisans.	Shall be actively promoted.
39.	Rain water harvesting.	Shall be actively promoted.
40.	Use of renewable energy and fuels.	Bio gas, solar light, etc. to be actively promoted.
41.	Agro-forestry.	Shall be actively promoted.
42.	Use of eco-friendly transport.	Shall be actively promoted.
43.	Skill development.	Shall be actively promoted.
44.	Restoration of degraded land/forests/ habitat.	Shall be actively promoted.



45.	Environmental awareness	Shall be actively promoted.
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13.3 MANAGEMENT OF ECO SENSITIVE ZONE

In order to manage eco sensitive zone of Sechu Tuan Nalla Wildlife Sanctuary, a monitoring committee has been constituted vide aforementioned notification chaired by the Conservator of Forests (T) Chamba and Member Secretary being Divisional Forest Officer, Pangti Division. The following table represents the list of members of the monitoring committee:

Sr. No.	Constituent of the Monitoring Committee	Designation
1	Conservator of Forests (T),	Chairman, ex officio
2	Divisional Forest Officer (WL) Chamba Division	Member, ex officio
3	One representative of Non-governmental Organizations working in the field of environment (including heritage conservation) to be nominated by the State Government	Member
4	Regional Executive Engineer of State Pollution Control Board	Member, ex officio
5	Senior Town planner of the area	Member, ex officio
6	An expert in the field of Ecology to be nominated by State Government	Member
7	An expert in the field of Biodiversity from State Biodiversity Board	Member, ex officio
8	Divisional Forest Officer	Member, ex officio
9	Divisional Forest Officer	Member, ex officio

The committee shall devise a eco sensitive zonal master plan to prepare a road map for management in eco sensitive zone and implementing the notification in letter and spirit. The Zonal master plan shall evaluate the scope of various prohibited, regulated and promoted activities in the ESZ and suggest ways and means to enforce them.

Roles and Responsibilities of Monitoring Committee

1. The tenure of the Monitoring Committee shall be for a period of three years from the date of issue of Notification
2. The Monitoring Committee shall monitor the compliance of the provisions of this Notification.



3. The Monitoring Committee shall not allow the activities that are covered in the Schedule to the notification of the Government of India in the erstwhile Ministry of Environment and Forests number S.O. 1533 (E), dated the 14th September, 2006, and are falling in the Eco-sensitive Zone, including the prohibited activities as specified in the Table under paragraph 4 thereof. Only white categories of industries shall be considered as specified in the guidelines issued by the Centre Pollution Control Board for “classification of Industries, 2016”.

4. The activities that are not covered in the Schedule to the notification of the Government of India in the erstwhile Ministry of Environment and Forests number S.O.1533(E), dated the 14th September, 2006 and are falling in the Eco-sensitive Zone, except for the prohibited activities as specified in the Table under paragraph 4 thereof, shall be scrutinized by the Monitoring Committee based on the actual site-specific conditions and referred to the concerned Regulatory Authorities.

Proforma of Action Taken Report: -

Eco-sensitive Zone Monitoring Committee.-

1. Number and date of meetings.
2. Minutes of the meetings: Mention main noteworthy points. (Attach minutes of the meeting as separate annexure).
3. Status of preparation of Zonal Master Plan including Tourism Master Plan.
4. Summary of cases dealt for rectification of error apparent on face of land record (Eco-sensitive Zone wise). (Details may be attached as annexure).
5. Summary of cases scrutinized for activities covered under the Environment Impact Assessment notification, 2006. (Details may be attached as separate annexure).
6. Summary of cases scrutinized for activities not covered under the Environment Impact Assessment notification, 2006. (Details may be attached as separate annexure).
7. Summary of complaints lodged under section 19 of the Environment (Protection) Act, 1986.
8. Any other matter of importance.





CHAPTER-XIV

BUDGET



14.1 BUDGET SUMMARY

The Forest department will be the main executing agency for the implementation of the present Management Plan for the Sechu Tuan Nalla Wildlife Sanctuary. The management of habitat, protection activities, eco-tourism, eco-development, human-wildlife conflict, monitoring, capacity building of the staff and community are the main focal points for this Management Plan. Annual Plan Operation for the year 2024-25 to 2033-34 is attached as **Annexure-XX and as following:-**



Proposed Year-Wise Budget Summary for the next 10 Years 2025-26 to 2034-35 (In Lakhs)																						
A. Habitat Improvement.																						
Sr . No	Item of Work	2025-26		2026-27		2027-28		2028-29		2029-30		2030-31		2031-32		2032-33		2033-34		2034-35		Remarks
		Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	
1	Fodder, Fruit plantation	-	-	2 Hac.	2.90	-	-	-	-	2 Hac	2.90	-	-	-	-	-	-	-	-	-	-	
2	1 st year Maintenance	-	-	-	-	2 Hac.	1.0	-	-	-	-	2 Hac	1.0	-	-	-	-	-	-	-	-	
3	2 nd year Maintenance	-	-	-	-	-	-	2 Hac.	0.5	-	-	-	-	2 Hac.	0.5	-	-	-	-	-	-	
4	3 rd year Maintenance	-	-	-	-	-	-	-	-	2 Hac.	0.25	-	-	-	-	2 Hac.	0.25	-	-	-	-	
6	Maintenance of nurseries	L/S	1.5	L/S	1.5	L/S	1.75	L/S	1.75	L/S	1.75	L/S	2	L/S	2	L/S	2	L/S	2	L/S	2	



S N	Item of Work	2025-26		2026-27		2027-28		2028-29		2029-30		2030-31		2031-32		2032-33		2033-34		2034-35		Remarks
		Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	
C. Forest Protection																						
1	Survey and Demarcation	-	-	-	-	L/S	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Survey will be done with the help of Revenue Department to demarcate and construction of new boundary pillars.
2	Construction of New Boundary Pillars	-	-	-	-	-	-	-	-	-	-	100	12.5	-	-	-	-	-	-	-	-	
3	Create New Fire Lines	-	-	-	-	2 Km	1.25	2 Km	1.25	-	-	-	-	-	-	-	-	-	-	-	-	Sechu and Tuan Beat
4	Antipoaching activities	300 man days	5.0	300	5.5	300	6.0	300	6.5	300	6.5	300	7.0	300	7.5	300	8.5	300	9.0	300	9.5	
5	Fire Watcher	L/S	2.0	L/S	2.0	L/S	2.0	L/S	2.25	L/S	2.25	L/S	2.25	L/S	2.50	L/S	2.50	L/S	2.50	L/S	2.75	
6	Antigrazer	L/S	2.0	L/S	2.0	L/S	2.0	L/S	2.25	L/S	2.25	L/S	2.25	L/S	2.50	L/S	2.50	L/S	2.50	L/S	2.75	



S r. N o	Item of Work	2025-26		2026-27		2027-28		2028-29		2029-30		2030-31		2031-32		2032-33		2033-34		2034-35		Remarks
		Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	
7	Maintenance of Patrolling Path	L/S	5.0	L/S	5.0	L/S	5.5	L/S	5.5	L/S	6.0	L/S	6.0	L/S	6.5	L/S	6.5	L/S	7.0	L/S	7.5	
8	Construction of Bunker	-	-	L/S	3.0	-	-	L/S	3.5	-	-	-	-	-	-	L/S	4.0	-	-	-	-	
9	Maintenance of Bunker	-	-	-	-	-	-	1	.80	1	.80	-	-	1	1.25	1	1.25	-	-	1	1.25	
10	Purchase of motor bikes for patrolling	-	-	2	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
11	Engaging people for monitoring and driving away of problematic wild animals	L/S	1.5	L/S	1.5	L/S	1.75	L/S	1.75	L/S	1.75	L/S	1.85	L/S	1.85	L/S	2.0	L/S	2.0	L/S	2.0	
Sr	Item of Work	2025-26		2026-27		2027-28		2028-29		2029-30		2030-31		2031-32		2032-33		2033-34		2034-35		Remarks



N o																						
		Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	
B. Soil and Water Conservation Works																						
1	De-silting of existing Water ponds	3	2.0	3	2.0	5	4.0	3	2.25	3	2.50	5	2.50	5	4.50	5	4.50	3	2.50	3	2.50	
2	Construction of Dry Stone Check-Wall	100	50.0	100	50.0	100	75.0	100	75.0	100	75.0	100	85.0	100	85.0	100	95.0	100	95.0	100	95.0	
C. Training and Workshops																						
1	Exposure visit for staff within and outside state	-	-	L/S	3.0	-	-	L/S	4.0	-	-	L/S	4.0	-	-	L/S	4.0	-	-	L/S	4.0	
2	Education and awareness	L/S	2.0	L/S	2.0	L/S	2.0	L/S	3.0	L/S	2.0	L/S	2.0	L/S	3.0	L/S	3.0	L/S	3.0	L/S	3.0	
3	Wildlife Week Celebration	L/S	2.0	L/S	2.0	L/S	2.25	L/S	2.25	L/S	2.50	L/S	2.50	L/S	2.50	L/S	2.75	L/S	2.75	L/S	3.0	
4	Training to field staff regarding wildlife techniques & others	L/S	1.5	L/S	1.5	L/S	1.75	L/S	1.75	L/S	1.75	L/S	2.0	L/S	2.0	L/S	2.50	L/S	2.50	L/S	2.75	
5	Workshops/Seminars	L/S	1.5	L/S	1.5	L/S	1.5	L/S	1.75	L/S	1.75	L/S	1.75	L/S	2.0	L/S	2.0	L/S	2.5	L/S	2.5	
S r.	Item of Work	2025-26		2026-27		2027-28		2028-29		2029-30		2030-31		2031-32		2032-33		2033-34		2034-35		Remarks



No																						
		Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	
D. Staff Welfare Activities																						
1	Amenities of staff	L/S	1.0	L/S	1.0	L/S	1.5	L/S	1.5	L/S	1.5	L/S	1.75	L/S	1.75	L/S	1.75	L/S	2.0	L/S	2.0	
2	Connectivity Charges to Staff	L/S	0.10	L/S	0.10	L/S	0.10	L/S	0.20	L/S	0.20	L/S	0.20	L/S	0.20	L/S	0.30	L/S	0.30	L/S	0.30	
3	Provision of ration for patrolling parties	L/S	1.5	L/S	1.5	L/S	1.75	L/S	1.75	L/S	1.75	L/S	2.0	L/S	2.0	L/S	2.5	L/S	2.5	L/S	2.5	
E. Infrastructure																						
1	Maintenance of staff quarters and Range Office	L/S	3.0	L/S	3.0	L/S	3.0	L/S	4.0	L/S	4.0	L/S	4.0	L/S	4.0	L/S	5.0	L/S	5.0	L/S	5.0	
2	Maintenance FRH Chasak-Bhatori, I/Hut Sechu and I/Hut Tuan	L/S	3.0	-	-	-	-	L/S	4.0	-	-	L/S	4.0	-	-	-	-	L/S	5.0	-	-	
S	Item of	2025-26		2026-27		2027-28		2028-29		2029-30		2030-31		2031-32		2032-33		2033-34		2034-35		Remarks



r. N o	Work																						
		Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin		
4	Construction of Patrolling Hut (Chasak-Bhatori/Murch/Tuan/Chiroti and other places)	-	-	1	20.0	1	20.0	-	-	1	20.5	1	20.5	-	-	1	20.75	1	20.75	-	-		
8	Maintenance of Trekkers Hut	-	-	-	-	-	-	L/S	1.75	-	-	L/S	2.0	-	-	-	-	L/S	3.0	-	-		
9	Construction of Gang Hut at Murch	-	-	-	-	1	20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
10	Construction of Gang Hut at Bhatori	-	-	-	-	-	-	1	20.0	-	-	-	-	-	-	-	-	-	-	-	-		



Sr N o	Item of Work	2025-26		2026-27		2027-28		2028-29		2029-30		2030-31		2031-32		2032-33		2033-34		2034-35		Remarks
		Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	
F. Equipments																						
1	Purchase of field equipments and other Misc.items for staff	L/S	5.0	L/S	3.0	L/S	3.50	L/S	5.0	L/S	3.0	L/S	3.5	L/S	3.0	L/S	3.5	L/S	4.0	L/S	3.5	
G. Eco-Tourism Development																						
1	Construction of Wildlife Entrance Gate Sanctuary at Sechu	-	-	-	-	1	20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2	Construction of Rain Shelter/ Resting place	10	2.0	-	-	2	10.0	-	-	2	10.0	-	-	-	-	-	-	1	7.0	-	-	
3	Construction of Gazebo	2	10.0	-	-	2	10.0	-	-	2	10.0	-	-	2	15.0	-	-	1	7.0	-	-	
4	Printing sanctuary publicity literature	L/S	1.0	L/s	1.0	L/s	1.0	L/s	1.0	L/s	1.0	L/s	1.5	L/s	1.5	L/s	2.0	L/s	2.0	L/s	2.0	
5	Information Sign Boards	L/S	1.5	L/s	1.5	L/s	2.0	L/s	2.0	L/s	2.0	L/s	1.5	L/s	2.0	L/s	2.0	L/s	2.0	L/s	2.5	



S r. N o	Item of Work	2025-26		2026-27		2027-28		2028-29		2029-30		2030-31		2031-32		2032-33		2033-34		2034-35		Remarks
		Ph y	Fin	Ph y	Fin	Ph y	Fin	Ph y	Fin	Ph y	Fin	Ph y	Fin	Ph y	Fin	Ph y	Fin	Ph y	Fin	Phy	Fin	
H. Eco Development Activities																						
1	Skill development for village	L/S	2.0	L/s	2.5	L/s	2.5	L/s	2.0	L/s	2.5	L/s	2.75	L/s	2.75	L/s	3.0	L/s	3.0	L/s	3.0	
2	Community welfare activities (Installation of dustbin/solar lights and other amenities for villages)	L/s	2.25	L/s	2.50	L/s	2.50	L/s	2.75	L/s	2.75	L/s	2.75	L/s	3.0	L/s	3.0	L/s	3.0	L/s	3.0	
3	Development/Repair of Camping sites	-	-	L/S	1.5	L/S	2.0	L/S	2.5	-	-	-	-	L/S	3.0	-	-	-	-	L/S	3.0	
Monitoring and Population Estimation																						
1	Annual population monitoring exercise	L/S	1.5	L/s	1.75	L/s	1.75	L/s	1.85	L/s	1.85	L/s	2.0	L/s	2.0	L/s	2.5	L/s	2.5	L/s	3.0	



S r. N o	Item of Work	2025-26		2026-27		2027-28		2028-29		2029-30		2030-31		2031-32		2032-33		2033-34		2034-35		Remarks
		Ph y	Fin	Ph y	Fin	Ph y	Fin	Ph y	Fin	Ph y	Fin	Ph y	Fin	Ph y	Fin	Ph y	Fin	Ph y	Fin	Phy	Fin	
3	Evaluation and review of management plan	-	-	-	-	-	-	-	-	-	-	1	0.75	-	-	-	-	-	-	-	-	
5	Study on Climate Change	-	-	L/S	2.0	-	-	L/S	2.0	-	-	-	-	L/S	2.0	-	-	L/S	2.5	-	-	
Office Contingencies																						
1	Purchase of furniture articles to Range Office FRH etc.	L/s	3.0	L/s	2.0	L/s	1.0	L/s	1.0	L/s	1.5	L/s	1.5	L/s	2.0	L/s	2.0	L/s	2.0	L/s	1.5	
2	Misc. Office expenses	L/s	2.0	L/s	2.25	L/s	2.25	L/s	2.5	L/s	2.5	L/s	2.75	L/s	2.75	L/s	2.75	L/s	3.0	L/s	3.0	
4	Procurement of vehicle for patrolling	L/S	1.25	L/s	1.25	L/s	1.50	L/s	1.5	L/s	1.5	L/s	1.75	L/s	1.75	L/s	1.75	L/s	2.0	L/s	2.0	
	TOTAL	111.25		138.25		222.1		180.55		183.7		189.8		172.3		196.5		209.8		181.3		
TOTAL PROPOSED OUTLAY 2025-26 to 2034-35																					1785.55	



14.1.1 GAP BETWEEN THE BUDGET OUTLAY OF THE EXPIRED MP AND PROPOSED IN NEW MP

Comparative Table of Budget Outlay of the expired MP and Budget outlay proposed in new MP is given below:

Sr. No.	Budget Outlay proposed in expired MP (2011-12) to (2020-21)		Budget Outlay proposed in draft MP (2025-26) to (2034-35)	
	Year	Outlay Rs. In Lac.	Year	Outlay Rs. In Lac.
1	2011-12	87.75	2025-26	111.25
2	2012-13	98.05	2026-27	138.25
3	2013-14	92.85	2027-28	222.1
4	2014-15	57.75	2028-29	180.55
5	2015-16	57.40	2029-30	183.7
6	2016-17	37.60	2030-31	189.8
7	2017-18	37.95	2031-32	172.3
8	2018-19	41.20	2032-33	196.5
9	2019-20	44.25	2033-34	209.8
10	2020-21	45.95	2034-35	181.3
	Total	600.7		1785.55

14.2 FUNDING AGENCIES

The main funding agencies for the Management Plan of Sechu Tuan Nalla Wildlife Sanctuary will be as under:

- H.P. Forest Department
- Government of India - Centrally Sponsored Schemes (CSS)
- CAMPA funds
- Tribal Sub Plan Schemes

14.3 ITEMS OF BUDGET COMPONENTS:

14.3.1 NON RECURRING:

1. Infrastructure, Protection and Communication:

- ✓ Vehicle.
- ✓ Wireless system.
- ✓ Arms and ammunition
- ✓ Field equipments such as binoculars, digital cameras etc.



- ✓ Construction of new quarters for the staff.
- ✓ Construction of new anti-poaching campsImprovement of existing camps

2. Protected Area Management:

- ✓ Survey and demarcation
- ✓ Improvement of road network
- ✓ Bridges/ Culverts.
- ✓ Habitat Improvement works such as desilting of tanks etc.
- ✓ Creation of new fire lines

3. Tourism Development:

- ✓ Establishment of nature camp
- ✓ Creation of nature trails.
- ✓ Creation of camping facilities

4. Eco-development:

- ✓ Entry point investment.
- ✓ Village Eco-development programme.

5. Research, Monitoring and training:

- ✓ Conducting basic research on the ecological and socio-economic aspects etc.
- ✓ Training of staff on legal and other management aspects.
- ✓ Training of teachers, school children, villagers etc
- ✓ Conducting census of important species

6. Environmental Education:

- ✓ Development and procurement of education material for awareness generation such as pamphlets, brochures etc.
- ✓ Establishing a library of wildlife books and reference material.
- ✓ Erection of boards and signage's at important points
- ✓ Development of Educational Audio VisualProgrammes.

14.3.2 RECURRING COST:

1. Establishment Cost:

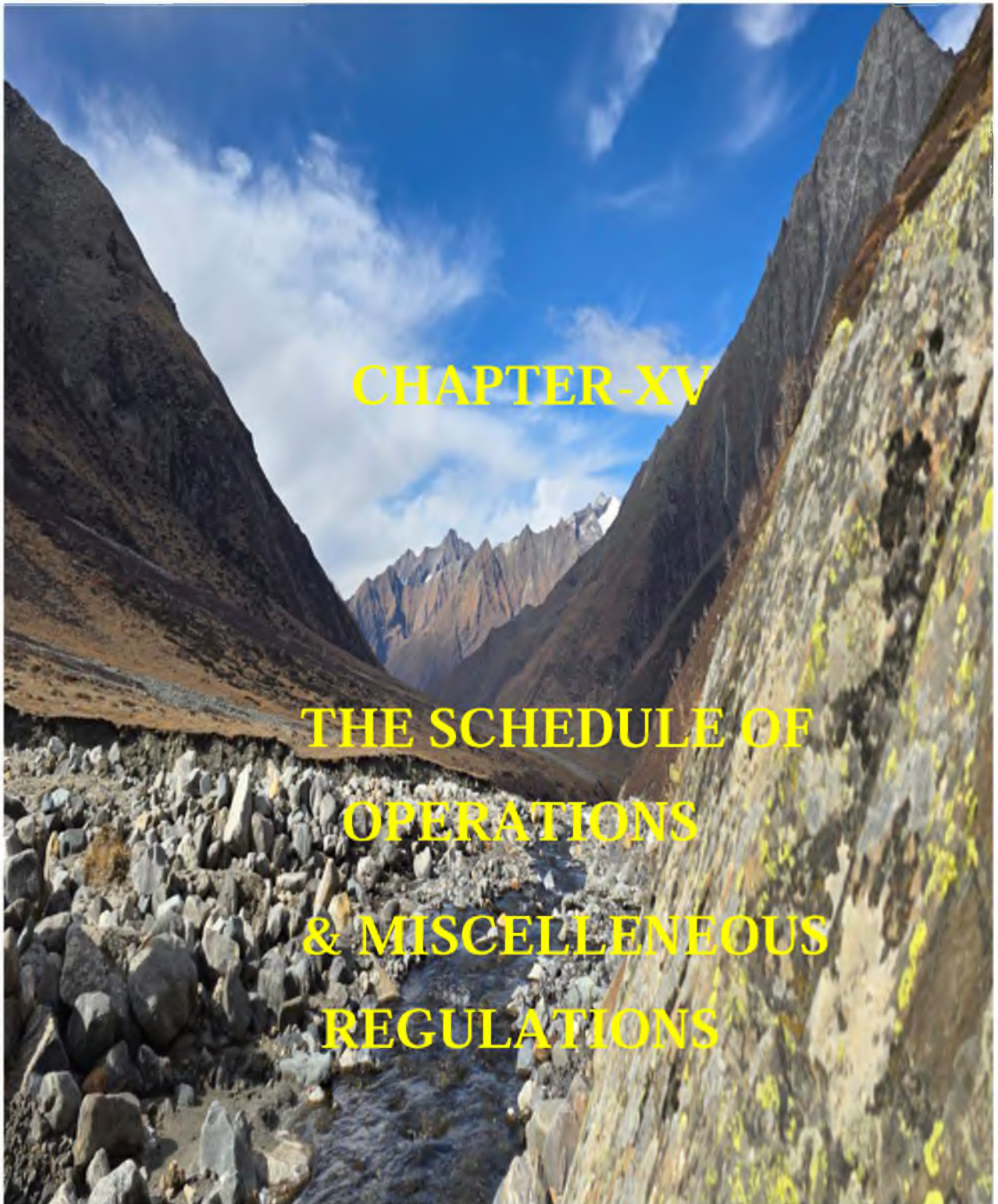
- ✓ Salaries and allowance.
- ✓ TA/ Medical.
- ✓ Office expenses.



2. Maintenance Cost:

- ✓ Maintenance of camps and Buildings.
- ✓ Maintenance of vehicles.
- ✓ Maintenance of roads, patrolling paths, bridges/ culverts etc.
- ✓ Ammunition.
- ✓ Uniform and other staff amenities (Torch, Kerosene, Drinking water etc.)
- ✓ Compensation arising out of man animal conflict.
- ✓ Training.
- ✓ Awareness programme.
- ✓ Staff welfare.
- ✓ Co-ordination.
- ✓ Immunization programme





15.1 THE SCHEDULE

The area being high altitude one, works are necessarily to be executed before the winter season. With this time constraint the works have to be meticulously planned. In this context the instructions issued from time to time have to be followed in letter and spirit.

15.2 RECORD OF DEVIATION AND IMPLEMENTED TARGETS

The final execution of works would depend upon the finance availability. But still the deviation from the plan prescriptions should be brought on record so that the plan objectives are not defeated.

15.3 THE RECORD OF EMPLOYMENT POTENTIAL

All works in the sanctuary though will improve and manage the habitat for Wildlife, yet at the same time there has to be a healthy and cordial relation with the common people of the area around the wildlife sanctuary. For their benefit, we have to give them gainful employment through various developmental works. In this way not only their income will be supplemented but also they will feel involved in this activity.

15.4 MAINTENANCE OF COMPARTMENT HISTORIES, BEAT MANUALS AND WILDLIFE CENSUS/SURVEY

The Compartment histories and beat manuals would be maintained in such a way that all forestry operations carried out in the area as well as general condition of the forests with relation to the wildlife trends, digital maps of the forests upto compartment level, Geo-coordinates of boundary pillars, census results will also be recorded. The wildlife census/survey should be conducted regularly and the same should be recorded properly



ANNEXURES



Annexure-I

NOTIFICATION OF THE SANCTUARY

(Authoritative English Text of this Department Notification No. FFE-B-F (6) 11/ 2005-II, dated 7th June, 2013 as required under Articles 348 (3) of the Constitution of India).

GOVERNMENT OF HIMACHAL PRADESH DEPARTMENT OF FORESTS

No. FFE-B-F(6)-11/2005-II/ Sechu Tuan Nalla Dated Shimla-2, the 7th June, 2013

NOTIFICATION

Whereas a Notification under Section 26A of the Wildlife (Protection) Act 1972 (53 of 1972) was issued by the Government vide Notification No. FFE-B-F(6)-3/99 dated 1.11.1999, to declare Sechu Tuan Nalla as Wildlife Sanctuary comprising an area of 103.00 sq. km;

And whereas, the matter with regard to rationalization of the Wildlife Sanctuaries and National Parks in Himachal Pradesh was under consideration of the Hon'ble Supreme Court in IA No. 139/2010 in Writ Petition Civil No. 337 of 1995 titled Centre for Environmental Law, WWF-I Versus Union of India & Others;

And whereas, in pursuance to the Hon'ble Supreme Court order 7th May 2010, the State Government issued Intention Notifications under Section 18 of the Wildlife (Protection) Act, 1972 in respect of the Wildlife Sanctuaries and National Parks for which rationalization had been proposed;

And whereas, Intention Notification under section 18(1) of the Wildlife (Protection) Act, 1972 was issued vide Notification No.FFE-B-F(6)-11/2005 dated 28th July 2010 to include an area of 113.27 sq. km to the existing notified 103.00 sq. km area of Sechu Tuan Nalla Wildlife Sanctuary;

And whereas, the Hon'ble Supreme Court vide order dated 05/08/2011, further directed the State to follow the procedure laid down under Section 18 to 26A and 35 of the Wildlife (Protection) Act, 1972 before issuance of final Notifications under Section 26A of the Wildlife (Protection) Act, 1972, which procedure was duly followed;



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

And whereas, the Hon'ble Supreme Court vide order dated 01/02/2013 passed in IA No. 155 (earlier IA No. 139/2010), has permitted the State Government to issue final Notifications under Sections 26A, 35(4) & 36A of the Wildlife (Protection) Act, 1972 with regard to the proposed rationalization of boundaries of Wildlife Sanctuaries and National Parks in Himachal Pradesh;

And whereas, as a consequence of rationalization of boundaries of Sechu Tuan Nalla Wildlife Sanctuary, an additional area of 113.27 sq. km is included and 52.98 sq. km area is excluded (comprising 5 villages namely Chasak Batory, Chask, Sechu, Udeen Sandhari and Hiltu Tuan) from the existing area on ground i.e. 330.00 sq. km of Sechu Tuan Nalla Wildlife Sanctuary. The total area of 390.29 sq. km (330.00 sq. km + 113.27 sq. km - 52.98 sq. km) shall now constitute the Sechu Tuan Nalla Wildlife Sanctuary after rationalization;

Now, therefore, the Governor Himachal Pradesh in exercise of the powers vested in her under Section 26A of the Act bid is pleased to declare the aforesaid area of 390.29 sq. km as 'Sechu Tuan Nalla Wildlife Sanctuary' with immediate effect for the purpose of protecting, propagating and developing wildlife and its environment.

The limits of Sechu Tuan Nalla Wildlife Sanctuary shall be as under:

Sr.No.	Name of Wildlife Sanctuary	Constituents i) District ii) Forest Division	Boundaries of Sechu Tuan Nalla Wildlife Sanctuary
1.	Sechu Tuan Nalla	i) Chamba ii) Chamba (WL) Division	NORTH: From point 5856 Mtrs. up to 6072 Mtrs. along the State boundary of Jammu & Kashmir and Himachal Pradesh. EAST: The main ridge, commencing from point 6072 Mtrs. of Zaskar (Jammu & Kashmir) State boundary separating the watershed of Sechu Nalla and Miyar Nalla along Urgose Pass and up to Ghordhar Pass 5105 mtr. SOUTH: From Ghordhar Pass 5105 Mtr. to Duphao Jot at point 6070 Mtrs. along the ridge, then upto Baihali Jot at point 6302 Mtrs.



			WEST: From near Baihari Jot 6302 Mtrs. to Malanu point 5233 Mtrs. up to Sidhani Nalla along the ridge and then along Sidhani Nalla up to point 2727 Mtrs., then along Chasak Nalla up to Bhator to Kulma Jot to via 3923 Mtr. height, 3434 mtr. height then boundary of Khud PF on ridge, 4666 Mtr. height, Dibri on ridge, 4639 height, 3730 Mtr. height, Mini Jot, Hud nal, 5488 Mtr. height, 5681 Mtr. height, 6142 Mtr. height, 5271 Mtr. height upto 5856 Mtr. height.
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This area is situated within the Geo-coordinates North Lat. $33^{\circ}10'55''$ N & Long. $76^{\circ}43'24''$ E East Lat. $32^{\circ}57'31''$ N & Long. $76^{\circ}46'38''$ E, South Lat. $32^{\circ}49'49''$ N & Long. $76^{\circ}35'00''$ E West Lat. $32^{\circ}54'18''$ N & Long. $76^{\circ}31'22''$ E which falls on Survey of India topo sheet No. 52C/12, 52C/16, 52D/9 & 52D/13 on scale 1: 50000.

Area of Sechu Tuan Nalla Wildlife Sanctuary = 390.29 sq. km

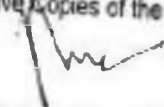
By Order

Principal Secretary (Forests) to the
Government of Himachal Pradesh.

Encls. No. As above
Copy forwarded to:-

Dated Shimla-2 the 7th June, 2013

1. All the Administrative Secretaries to the Govt. of H.P. Shimla-2.
2. All the Divisional Commissioners, Shimla, Mandi & Dharamshala, H.P.
3. All the Heads of Departments of H.P.
4. The Principal Chief Conservator of Forests, H.P. Shimla-1
5. The Principal Chief Conservator of Forests, (Wildlife) H.P. Shimla-1.
6. All CCFs / DFOs (Wildlife) in H.P.
7. All the Deputy Commissioners in H.P.
8. All the CCFs/CFs /DFOs in H.P.
9. ALR-cum- Under Secretary Law to the Government of Himachal Pradesh.
10. The Commissioner, Municipal Corporation, Shimla.
11. The Controller H.P. Printing & Stationary Department Shimla-5 for publication in the Raj-Patra (Extra-ordinary) Five Copies of the Raj-Patra be sent to this Department.
12. Guard File.


Under Secretary (Forests) to the
Government of Himachal Pradesh.



**हिमाचल प्रदेश सरकार
वन विभाग**

संख्या: एफ.एफ.ई.-बी-एफ.(6)-11/2005-II सेचू तुआन नाला तारीख शिमला-2 7 जून, 2013

अधिसूचना

सरकार ने वन्य जीव (संरक्षण) अधिनियम, 1972 (1972 का 53) की धारा 26क के अधीन अधिसूचना संख्या: एफ.एफ.ई.-बी-एफ.(6)-3/99 तारीख 1-11-1999 द्वारा 103.00 वर्ग किलोमीटर से सनादिष्ट क्षेत्र सेचू तुआन नाला को वन्य जीव अभ्यारण्य के रूप में घोषित करने की अधिसूचना जारी की थी।

और हिमाचल प्रदेश में वन्य जीव अभ्यारण्यों और राष्ट्रीय पार्कों के युक्तिकरण की बाबत मानता आईए नं० 139/2010 इन रिट पिटिशन सिविल नं० 337 ऑफ 1995 नामत सेन्टर फॉर एनवायरनमेंटल लॉ, डबल्यू डबल्यू एफ-1 बनाम यूनियन ऑफ इण्डिया एण्ड अदर्स में माननीय उच्चतम न्यायालय के विचारधीन था;

और माननीय उच्चतम न्यायालय के आदेश तारीख 7 मई, 2010 के अनुसरण में सरकार ने वन्य जीव अभ्यारण्यों और राष्ट्रीय पार्कों, जिनके लिए युक्तिकरण प्रस्तावित किया गया था, की बाबत वन्य जीव (संरक्षण) अधिनियम, 1972 की धारा 18 के अधीन इस आशय की अधिसूचनाएं जारी की थीं;

और अधिसूचना संख्या: एफ.एफ.ई.-बी-एफ.(6)11/2005 तारीख 29 जुलाई, 2010 द्वारा सेचू तुआन नाला वन्य जीव अभ्यारण्य के विद्यमान अधिसूचित 103.00 वर्ग किलोमीटर क्षेत्र में 113.27 वर्ग किलोमीटर क्षेत्र को सम्मिलित करने के लिए वन्य जीव (संरक्षण) अधिनियम, 1972 की धारा 18(1) के अधीन आशय अधिसूचना जारी की गई थी;

और माननीय उच्चतम न्यायालय के आदेश तारीख 5-8-2011 द्वारा, वन्य जीव (संरक्षण) अधिनियम, 1972 की धारा 26क के अधीन अंतिम अधिसूचना जारी करने से पूर्व, वन्य जीव (संरक्षण) अधिनियम, 1972 की धारा 18 से 26क और 35 के अधीन अधिकशित प्रक्रिया का अनुसरण करने के लिए भी राज्य सरकार को निर्देश दिए गए, जिस प्रक्रिया का सम्यक् रूप से अनुसरण किया गया था;



और गाननीय उच्चतम न्यायालय ने आईए नं० 155 (पहले आईए नं० 139/2010) में पारित आदेश तारीख 1-2-2013 द्वारा, राज्य सरकार को हिमाचल प्रदेश में वन्य जीव अभ्यारण्यों और राष्ट्रीय पार्कों की सीमाओं के प्रस्तावित युक्तिकरण की बाबत वन्य जीव (संरक्षण) अधिनियम, 1972 की धारा 26क, 35(4) एवं 36क के अधीन अन्तिम अधिसूचनाएं जारी करने को अनुमति किया है।

और सेचू तुआन नाला वन्य जीव अभ्यारण्य की सीमाओं के युक्तिकरण के परिणामस्वरूप भू-क्षेत्र पर अर्थात् सेचू तुआन नाला वन्य जीव अभ्यारण्य के विद्यमान 330.00 वर्ग किलोमीटर क्षेत्र में 113.27 वर्ग किलोमीटर का अतिरिक्त क्षेत्र सम्मिलित किया गया है और उसमें से 52.98 वर्ग किलोमीटर (5 गांवों नामतः चासक बटोरी, चासक, सेचू, उछीन सन्धारी और हिलू तुआन को समाविष्ट करके) अभ्यारण्य में से निकाल दिया गया है। युक्तिकरण के परिणाम अर्थात् कुल 390.29 वर्ग किलोमीटर (330.00 वर्ग किलोमीटर + 113.27 वर्ग किलोमीटर - 52.98 वर्ग किलोमीटर) के क्षेत्र से सेचू तुआन नाला वन्य जीव अभ्यारण्य गठित होगा।

अतः हिमाचल प्रदेश की राज्यपाल, पूर्वोक्त अधिनियम, की धारा 26क के अधीन उनमें निहित शक्तियों का प्रयोग करते हुए वन्य जीव और पर्यावरण के संरक्षण, प्रसारण या विकसित करने के प्रयोजन के लिए, 390.29 वर्ग किलोमीटर क्षेत्र को तुरन्त प्रभाव से सेचू तुआन नाला वन्य जीव अभ्यारण्य घोषित करती हैं।

सेचू तुआन नाला वन्य जीव अभ्यारण्य की सीमाएं निम्न प्रकार से होंगी:

क्रम संख्या	वन्य जीव अभ्यारण्य का नाम	घटक a) जिला b) वन मण्डल	सेचू तुआन नाला वन्य जीव अभ्यारण्य की सीमाएं
1	सेचू तुआन नाला	a) चम्बा b) चम्बा (वन्य जीव) मण्डल,	उत्तर:- बिन्दु 5856 मीटर ऊंचाई से 6072 मीटर ऊंचाई तक जम्मू कश्मीर राज्य की सीमा के साथ-साथ। पूर्व:- मुख्य चोटी जसंकर की रिज बिन्दु 6072 मीटर ऊंचाई जम्मू और कश्मीर राज्य की सीमा से सेचू नाला तथा मियाड नाला के जलागम क्षेत्र की विभाजन रेखा के साथ छरघोष दर्रा से घोसघार दर्रा 5105 मीटर तक।



			दक्षिण-घोखार दर्रा 5105 मी० ऊँचाई से दुफाहो जोत 6070 मी० ऊँचाई से वैहाली जोत 6302 मी० ऊँचाई तक चोटी के साथ-2 । पश्चिम-वैहाली जोत 6302 मी० ऊँचाई के नजदीक से 5685 मी० ऊँचाई, 6027 मी० ऊँचाई और मैलाणू 5233 मी० ऊँचाई से सिघाणी नाला तक चोटी के साथ-2 । उसके बाद सिघाणी नाला के साथ 2727 मी० ऊँचाई, चसक नाला के साथ-2 भटोर से कुलमा जोत 5459 मी० ऊँचाई तक उसके बाद कुलमा जोत से 3923 मी० ऊँचाई से 3434 मीटर ऊँचाई से खुड संरक्षित वन की सीमा तक चोटी के साथ-2, खुड संरक्षित वन से 4666 मीटर ऊँचाई से डिबरी तक चोटी के साथ-2, डिबरी से 4639 मीटर ऊँचाई से 3730 मीटर ऊँचाई से मनी गोठ से हुडनाल नाला तक, हुड नाला से 5488 मी० ऊँचाई से 5681 मी० ऊँचाई से 6142 मी० ऊँचाई से 5271 मी० ऊँचाई से 5856 मी० ऊँचाई तक चोटी के साथ-2 ।
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इस क्षेत्र की भौगोलिक स्थिति: उत्तर अक्षांश $30^{\circ} 10' 55''$ उत्तर और देशान्तर $76^{\circ} 43' 24''$ पूर्व। पूर्व अक्षांश $32^{\circ} 57' 31''$ उत्तर और देशान्तर $76^{\circ} 46' 38''$ पूर्व । दक्षिण अक्षांश $32^{\circ} 49' 49''$ उत्तर और देशान्तर $76^{\circ} 35' 00''$ पूर्व और पश्चिम अक्षांश $32^{\circ} 54' 18''$ उत्तर और देशान्तर $76^{\circ} 31' 22''$ पूर्व । यह क्षेत्र भारतीय सर्वेक्षण विभाग की टोपो शीट नम्बर 52सी/12, 52सी/16, 52बी/9 और 52बी/13, (पैमाना 1:50,000) पर दर्शाया गया है ।

क्षेत्रफल: 39029 वर्ग कि०मी०

आदेश द्वारा,

प्रधान सचिव (वन)

हिमाचल प्रदेश सरकार ।

पृष्ठांकन संख्या: यद्योपरि।

दिनांक शिमला-2 7 जून, 2013

प्रतिलिपि निम्नलिखित को सूचनार्थ एवं आगामी आवश्यक कार्यवाही हेतु प्रेषित है:-

1. समस्त प्रशासनिक सचिव, हिमाचल प्रदेश-शिमला-2
2. सभी मण्डलायुक्त, शिमला, मण्डी व धर्मशाला मण्डल हिमाचल प्रदेश।
3. समस्त विभागाध्यक्ष हिमाचल प्रदेश।
4. प्रधान मुख्य अरण्यपाल हिमाचल प्रदेश शिमला-1
5. प्रधान मुख्य अरण्यपाल (वन्य प्राणी) हिमाचल प्रदेश-शिमला-1
6. समस्त मुख्य अरण्यपाल/ वनमण्डलाधिकारी (वन्य प्राणी) हिमाचल प्रदेश।
7. समस्त जिलाधीश, हिमाचल प्रदेश।
8. समस्त मुख्य अरण्यपाल/अरण्यपाल/वनमण्डलाधिकारी, (क्षेत्रीय) हिमाचल प्रदेश।
9. सहायक विधि परामर्शी एवं अवसर सचिव (विधि) हिमाचल प्रदेश सरकार।
10. आयुक्त नगर निगम शिमला हिमाचल प्रदेश।
11. निवन्त्रक, मुद्रण एवं लेखन सामग्री विभाग, हिमाचल प्रदेश शिमला-5 को राजपत्र में प्रकाशित करने हेतु। कृपया इसकी पांच अतिरिक्त प्रतियां छापी जावें।
12. गार्ड फाइल।

अवर सचिव (वन)
हिमाचल प्रदेश सरकार।

Annexure-II

LIST OF FOREST / COMPARTMENT AND AREA IN HA.

Or say 39029 Ha. as per Notification No. FFE-B-F(6)-11/2005-II dated 7th June, 2013 with total area of the sanctuary.

Sr. No.	Name of the Beat	Name of compartment.	Forest type.	Area in hac.
A	Sechu	Demarcated Protected Forests.		
1.		Gajroon DPF.	12/C1/D, 12/C/e	154
		Dhars NDPFs		
1		Chasak Bhatori Dhar.	12/DS3, 15/C-III, 16/C1	4000
2		Harvin Dhar.	14/C1a, 14/C1b, 12/DS3, 15/C-III, 16/C1	5620
3		Sechu Dhar	12/C1/D, 12/C/e, 14/C1a, 14/C1b	607
4		Shidhani Dhar	13/C2b, 14/C1a, 14/C1b, 12/DS3, 15/C-III, 16/C1	11327
		Total:-A		21708
B	Tuan	Dhars DPFs.		
1.		Chogullu Dhar.	12/C/e, 12/C1/d, 12/C/e, 13/C2b, 16/C1, 16/E1, 15/C-III	3134
2.		Gal Dhar	-do-	2225
3.		Topiun Dhar	-do-	11962
		Total:-B		17321
		Total Govt. land. (A+B)		39029 Hac.



(10) पारिविश्विधिका गिरीदी कोन के प्रदेन नगी नए गवर्नर दिवाकनारी वा बिद्यमान गवर्नर दिवाकनारी वा बिन्नाय केनीय नए हार के पदोपन, वन और जलकपु दिवाकन सनपन नुवा राष्ट्रीय ब्राह्म संस्था वा बिचरण, प्राग आदी (मनव-मनव पर नुवा नुवादिन) दिवाकनारी के जलनार होवा क्रिये पारिविश्विधिका पदोपन पर वन दिवा लागूवा

- (6) अवैधिक महायोजना का अनुमोदन किए जाने तक, पर्यटन के लिए विमान और विद्यमान स्थित विमानमार्गों के विमान की आवश्यक स्थान निर्दिष्टि करीला तथा मार्गदर्शक अधिकारी की विधिवित पर अवैधिक अवैधित निर्दिष्टावक अधिकारी द्वारा अनुमोदन किया होना ।

(4) **वैधानिक विपदाय** - पार्लियामेन्टिकी संघर्षी क्षेत्र में पर्यटनपुर्ण वैधानिक विमानन के समी क्षेत्रों जैसे पर्यटनी क्षेत्र कोल अवैधित क्षेत्र, क्षेत्र विमानन, जल प्रवासी, जलवा, पानी मार्ग, उपकरण, गुणवत्ता, स्थलों, अवस्था, अवैधितपुर्ण, पर्यटनी क्षेत्र की पर्यटन की आगामी और जल अवैधित किया जाएगा तथा उनकी गुणवत्ता और अवस्था के लिए इस अधिनियम के अधिनियम प्रकाशन की तारीख में यह माना जा और, उपर्युक्त योजना बनाएगी और ऐसी योजना अवैधिक महायोजना का भाग होगा ।

(5) **बालन निर्मित विपदाय स्थान** - पार्लियामेन्टिकी संघर्षी क्षेत्र में जलवा, महायोजना, विमानन, विमानन, विमानन और पार्लियामेन्ट महायन के क्षेत्रों की पर्यटन की आगामी और इस अधिनियम के प्रकाशन की तारीख के यह माना जा और उनके महायन की योजना के लिए कार्य होनी तथा अवैधिक महायोजना में परिवर्तित की जाएगी ।

(6) **वर्षी वरुण** - पार्लियामेन्टिकी संघर्षी क्षेत्र में वर्षी वरुण के विपदाय के लिए राज्य सरकार का पर्यटन विभाग या विमानन प्रवेश विमानन और पर्यटन (पर्यटन) अधिनियम, 1966, के अधीन वर्षी वरुण (विमानन और विमानन) नियम 2000 के अनुसार अधिनियमों के अधिनियम होना ।

(7) **बाहु वरुण** - पार्लियामेन्टिकी संघर्षी क्षेत्र में, बाहु वरुण का निर्माण बाहु (वरुण) विमानन और विमानन अधिनियम, 1981 (1981 का 14) और उनके अधीन बनाए गए विमानों के उपकरणों के अनुसार होना ।

(8) **अधिकारी का विमानन** - पार्लियामेन्टिकी संघर्षी क्षेत्र में उपर्युक्त अधिनियम का विमानन पर्यटन (पर्यटन) अधिनियम, 1966 और उनके अधीन बनाए गए विमानों के अनुसार जाने जाने पर्यटनपुर्ण वरुणपुर्ण संघर्षी क्षेत्रों के विमानन संघर्षी विमानन मानकों के उपकरणों के अनुसार होना ।

(9) **औसत अवैधित** - औसत अवैधितों का विमानन निर्दिष्टि कर में होना-

- (i) पार्लियामेन्टिकी संघर्षी क्षेत्र में औसत अवैधितों का निर्माण, औसत अवैधित अवैधित, विमान, 2016, जो भारत सरकार के पर्यटन, जल और वरुणपुर्ण पर्यटन विभाग की समन्वय-समन्वय पर तथा पार्लियामेन्ट अधिनियम का, का.अ. 1957(अ), पार्लियामेन्ट अधिनियम, 2016 द्वारा प्रवर्तित किए गए हैं, के उपकरणों के अनुसार किया जाएगा ।
- (ii) अवैधिक स्थानीय का विमानन पर्यटनपुर्ण जल में अधिकांश निर्मित में पार्लियामेन्टिकी संघर्षी क्षेत्र के बाहर पर्यटन किए गए विमानों का विमानन होना ।
- (iii) पार्लियामेन्टिकी संघर्षी क्षेत्र में औसत अवैधितों की अवस्था का अधीनकार और अधिनियम अवैधित को अनुमान नहीं किया

(10) **वैद्य निधिकारी कर्मचारी**—(i) पारिविहितिकी कार्यो ओर में अब निहितता अपरिचित का निरूपण, वैद्य अस्पताल प्रत्यक्ष निरूपण, 2018 को भारत सरकार के पारोपण, अरु और उपरान्त पारिविहितिकी संरचना की समान-समान पर इतर पारोपणिकी अतिरिक्तता में अ.अ. 343 (अ) कर्मचारी 23 मार्च 2016 द्वारा प्रकटित निरूपण का अ. के उपरान्त के अनुसार किया जाएगा ।

(a) पाणिनिविरचिते संस्कृत-शब्द-कोश-के-धीन-अवस्थिति-के-लिए-कोई-सुझाव-प्रकार-सुझाव-नहीं-है-प्रार्थना।

(ग) जलिक अणुमान या हाइड्रोजन इकाय में दो, जो पहले से ही परिचित हैं। मसालों के किताब है, मसालों के किताब पर उपलब्ध।

[illegible][illegible]

(13) **ईकॉनॉमिक्स-एजिटेशन**—शांतिमित्रिकी मंडली और वे ईकॉनॉमिक्स-एजिटेशन मिशन, 2016, जो भारत सरकार के एजेंट हैं, के द्वारा शांतिमित्रिकी के माध्यम से भारत-भारत में शांतिमित्रिकी और प्रकृति मित्र का है, के अन्तर्गत किया जाता।

[illegible]

Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

[illegible]

68. मागीरीची बाबिति- (१) रडपी सरदार, पाकिस्थानिजि मदेदी आम ह दलाही मागीरी क चित्त ताक मागीरी बाबिति वा गहन डरणी
आं विदमविदिन मे दिवसकर डरणी अर्थात् -

- | | | |
|-----|---|--------|
| (A) | मरुट विद्या ललितपुर, | -सदस्य |
| (B) | पारिस्थितिकी और पर्यावरण क्षेत्र में शिक्षात्मक प्रवेश लेकर द्वारा तीन वर्ष की अवधि के लिए नामनिर्दिष्ट किया जाने वाला एक विशेषज्ञ | -सदस्य |
| (C) | प्रवीणता की क्षेत्र में कार्य करने वाले दो सरकारी संगठनों (विशेष रूप से विशाल संस्था) की है वे परामर्श। का शिक्षा क्षेत्र राज्य सरकार द्वारा तीन वर्ष की अवधि के लिए नामनिर्दिष्ट किया जाने वाला एक प्रतिनिधि | -सदस्य |
| (D) | शिक्षात्मक प्रवेश राज्य क्षेत्र-निविद्यता बोर्ड का अध्यक्ष ललित/गुरुकुल | -सदस्य |



[भाग II - खण्ड III]

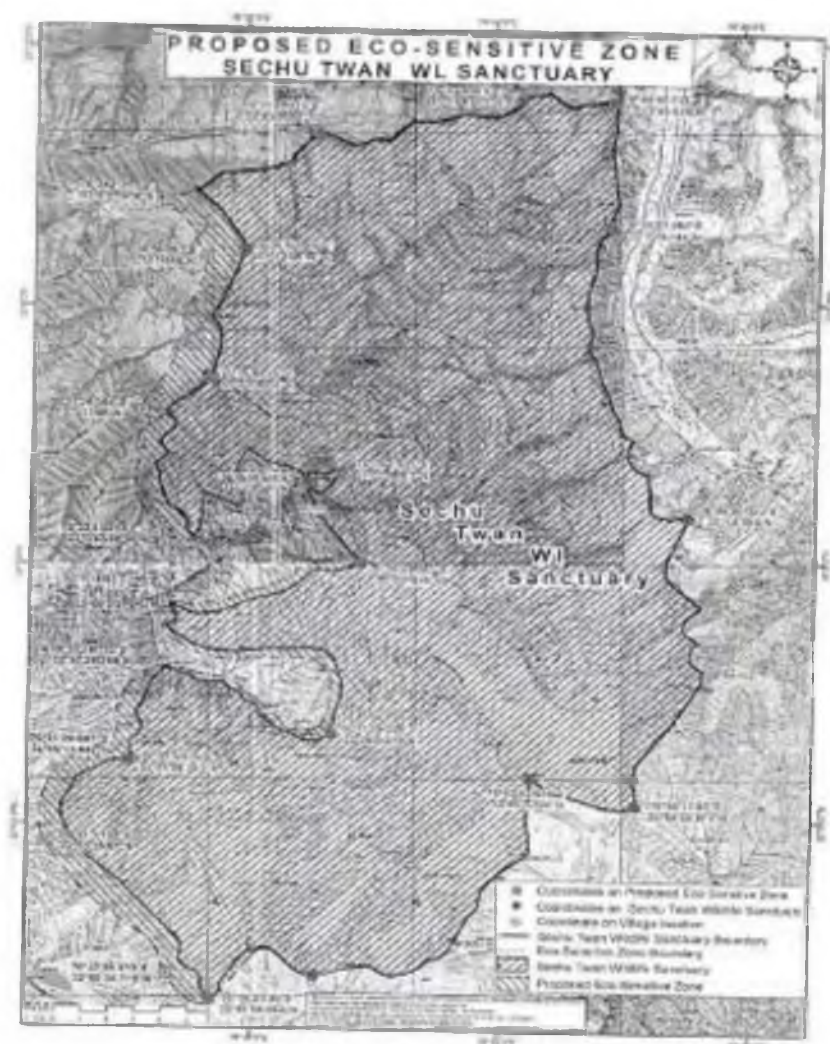
प्रायः ३३ राजपत्र : अक्टोबर

३

सेचु तुवान नाला वन्यजीव अभयारण्य, हिमाचल प्रदेश का नक्शा

आकार-1

A7



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

उपाबंध-II

सेचु तुवान नाला वन्यजीव संरक्षण की सीमा के दू-निर्देशांक और उनके पारिस्थितिकी संवेदी जोन

सेचु तुवान नाला वन्यजीव संरक्षण	पारिस्थितिकी संवेदी जोन
33°10'50.684"उ 76°42'41.106"पू	33°8'28.083"उ 76°34'1.875"पू
33°10'41.026"उ 76°44'53.899"पू	33°7'13.249"उ 76°35'0.453"पू
33°7'52.287"उ 76°44'43.723"पू	33°4'23.536"उ 76°35'7.409"पू
33°1'4.745"उ 76°46'37.578"पू	33°1'20.235"उ 76°36'0.386"पू
32°54'23.388"उ 76°48'19.07"पू	32°58'12.12"उ 76°33'54.362"पू
32°50'29.9"उ 76°37'33.388"पू	32°57'27.664"उ 76°33'16.547"पू
32°49'57.934"उ 76°34'56.886"पू	32°06'38.013"उ 76°31'2.348"पू

उपाबंध-III

सेचु तुवान नाला वन्यजीव संरक्षण के दू-निर्देशांकों के साथ पारिस्थितिकी संवेदी जोन के संलग्न करने वाले जालों की सूची

जाल का नाम	दू-निर्देशांक
हीम्ल	33°00'203"उ 76°35'252"पू
दवान	33°1'876"उ 76°37'121"पू
चिरोटी	33°1'254"उ 76°36'348"पू
बागिछोव	33°1'810"उ 76°36'831"पू
बनबारी	33°00'519"उ 76°35'875"पू

उपाबंध-IV

पारिस्थितिकी संवेदी जोन वाणीकवी सन्धि - की गई कार्यवाही की रिपोर्ट का रूप विधान

1. क्षेत्रों की संख्या और विधि।
2. क्षेत्रों का वर्गीकरण - इसका मुख्य उद्देश्य वन्यजीव संरक्षण है। क्षेत्र के कार्यवाही को एक एक संलग्न में उपाबंध करने।
3. संवर्धित महाराष्ट्र की सीमा की पारिस्थितिकी संवेदी जोन में महाराष्ट्र।
4. सन्धिस्थल में वन्यजीव संरक्षण के सुधार के लिए कार्यवाही का कार्यक्रम।
5. पर्यावरण सन्धिस्थल निर्धारण अधिनियम, 2006 के अधीन आने वाली पारिस्थितिकी संवेदी जोन के माध्यमों का मागण।
अर्थात् एक एक उपाबंध के रूप में उपाबंध किए जा सकते हैं।
6. पर्यावरण सन्धिस्थल निर्धारण अधिनियम, 2006 के अधीन आने वाली पारिस्थितिकी संवेदी जोन के माध्यमों का मागण।
अर्थात् एक एक उपाबंध के रूप में उपाबंध किए जा सकते हैं।
7. पर्यावरण (संरक्षण) अधिनियम, 1986 की धारा 19 के अधीन आने वाली पारिस्थितिकी संवेदी जोन का मागण।
8. कोई अन्य महत्त्वपूर्ण विषय।



MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 28th September, 2017

S.O. 1193(E).—WHEREAS a draft notification was published in the Gazette of India, Extraordinary, vide notification of the Government of the India in the Ministry of Environment, Forest and Climate Change number S.O. 2276 (E), dated the 1st July, 2016, inviting objections and suggestions from all persons likely to be affected thereby within the period of sixty days from date on which copies of the Gazette containing the said notification were made available to the public;

AND WHEREAS, the copies of the Gazette containing the draft notification were made available to the public on the 1st July, 2016;

AND WHEREAS, no objections and suggestions were received from persons and stakeholders in response to the draft notification;

AND WHEREAS, the Sechu Tuan Nalla Wildlife Sanctuary is situated in the Chamba District of Himachal Pradesh and is spread over an area of about 390.29 square kilometers;

AND WHEREAS, the flora and fauna represent rich biological significance of this sanctuary, floral species include Kail (*Pinus wallichiana*), Spruce (*Pinus wallichiana*), Silver Fir (*Abies pinsolow*), etc. the Sanctuary is the habitat of Snow Leopard (*Panthera uncia*), Leopard cat (*Prionailurus bengalensis*), Musk deer (*Mooschus sp.*), Brown Bear (*Ursus arctos*), Langur, Himalayan Thar (*Hemitragus jemlahicus*), Goral (*Naemorhedus sp.*), etc., and pheasants like Monal (*Lophophanes impeyanus*), Koklash (*Pucrasia macrolophus*), Kalij (*Lophura leucostictus*), Chukar (*Gallus gallus*), etc. also inhabit the Sanctuary;

AND WHEREAS, it is necessary to conserve and protect the area, the extent and boundaries of which are specified in paragraph 1 of this notification, around the protected area of Sechu Tuan Nalla Wildlife Sanctuary as Eco-sensitive Zone from ecological, environmental and biodiversity point of view and to prohibit industries or class of industries and their operations and processes in the said Eco-sensitive Zone;

NOW THEREFORE, in exercise of the powers conferred by sub-section (1), clauses (v) and (vi) of sub-section (2) and sub-section (3) of section 3 of the Environment (Protection) Act, 1986 (29 of 1986), read with sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986, the Central Government hereby notifies an area with an extent ranging from 0 metres to 1 kilometre around the boundary of the Sechu Tuan Nalla Wildlife Sanctuary in the State of Himachal Pradesh as the Sechu Tuan Nalla Wildlife Sanctuary Eco-sensitive Zone; therein after referred to as the Eco-sensitive Zone; details of which are as under, namely:-

1. Extent and boundaries of Eco-sensitive Zone. (1) The extent of Eco-sensitive Zone varies from 0 metres to 1 kilometre from the boundary of Sechu Tuan Nalla Wildlife Sanctuary. 0 Eco-Sensitive Zone towards North, South and Eastern sides is due to inter-State boundary with Jammu and Kashmir and high altitude areas and the area of the Eco-sensitive Zone is 46.45 sq. km.

(2) The map of Sechu Tuan Nalla Wildlife Sanctuary demarcating the Eco-sensitive Zone is appended as **Annexure I**.

(3) The Geo-Coordinates of prominent locations of the boundary of Sechu Tuan Nalla Wildlife Sanctuary and its Eco-Sensitive Zone is appended as **Annexure II**.

(4) The list of villages falling within the Eco-Sensitive Zone is appended as **Annexure III**.

2. Zonal Master Plan for Eco-sensitive Zone. (1) The State Government shall, for the purpose of the Eco-sensitive Zone prepare, a Zonal Master Plan, within a period of two years from the date of publication of this notification in the Official Gazette, in consultation with local people and adhering to the stipulations given in this notification.

(2) The Zonal Master Plan so prepared shall be commensurate with the provisions specified in this notification.

(3) The Zonal Master Plan shall be approved by the Competent Authority in the State Government.

(4) The Zonal Master Plan for the Eco-sensitive Zone shall be prepared by the State Government in such manner as is specified in this notification and also in consonance with the relevant Central and State laws and the guidelines issued by the Central Government, if any.

(5) The Zonal Master Plan shall be prepared in consultation with all concerned State Departments, namely:-

- (i) Environment;
- (ii) Forest;
- (iii) Urban Development;



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

- (iv) Tourism;
- (v) Municipal;
- (vi) Revenue;
- (vii) Agriculture;
- (viii) Irrigation;
- (ix) Public Works Department; and
- (x) Himachal Pradesh State Pollution Control Board.

(6) The Zonal Master Plan shall not impose any restriction on the approved existing land use, infrastructure and activities, unless so specified in this notification and the Zonal Master Plan shall foster improvement of all infrastructure and activities to be more efficient and eco-friendly.

(7) The Zonal Master plan shall provide for restoration of denuded areas, conservation of existing water bodies, management of catchment areas, watershed management, groundwater management, soil and moisture conservation, needs of local community and such other aspects of the ecology and environment that need attention.

(8) The Zonal Master Plan shall demarcate all the existing worshipping places, villages and urban settlements, types and kinds of forests, tribal areas, agricultural areas, fertile lands, green areas such as parks and like places, horticultural areas, orchards, lakes, wetlands and other water bodies with squaring maps and the Plan shall be supported by maps giving details of existing and proposed land use features.

(9) The Zonal Master Plan shall regulate development in Eco-sensitive Zone and shall follow prohibited, regulated and permitted activities specified in this notification so as to ensure Eco-friendly development for livelihood security of local communities.

(10) The Zonal Master Plan shall be a reference document for the Monitoring Committee for carrying out its functions under the provisions of this notification.

3. Measures to be taken by State Government. The State Government shall take the following measures for giving effect to the provisions of this notification, namely:-

(i) **Landuse.** Forests, horticulture areas, agricultural areas, parks and open spaces earmarked for recreational purposes in the Eco-sensitive Zone shall not be used or converted into areas for commercial or industrial related development activities;

Provided that the conversion of agricultural lands within the Eco-sensitive Zone may be permitted on the recommendation of the Monitoring Committee, and with the prior approval of the State Government, to meet the residential needs of local residents, and for the activities listed in column (2) of the Table in paragraph 6, namely:-

- (i) eco-friendly cottages for temporary occupation of tourists, such as tents, wooden houses, for eco-friendly tourism activities;
- (ii) widening and strengthening of existing roads and construction of new roads;
- (iii) small scale industries not causing pollution;
- (iv) rain water harvesting; and
- (v) cottage industries including village industries, convenience stores and local amenities.

Provided further that no use of tribal land shall be permitted for commercial and industrial development activities without the prior approval of the State Government and without compliance of the provisions of article 244 of the Constitution or the law for the time being in force, including the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (2 of 2007);

Provided also that any error appearing in the land records within the Eco-sensitive Zone shall be corrected by the State Government, after obtaining the views of the Monitoring Committee, once in each case and the correction of said error shall be intimated to the Central Government in the Ministry of Environment, Forest and Climate Change.

Provided also that the above correction of error shall not include change of land use in any case except as provided under this sub-paragraph.

Provided also that there shall be no consequential reduction in green area, such as forest area and agricultural area and efforts shall be made to reforest the unroad or unproductive agricultural areas.

(2) **Natural springs.** The catchment areas of all natural springs shall be identified and plans for their conservation and rejuvenation shall be incorporated in the Zonal Master Plan and the catchment management plan shall be drawn up by the State Government in such a manner as to prohibit or restrict development activities within the catchment areas.



(3) **Eco-Tourism.**-(a) The activity relating to tourism within the Eco-sensitive Zone shall be as per Eco-Tourism Master Plan, which shall form part of the Zonal Master Plan.

(b) The Eco-Tourism Master Plan shall be prepared by the Department of Tourism, Government of Himachal Pradesh in consultation with Department of Revenue and Forests, Government of Himachal Pradesh.

(c) The Tourism Master Plan shall form a component of the Zonal Master Plan.

(d) The activities relating to tourism shall be regulated as under, namely:-

(i) no new construction of hotels and resorts shall be permitted within 1 km from the boundary of the Sechu Tuan Nalla Wildlife Sanctuary or upto the extent of the Eco-sensitive Zone whichever is nearer, however, beyond the distance of 1 km from the boundary of the said Wildlife Sanctuary till the extent of the Eco-Sensitive Zone, the establishment of new hotels and resorts shall be permitted only in pre-defined and designated areas for eco-tourism facilities as per Tourism Master Plan.

(ii) all new tourism activities in expansion of existing tourism activities within the Eco-sensitive Zone shall be in accordance with the guidelines issued by the Central Government in the Ministry of Environment, Forest and Climate Change and the eco-tourism guidelines issued by National Tiger Conservation Authority (as amended from time to time) with emphasis on eco-tourism.

(iii) all the Zonal Master Plan is approved, development for tourism and expansion of existing tourism activities shall be permitted by the concerned regulatory authorities based on the actual site specific scrutiny and recommendation of the Managing Committee.

(4) **Natural heritage.** All sites of valuable natural heritage in the Eco-sensitive Zone such as the game pool reserve area, rock formations, waterfalls, springs, gorges, groves, caves, ponds, walks, rides, cliffs, etc. shall be identified and preserved and plan shall be drawn up for their protection and conservation, within six months from the date of publication of this notification in the official Gazette and such plan shall form part of the Zonal Master Plan.

(5) **Man-made heritage sites.** Buildings, structures, artefacts, areas and precincts of historical, architectural, aesthetic, and cultural significance shall be identified in the Eco-sensitive Zone and plans for their conservation shall be prepared within six months from the date of publication of this notification in the official Gazette and incorporated in the Zonal Master Plan.

(6) **Noise pollution.** The Environment Department of the State Government or Himachal Pradesh State Pollution Control Board shall implement the regulations for control of noise pollution in the Eco-sensitive Zone in accordance with the provisions of the Noise Pollution (Regulation And Control) Rules, 2000 under the Environment (Protection) Act, 1986.

(7) **Air pollution.** The control of air pollution in the Eco-Sensitive Zone shall be in accordance with the provisions of the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981) and rules made thereunder.

(8) **Discharge of effluents.** The discharge of treated effluent in Eco-sensitive Zone shall be in accordance with the provisions of the General Standards for Discharge of Environmental Pollutants covered under the Environmental (Protection) Act, 1986 and the rules made thereunder.

(9) **Solid wastes.** - Disposal of solid wastes shall be as under:-

(i) the solid waste disposal in Eco-sensitive Zone shall be carried out as per the provisions of the Solid Waste Management Rules, 2016 published by the Government of India in the Ministry of Environment, Forest and Climate Change vide notification number S.O. 1357 (E), dated the 8th April, 2016 as amended from time to time.

(ii) the inorganic material may be disposed in an environmentally acceptable manner at site identified outside the Eco-sensitive Zone.

(iii) no burning or incineration of solid wastes and establishment of landfills shall be permitted in the Eco-sensitive Zone.

(iv) **Bio-medical waste.** (i) The bio-medical waste disposal in the Eco-sensitive Zone shall be carried out as per the provisions of the Bio-Medical Waste Management Rules, 2016 published by the Government of India in the Ministry of Environment, Forest and Climate Change vide notification number G.S.R. 343 (E), dated the 28th March, 2016, as amended from time to time.

(ii) No common treatment facility or incineration shall be permitted within the Eco Sensitive Zone;

(iii) Individual hospitals or private health centres already existing within the Eco Sensitive Zone shall provide waste treatment system to avoid adverse impact on the Protected Area.

(v) **Plastic waste management.** The plastic waste management in the Eco-sensitive Zone shall be carried out as per the provisions of the Plastic Waste Management Rules, 2016 published by the Government of India in the Ministry of



Environment, Forest and Climate Change vide notification number G.S.R. 346 (E), dated the 18th March, 2016, as amended from time to time.

(12) **Construction and demolition waste management.**—The construction and demolition waste management in the Eco-sensitive Zone shall be carried out as per the provisions of the Construction and Demolition Waste Management Rules, 2016 published by the Government of India in the Ministry of Environment, Forest and Climate Change vide notification number G.S.R. 31 (NE), dated the 29th March, 2016, as amended from time to time.

(13) **E-waste.**—The e-waste management in the Eco-sensitive Zone shall be carried out as per the provisions of the E-Waste Management Rules, 2016 published by the Government of India in the Ministry of Environment, Forest and Climate Change and as amended from time to time.

(14) **Vehicular traffic.**—The vehicular movement of traffic shall be regulated in a habitat friendly manner and specific provisions in this regard shall be incorporated in the Zonal Master Plan and till such time as the Zonal Master plan is prepared and approved by the Competent Authority in the State Government, the Monitoring Committee shall monitor compliance of vehicular movement under the relevant Acts and the rules and regulations made thereunder.

(15) **Industrial units.**—(a) No establishment of new wood based industries within the Eco-sensitive zone shall be permitted except the existing wood based industries set up as per the law.

(b) No establishment of any new industry causing water, air, soil, and noise pollution within the Eco-sensitive Zone shall be permitted.

(16) The Central Government and the State Government shall specify other measures, if it considers necessary, in giving effect to the provisions of this notification.

4. **List of activities prohibited or to be regulated or promoted within the Eco-sensitive Zone.**—All activities in the Eco-sensitive Zone shall be governed by the provisions of the Environment (Protection) Act, 1986 (29 of 1986) and the rules made thereunder and shall be regulated in the manner specified in the Table below, namely:

TABLE

Sl. No	Activity	Remarks
(1)	(2)	(3)
Prohibited activities		
1.	Commercial mining, stone quarrying and crushing units.	(a) All new and existing (minor and major minerals), stone quarrying and crushing units shall be prohibited except for meeting the domestic needs of bona fide local residents including digging of earth for construction or repair of houses and for manufacture of country tiles or bricks for housing and for other personal consumption. (b) The mining operations shall be carried out in accordance with the order of the Hon'ble Supreme Court dated the 4 th August, 2006, in the matter of T.N. Godavarman Thirumudpal Vs. UOI in W.P.(C) No.202 of 1995 and dated the 21 st April, 2014 in the matter of Goa Foundation Vs. UOI in W.P.(C) No.435 of 2012.
2.	Setting of new saw mills and wood based industry.	No new or expansion of existing saw mills or wood based industry shall be permitted within the Eco-sensitive Zone.
3.	Use or production or processing of any hazardous substances.	Prohibited (except as otherwise provided) as per applicable laws.
4.	Setting of industries causing pollution (water, air, soil, noise, etc.).	(a) No new industries and expansion of existing polluting industries in the Eco-sensitive zone shall be permitted. (b) Only non-polluting industries shall be permitted within Eco-sensitive Zone as per classification of industries in the guidelines issued by Central Pollution Control Board in February 2016, unless otherwise specified in this notification.
5.	Establishment of major hydroelectric project.	Prohibited (except as otherwise provided) as per applicable laws.
6.	Commercial use of firewood.	Prohibited (except as otherwise provided) as per applicable laws.
7.	Use of polythene bags by shopkeepers.	Prohibited (except as otherwise provided) as per applicable laws.



[Part II – Rules 2001]

शुद्ध वातावरण : अनुसूची

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8.	Discharge of untreated effluents in natural water bodies or land area.	Prohibited (except as otherwise provided) as per applicable laws.
9.	Establishment of solid waste disposal site and common incineration facility for solid and bio-medical waste.	No new solid waste disposal site and waste treatment/processing facility of solid waste shall be permitted within the Eco-sensitive Zone and installation of common or individual incineration facility for treatment of any form of solid waste generated from industrial process and health establishment, hospitals, etc. shall be prohibited.
10.	Establishment of large scale commercial livestock and poultry farms by firms, companies etc.	Prohibited (except as otherwise provided) as per applicable laws except for meeting local needs.
11.	Setting up of brick kilns.	Prohibited (except as otherwise provided) as per applicable laws.
Regulated Activities		
12.	Under taking other activities related to tourism like over flying the Eco-sensitive Zone area by hot air balloon, helicopter, planes, gliders, etc.	Regulated under applicable laws.
13.	Commercial establishment of hotels and resorts.	No new commercial hotels and resorts shall be permitted within one kilometre of the boundary of the Protected Area or upto the extent of Eco-sensitive Zone, whichever is lesser, except for small temporary structures for ecotourism activities. Provided that, beyond one kilometre from the boundary of the Protected Area or upto the extent of Eco-sensitive Zone whichever is lesser, all new tourist activities or expansion of existing activities shall be in conformity with the Tourism Master Plan and guidelines as applicable.
14.	Construction activities.	No new commercial construction of any kind shall be permitted within one kilometre from the boundary of the Protected Area or upto extent of the Eco-sensitive Zone whichever is lesser. Provided that, local people shall be permitted to undertake construction at their land for their use including the activities listed in sub paragraph (1) of paragraph 1 as per building bye-laws to meet their residential needs.
15.	Travelling ground.	Establishment of new travelling ground shall be prohibited and old travelling grounds shall be regulated under applicable laws.
16.	Discharge of treated waste water/effluents in natural water bodies or land area.	The discharge of treated waste water/effluents shall be avoided to enter into the water bodies and efforts shall be made for recycle and reuse of treated waste water, and the discharge of treated waste water/effluents shall be regulated as per applicable laws.
17.	Air and vehicular pollution.	Regulated under applicable laws.
18.	Noise pollution.	Regulated under applicable laws.
19.	Extraction of ground water.	Regulated under applicable laws.
20.	Felling of trees.	(a) There shall be no felling of trees on the forest or Government or private lands without prior permission of the competent authority in the State Government. (b) The felling of trees shall be regulated in accordance with the provisions of the commercial Central or State Acts and the rules made thereunder.
21.	Migratory gradients.	Regulated under applicable laws and as per Zonal Master Plan.
22.	Erection of electrical and communication towers and laying of cables and other infrastructures.	All existing electric lines passing through the Eco-sensitive Zone shall be adequately insulated in the time frame specified in the Zonal Master Plan. Under ground cabling to be promoted.
23.	Widening and strengthening of existing roads and construction of new roads.	Shall be done with mitigation measures, as per applicable laws, rules and regulations and available guidelines.
24.	Fencing of existing perimeter of hotels and lodges.	Regulated under applicable laws.
25.	Collection of Forest Produce or Non-Timber Forest Produce (NTFP).	Regulated under applicable laws.
26.	Drastic change of agricultural system.	Regulated under applicable laws.



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THE GAZETTE OF INDIA : EXTRAORDINARY

[Part II—Sec. 3(n)]

22.	Commercial extraction of surface and ground water.	Regulated under applicable law.
23.	Movement of vehicles traffic at night.	Regulated for commercial purpose under applicable laws.
24.	Introduction of exotic species.	Regulated under applicable laws.
25.	Commercial sign boards and hoardings.	Regulated under applicable laws.
31.	Provision of hill slopes and street tanks.	Regulated under applicable laws.
32.	Infrastructure including fibre internet.	Shall be done with mitigation measures as per applicable laws, rules and regulations and available guidelines.
33.	Open well, bore well etc. for agriculture or other usage.	Regulated under applicable laws and the activity shall be monitored by the concerned authority.
34.	Solid waste management.	Regulated under applicable laws.
35.	Eco-tourism.	Regulated under applicable laws.
Prohibited Activities		
36.	Carrying agriculture and horticulture practices by hand cultivation along with ditches, dairy farming, aquaculture and fisheries.	Prohibited under applicable laws for use of lands.
37.	Small scale non polluting industries.	Non polluting industries termed as White Category as per classification of Industries listed by the Central Pollution Control Board in February 2016 and notified under small-scale and service industry, agriculture, livestock, horticulture or agro-based industry producing products from indigenous materials from the Eco-sensitive Zone shall be permitted by the competent Authority.
38.	Large scale farming.	Shall be actively promoted.
39.	Adoption of green technology for all activities.	Shall be actively promoted.
40.	Cottage industries including village industries.	Shall be actively promoted.
41.	Small scale harvesting.	Shall be actively promoted.
42.	Use of renewable energy and fuels.	High priority high etc. to be actively promoted.
43.	Agro forestry.	Shall be actively promoted.
44.	Use of eco friendly transport.	Shall be actively promoted.
45.	Small development.	Shall be actively promoted.
46.	Restoration of degraded land/ forest habitat.	Shall be actively promoted.
47.	Environmental awareness.	Shall be actively promoted.

5. Monitoring Committee: (1) The Central Government hereby constitutes a Monitoring Committee for effective monitoring of the Eco-sensitive Zone, which shall comprise of the following, namely:-

(i)	Concerned District Magistrate	-Chairman
ii)	An expert in the area of ecology and environment to be nominated by the Government of Himachal Pradesh for a period of three years.	-Member
(iii)	One representative of non-Governmental Organisation (working in the field of conservation/including heritage conservation) to be nominated by the Government of Himachal Pradesh for a period of three years.	-Member
(iv)	Member Secretary or Member, Himachal Pradesh State Biodiversity Board	-Member
(v)	Executive Engineer, Himachal Pradesh State Pollution Control Board	-Member
(vi)	Sub-Divisional Magistrate, Pangi	-Member
(vii)	Divisional Forest Officer (Territorial)	-Member
(viii)	Divisional Forest Officer (Wildlife)	-Member Secretary



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

Terms of Reference.-

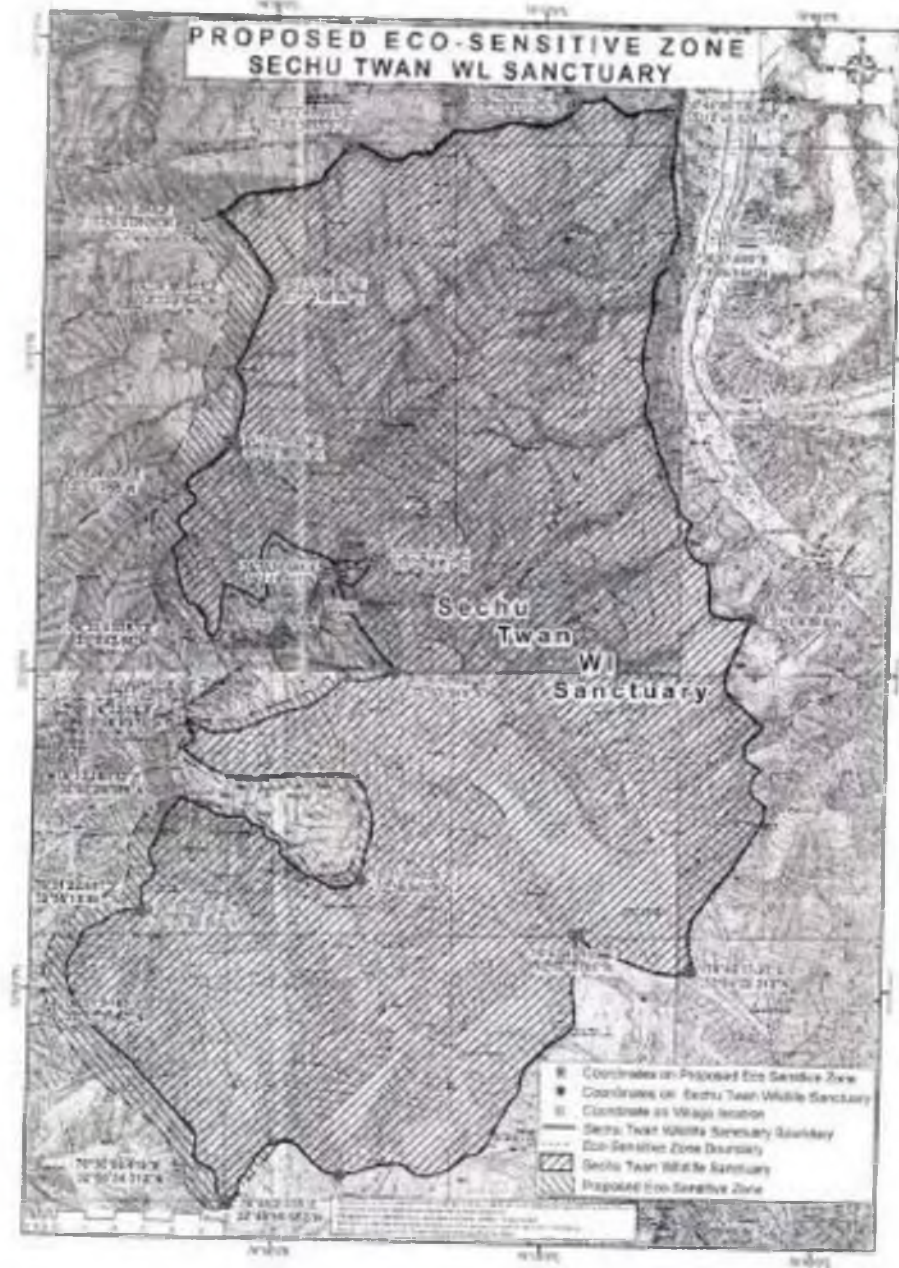
- (1) The tenure of the Monitoring committee shall be for three years or till the re-constitution of the new Committee by the State Government and subsequently the Monitoring Committee would be constituted by the State Government.
 - (2) The Monitoring Committee shall monitor the compliance of the provisions of this notification.
 - (3) The activities that are covered in the Schedule to the notification of the Government of India in the erstwhile Ministry of Environment and Forests number S.O. 1533 (E), dated the 14th September, 2006, and are falling in the Eco-sensitive Zone, except for the prohibited activities as specified in the Table under paragraph 4 thereof, shall be scrutinized by the Monitoring Committee based on the actual site specific condition and referred to the Central Government in the Ministry of Environment, Forest and Climate Change for prior environmental clearance under the provisions of the said notification. Only white categories of industries shall be considered as specified in the guidelines issued by the CPCB for "classification of Industries, 2018".
 - (4) The activities that are not covered in the Schedule to the notification of the Government of India in the erstwhile Ministry of Environment and Forests number S.O. 1533(E), dated the 14th September, 2006 and are falling in the Eco-sensitive Zone, except for the prohibited activities as specified in the Table under paragraph 4 thereof, shall be scrutinized by the Monitoring Committee based on the actual site-specific condition and referred to the concerned Regulatory Authorities.
 - (5) The Member Secretary of the Monitoring Committee or the concerned Commissioner shall be competent to file complaints under section 19 of the Environment (Protection) Act, 1986 (29 of 1986) against any person who contravenes the provisions of this notification.
 - (6) The Monitoring Committee may invite representatives or experts from concerned Departments, representatives from Industry Associations or concerned stakeholders to assist in its deliberations depending on the requirements on issue to some extent.
 - (7) The Monitoring Committee shall submit the annual action taken report of its activities as on 31st March of every year by 30th June of that year to the Chief Wild Life Warden of the State as per proforma appended at Annexure IV.
 - (8) The Central Government in the Ministry of Environment, Forest and Climate Change may give such directions, as it deems fit, to the Monitoring Committee for effective discharge of its functions.
6. The Central Government and State Government may specify additional measures, if any, for giving effect to provisions of this notification.
7. The provisions of this notification shall be subject to the orders, if any, passed, or to be passed, by the Hon'ble Supreme Court of India or the High Court or the National Green Tribunal.

[F. No. 2528/2016-ESZ-RE]

LALIT KAPUR, Scientist 'G'



Map of Sechu Twan Nalla Wildlife Sanctuaries, Himachal Pradesh



Annexure-II**Geo Co-ordinates of boundary of Sechu Tuan Nalla Wildlife Sanctuary and its Eco-sensitive Zone**

Sechu Tuan Nalla Wildlife Sanctuary	Eco-sensitive Zone
33°10'50.664"N 76°42'41.306"E	33°8'28.083"N 76°34'13.75"E
33°10'41.026"N 76°44'53.859"E	33°7'13.249"N 76°35'04.53"E
33°7'52.297"N 76°44'45.721"E	33°4'23.536"N 76°35'7.409"E
33°1'4.745"N 76°46'37.570"E	33°1'20.235"N 76°36'0.986"E
32°54'23.388"N 76°45'19.07"E	32°59'12.12"N 76°33'54.362"E
32°50'29.9"N 76°57'33.368"E	32°57'27.664"N 76°30'16.587"E
32°49'51.934"N 76°54'56.696"E	32°53'38.013"N 76°31'2.349"E

Annexure-III**List of villages along with Geo Co-ordinates falling within the Eco-sensitive Zone of Sechu Tuan Nalla Wildlife Sanctuary**

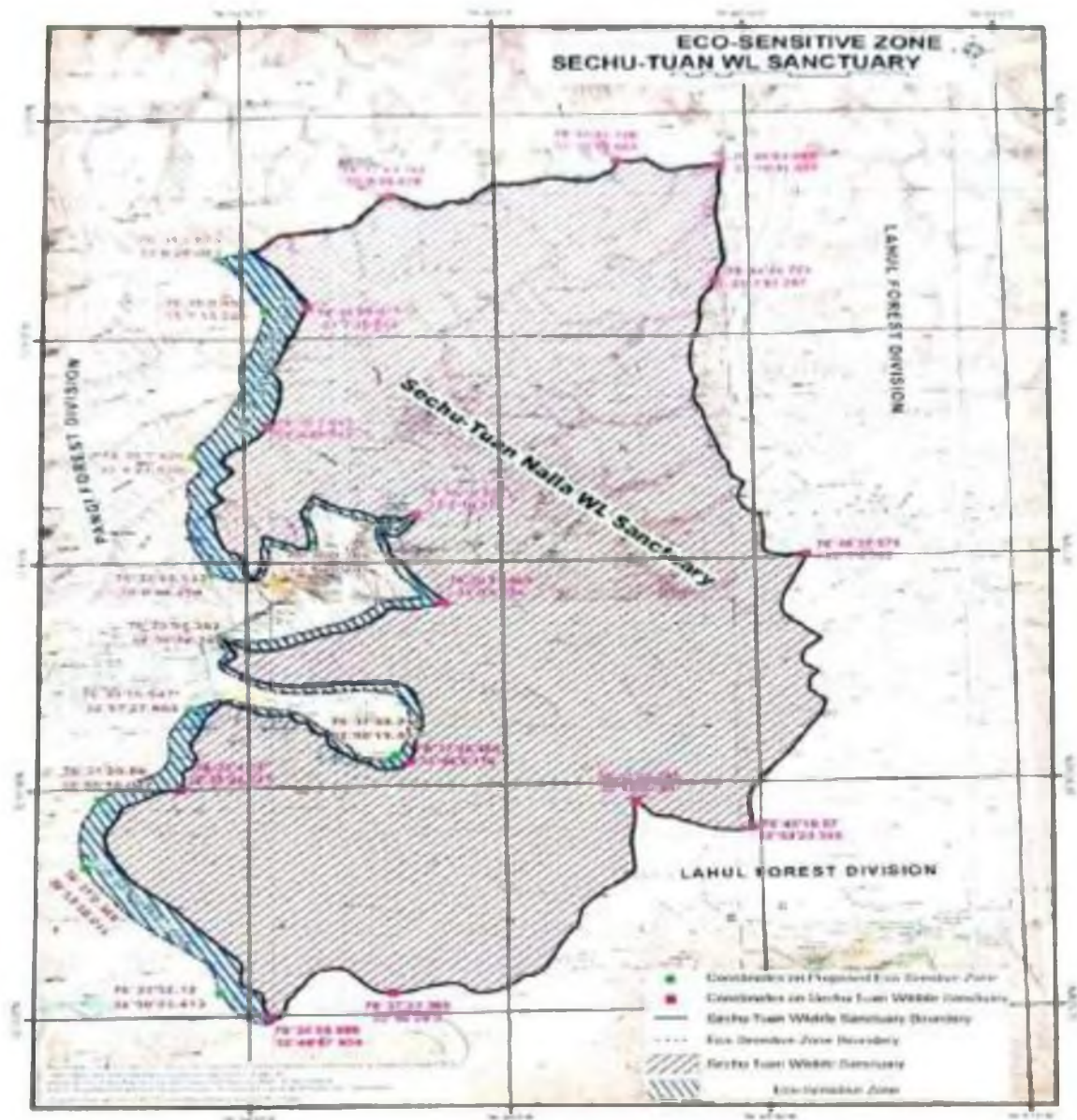
Name of the Village	Geo Co-ordinates
Hillu	33°00'203"N 76°35'252"E
Twan	33°1'376"N 76°37'121"E
Chiraj	33°1'254"N 76°36'346"E
Kalkhow	33°1'610"N 76°36'831"E
Sandhari	33°00'519"N 76°35'675"E

Annexure-IV**Performs of Action Taken Report: - Eco-sensitive Zone Monitoring Committee.-**

1. Number and date of meetings.
2. Minutes of the meetings. Mention main noteworthy points. (Attach minutes of the meeting as separate annexure).
3. Status of preparation of Zonal Master Plan including Tourism Master Plan.
4. Summary of cases dealt for rectification of error apparent on face of land record (Eco-sensitive Zone wise). (Details may be attached as annexure).
5. Summary of cases scrutinised for activities covered under the Environment Impact Assessment notification, 2006. (Details may be attached as separate annexure).
6. Summary of cases scrutinised for activities not covered under the Environment Impact Assessment notification, 2006. (Details may be attached as separate annexure).
7. Summary of complaints lodged under section 19 of the Environment (Protection) Act, 1986.
8. Any other matter of importance.

Annexure-IV

ECO SENSITIVE ZONE MAP OF SECHU TUAN NALLA WILDLIFE SANCTUARY



Annexure-V

GEO CO-ORDINATES OF BOUNDARY OF SECHU TUAN NALLA WILDLIFE SANCTUARY AND ITS ECO-SENSITIVE ZONE

Sechu Tuan Nalla Wildlife Sanctuary	Eco-sensitive Zone
33° 10' 50.664''N 76° 42' 41.106''E	33° 8' 28.083''N 76° 34' 1.875''E
33° 10' 41.026''N 76° 44' 53.899''E	33° 7' 13.249''N 76° 35' 0.453''E
33° 7' 52.297''N 76° 44' 45.723''E	33° 4' 23.536''N 76° 35' 7.409''E
33° 1' 4.745''N 76° 46' 37.576''E	33° 1' 20.235''N 76° 36' 0.386''E
32° 54' 23.388''N 76° 45' 19.07''E	32° 59' 12.12''N 76° 33' 54.362E
32° 50' 29.9''N 76° 37' 33.368''E	32° 57' 27.664''N 76° 33' 16.547''E
32° 49' 57.934''N 76° 34' 56.696''E	32° 53' 38.013''N 76° 31' 2.348''E



Annexure-VI

LIST OF VILLAGES ALONG WITH GEO CO-ORDINATES FALLING WITHIN THE ECO-SENSITIVE ZONE OF SECHU TUAN NALLA WILDLIFE SANCTUARY

Name of the Village	Geo Co-ordinates
Hillu	33 ⁰ 00'203''N 76 0 35'252''E
Twan	33 ⁰ 1'876''N 76 0 37'121''E
Chiroty	33 ⁰ 1'254''N 76 0 36'346''E
Kaalichow	33 ⁰ 1'610''N 76 0 36'831''E
Sandhari	33 ⁰ 00'519''N 76 0 35'675''E



Annexure-VII

LIST OF NATURAL WATER RESOURCE

Sr. No.	Name of Resource / Nallahs	Perennial/ Seasonal
1	ChasakBhatori Nalla	Perennial
2	Shidhani Nalla	Perennial
3	Harvin Nalla	Perennial
4	Tarunda Nalla.	Perennial
5	Jammu Nalla	Perennial
6	Gal Nalla.	Perennial



Annexure-VIII

CATTLE/BOVINE POPULATION IN ESZ OF SECHU TUAN NALLA WILDLIFE SANCTUARY

Sr. No.	Name of Species	Population
1	Sheeps	2150
2	Goats	475
3	Cattles	700
4	Mules	55
Total		3280



Annexure-IX

LIST OF OLD PLANTATIONS

Sr. No.	Name of plantation.	Spp. planted.	Area (Hac.).	Year of Establishment.
1.	Harvin Dhar	Willow= 1600 Alenthus = 400 Chharma = 500 Chulli = 1500 H.C. Nut = 1500 Total = 5500	5Hac.	2013-14
2.	Medicinal Plantation Murch	Kuth root = 18000 Kuth Seed = 4000 Total = 22000	5 Hac.	2016-17
3.	Medicinal Plantation CA ChasakBhatori	Kuth root = 11000 Kuth Seed = 5500 Total = 16500	5 Hac.	2017-18
4.	Affo. CA C/Bhatori	H.C. Nut = 1800 Kail = 800 Deo. = 900 W. nut = 1000 Willow = 1000 Total = 5500	5Hac.	-do-
5.	Enrichment CA Sechu	H.C. Nut = 400 W/Nut = 400 Chuli = 800 Total = 1600	2Hac.	2021-22
6.	Sandhari DPF	Deo. = 2500 Kail = 3000 H.C Nut = 2100 Kuth = 2200 Total = 9900	2Hac.	2012-13
7.	Kanu Bug	Deodar= 1800 Willow = 1100 Chuli = 700 Robinia = 1500 Ash = 400 Alenthus= 300 HC Sowing = 1500 Kuth Sowing = 1500	8Hac.	2014-14



		Total = 8800		
8.	Jammu CA	Chharma= 1800 Wal Nut = 700 Chuli = 2000 HC Nut = 1000 Total = 5500	5 Hac.	2014-15
9	BakhoonCA.	Wal Nut = 1500 Chulli = 1500 HC Nut = 1400 Total = 4400	4 Hac.	2015-16
10	Medicinal CATarundaNalla	Kuth Root = 12000 Kuth Sowing= 5600 Total = 17600	4 Hac.	-do-
11	Fruit & Fodder Jammu	H.C. Nut = 2000 Willow = 1000 HC Seed = 2500 Total = 5500	5 Hac.	2016-17
12	Medicinal CA Tarunda Dhar	Kuth Root = 11000 Kuth Sowing= 5500 Total = 6600	5Hac.	2017-18
13	Affo. CA Jammu Nalla	H.C. Nut = 1800 Kail = 800 Deo. = 900 W. nut = 1000 Willow = 1000 Total = 5500	5 Hac.	2017-18
14	Plantation behind Range office Sechu	H.C. Nut = 600 Kail = 400 W. nut = 400 Chulli = 200 Total = 1600	2 Hac.	2020-21
15	Plantation behind I/Hut Twan	H.C. Nut = 600 Kail = 400 W. nut = 400 Willow = 200 Total = 1600	2 Hac.	2021-22



Annexure-X

LIST OF TRACK ROUTES, BRIDLE PATHS, INSPECTION PATHS AND FOOT PATHS

Sr. No.	Particulars	Length
1	T/Route from C/Bhatorito Gul Dhar Pass	7.00 Km
2	T/Route from Twan to Twan Dhar (Pass)	9.00 Km
3	T/Route Chiroti to Ash Dhar	8.810 Km
4	T/Route C/Bhatori to Harvin Dhar	5.50 Km
5	B/Path Chimi to Murch	1.50 Km.
6	B/Path Twan to Tarunda	7.5 Km.
7	B/Path Murch to C/Bhatori	3.0 Km
8	I/Path Kali Chho to Tarunda	6.40 Km
9	I/Path Sechu to Shidhani Dhar	15.0 Km
10	I/Path Murch to Shidhani Nalla	2.50 Km.
11	I/Path Sechu to Harvin Dhar	10.00 Km
12	Foot Path from Twan to Twan Dhar (Topiun Dhar)	3.50 Km



Annexure-XI

LIST OF DEMARCATED PROTECTED FORESTS

Sr. No.	Name of DPF	Area in ha
1	Gajroon DPF	154
	Total	154



Annexure-XII

LIST OF FIRE PRONE AREAS

The following areas in the Sechu Tuan Nalla wildlife sanctuary are sensitive from fire hazards which need to be taken care of so that there is minimum loss to the habitat as well as to the wildlife itself.

Sr. No.	Name of Fire Sensitive Area	Area in ha.
1.	Gajroon DPF	154 Ha.
4.	Sechu Dhar	608 Ha.
6.	ChasakBhatori Dhar	4000 Ha.
7.	Harvin Dhar	5620 Ha.
8.	Topiun Dhar	11969 Ha.
9.	Chogulu Dhar	3138 Ha.
10.	Gal Dhar	2227 Ha.
	Total:-	27716 Ha.



Annexure-XIII

LIST OF NATURAL SALT LICKS AND PROPOSED LOCATION FOR ARTIFICIAL SALT LICKS IN SECHU TUAN NALLA WILDLIFE SANCTUARY

A. NATURAL SALT LICKS		
Sr. No.	Place	Location
1	Thanan	ChasakBhatori Dhar
2	Murch	GajroonDPF
3	Malkotu	ChasakBhatori Dhar
4	Kaoyal	Gal Dhar.
5	Guru ka aliyas.	Topiun Dhar
6	Raja Ka dera	Shidhani Dhar

B. PROPOSED ARTIFICIAL SALT LICKS				
Sr. No.	Place	Location	Latitude	Longitude
1	Hillu	Hillu Dhar	33°02'13"N	76°35'37"E
2	Harvin Ridge	Harvin Dhar	32°59'04"N	76°35'14"E
3	Tarunda	Trunda Dhar	33°03'26"N	76°37'05"E



Annexure-XIV

EXISTING CAMPING SITES IN SECHU TUAN NALLA WILDLIFE SANCTUARY

Sr. No.	Name of camping site	Geo Coordinates		Altitude (mtr.)
		Latitude	Longitude	
1	Camping site at Murch	32° 55' 57" N	76° 36' 29" E	3567
2	Camping site at ChasakBhatori	32° 56' 12" N	76° 36' 49" E	3637
3	Camping site at Jammu Nalla	33° 01' 40" N	76° 37' 46" E	3796
4	Camping site at Tarunda nalla	33° 02' 17" N	76° 37' 10" E	3220

PROPOSED CAMPING SITES IN SECHU TUAN NALLA WILDLIFE SANCTUARY

Sr. No.	Name of Proposed site	Geo Coordinates		Altitude (mtr.)
		Latitude	Longitude	
1	Camping site at Tarunda Dhar	33° 04' 25" N	76° 37' 38" E	3365
2	Camping site at Jammu Dhar	33° 01' 33" N	76° 39' 39" E	3460
3	Camping site at Shidhani Dhar	32° 57' 32" N	76° 32' 54" E	3689
4	Camping site at Gal Dhar	33° 00' 41" N	76° 36' 21" E	3561
5	Camping site at Hillu Dhar	33° 01' 39" N	76° 36' 11" E	3322
6	Camping site at Topiun Dhar	33° 05' 43" N	76° 39' 43" E	3520
7	Camping site at ChasakBhatori Dhar	32° 56' 13" N	76° 37' 01" E	4197
8	Camping site at Harvin Dhar	32° 58' 11" N	76° 33' 58" E	3809
9.	Trekker hut at ChasakBhatori	32° 56' 01" N	76° 37' 32" E	3624
10.	Trekker hut at Tuan	33° 01' 49" N	76° 37' 06" E	3026
11.	Trekker hut at Sechu	32° 59' 11" N	76° 33' 52" E	2663



Annexure-XV

NOTIFICATION OF HUMAN WILDLIFE CONFLICTS

Government of Himachal Pradesh
Forest Department

No. FFE-B-A (10)-1/2009

18 Dated Shimla-2, the

Notification

In supersession of all previous Notification Nos. Fts (F)6-7/82-Loose, Fts-B(B)-6-7/82-II, FFE-B-A(10)-2005 and FFE-B-A(10)-1/2009 dated 09.04.1996, 27.08.2001, 20.07.2006 and 04.03.2014 regarding relief due to losses caused to human beings and domestic livestock by the Wild animals as defined in Wildlife (Protection) Act, 1972, the Governor, Himachal Pradesh is pleased to notify the following enhanced relief rates as under:-

S.No	Particulars	Enhanced Rates (in Rupees)
1.	In case of death of human being.	4,00,000/-
2.	In case of permanent disability to human being.	2,00,000/-
3.	In case of grievous injuries/partial disability to human being.	75,000/-
4.	In case of simple injury to human being as per actual cost of medical treatment subject to maximum.	15,000/-
5.	In case of loss of Horse, Mule, Buffalo, Ox, Yak and Camel	30,000/-
6.	In case of loss of Cow Jersey and cross breed.	15,000/-
7.	In case of loss of Cow (local breed), Donkey, Churu, Churi & Pashmina Goat.	6,000/-
8.	In case of loss of Sheep, Goat and Pig.	3,000/-
9.	In case of loss of young ones of Buffalo, Cow Jersey and all other breeds, Mule, Yak, Horse, Camel, Churu, Churi, Donkey, Pashmina Goat, Sheep and Goat.	15,00/-

The following guidelines will be followed for grant of relief:-

- i) Production of postmortem report in case of loss of human life, certificate in case of grievous injury, partial & permanent disability and prescription slip as well as verification of actual cost of Medical treatment in case of simple injury (including Monkey bites) from the Medical officer of a Government Institution/Govt. recognized Medical Institution, as the case may be.
- ii) The verification of loss of cattle that was actually caused by wild animal can be done by the Pradhan/Up Pradhan of Panchayat/Patwari/President Notified Area Committee/ Chairman, Municipal Committee, Commissioner/ Mayor/Deputy Mayor, Municipal Corporation of the area/Elected Member of the Cantonment Board area/Councilor of the area, Range Officer/Deputy Ranger/Forest Guard or any other forest officer higher in rank than a Range Officer, Veterinary Officer or Veterinary Pharmacist or officer authorized by Veterinary officer of the area.
- iii) All DFOs in HP shall be the final authority to sanction all cases of relief claims on account of losses caused by the wild animals to humans and domestic livestock.
- iv) The DFOs shall release 25% of the amount of relief prescribed for human loss/permanent & partial disability/grievous injury on receipt of report as interim relief immediately to the family of the deceased/affected person after due



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

Endst. No. As above Dated Shimla-2 the

18 August, 2018

Copy forwarded to the following for information and necessary action:-

1. All the Additional Chief Secretaries/ Principal Secretaries /Secretaries to the Government of Himachal Pradesh.
2. All the Heads of Departments in Himachal Pradesh.
3. All the Deputy Commissioners in Himachal Pradesh.
4. The Principal Chief Conservator of Forests, (HoFF) HP Shimla-1.
- ✓ 5. The Principal Chief Conservator of Forests, (Wildlife) HP Shimla-1.
6. APCCFs (IT), CCFs/DFOs (Territorial & Wildlife).
7. Controller, HP Printing Press, Shimla for publication in H.P., Rajpatra.
8. Guard file.

(Sat Pal Dhiman) 18-8-2018

Joint Secretary (Forests) to the
Government of Himachal Pradesh
Ph.No. 0177-2621874

Endst. No. WL/Compensation Rates/ WLM/ 3840-99 dated/ 25-09-2018

Copy is forwarded to all CCFs/CFs/DFOs (Territorial) and (Wildlife) in H.P.
for information and necessary action please.

Chief Conservator of Forests (Wildlife)
O/o Principal Chief Conservator of Forest, (Wildlife)
-cum-Chief Wildlife Warden, HP Shimla-171001

33
24/9/18



- verification in anticipation of formal sanction without delay. The balance amount will be released after receipt of the complete relief claim.
- v) For immediate disbursement of relief claim, a corpus fund will be created at the level of Principal Chief Conservator of Forests (Wildlife)-cum Chief Wildlife Warden. All the budget allocations from the state as well as from State CAMPA in respect of relief shall be deposited in the aforesaid corpus fund. The PCCF (WL) will ensure the disbursement of relief amount in respect of aforesaid categories of losses on the same day on receipt of a request from the concerned DFO. The DFO concerned will ensure to send such requests by E-mail/ Fax asking for funds of relief amount on the same day of incident or on the day of receipt of information of the incident from the claimant. DFO will make payment of aforesaid 25% of the relief amount immediately from the budget available with him under any scheme and same will be recouped on receipt of funds from the Chief Wildlife Warden.
- vi) All claims in respect of simple injury to humans shall be restricted to actual cost of medical treatment verified by the Medical Officer of a Government Institution/Govt. recognized Medical Institution subject to maximum of Rupees 15,000/- as prescribed above in the categories of losses.
- vii) All cases of losses caused by the wild animals should be reported by the applicant to the nearest Forest Office within seven days of the incident and claims for relief is filed within one month to the nearest Range Forest Office under control of Divisional Forest Officer (territorial or wildlife). The claim can be filed either at the place where the loss by wild animal has occurred/reported or where the applicant resides. All time barred cases shall be sent to Govt. of Himachal Pradesh for approval.
- viii) The relief will be granted in case of loss of livestock to the owner of the livestock. These rates would be applicable for killing of domestic animals by wild animals as defined in Wildlife (Protection) Act, 1972 in cattlesheds/cowsheds, private land, private premises and forests.
- ix) The relief in case of loss of the human being will be granted in the order of preference given below:-
- (a) Wife or husband, as the case may be.
 - (b) Sons, unmarried or divorced daughters and children of predeceased son (equal share).
 - (c) Daughters. (equal share).
 - (d) Grand Children being children of his/her sons or daughters who died before him/her (equal share).
 - (e) Father or Mother.
 - (f) Brothers or sisters or children of the deceased brothers (equal share).
 - (g) Failing all above any other next of kin entitled to a share in the estate.
- All the prescribed rates shall be made applicable with immediate effect.

By Order,

Tarun Kapoor
Additional Chief Secretary (Forests) to the
Government of Himachal Pradesh



Annexure-XVI

LIST OF TREES, SHRUBS AND CLIMBERS IN SECHU TUAN WILDLIFE SANCTUARY

A. LIST OF TREES

S. No.	Scientific Name	Local Name	English Name	IUCN status
1	<i>Abies pindrow</i>	Rai	Silver Fir	Least Concern
2	<i>Acer caesium</i>	Mandhar	Indian Maple	Least Concern
3	<i>Acer caudatum</i>	Mandhar	Maple	Least Concern
4				
5	<i>Acer villosum</i>	Mandhar	Maple	Least Concern
6	<i>Aesculus indica</i>	Goon	Indian Horse chestnut	Vulnerable
7	<i>Betula alnoides</i>	Bhuj	Himalayan Birch	Least Concern
8	<i>Betula utilis</i>	Bhuj	Himalayan White Birch	Least Concern
9	<i>Carpinus caoinea</i>	Bhakri	NA.	-NA-
10	<i>Cedrus deodara</i>	Diyar	Himalayan cedar	Least Concern
11	<i>Fraxinus floribunda</i>	Sunnu	Himalayan Ash	Least Concern
12	<i>Juglans regia</i>	Khor	Walnut	Near Threatened
13	<i>Lonicera quiqueloculareis</i>	Bak	Translucent honey suckle	-NA-
14	<i>Parrotiopsis jacquemontiana</i>	Killar	Parrotia	-NA-
15	<i>Picea morinda</i>	Tosh	Spruce	Least Concern
16	<i>Pleris ovalifolia</i>	Ailan	NA.	-NA-
17	<i>Populus alba</i>	Chaloon	Poplar	-NA-
18	<i>Populus ciliata</i>	Pahari Chulanooj	Himalayan Poplar	Least Concern
19	<i>Prunus armenika</i>	Chir	Apricot	Least Concern
20	<i>Prunus padus</i>	Jammu	Bird cherry	Least Concern
21	<i>Prunus persica</i>	Aru	Peach	-NA-
22	<i>Pyrus baccata</i>	Lewar	Siberian Crab Apple	Least Concern
23	<i>Pyrus lanata</i>	Amlor	NA.	-NA-
24	<i>Pyrus malus</i>	Seo	Wild apple	-NA-
25	<i>Pyrus pashia</i>	Kainth	Indian Wild pear	Least Concern



26	<i>Rhododendron arboreum</i>	Cheers	Red Burans	Least Concern
27	<i>Rhododendron campanulatum</i>	Cheo	Rhododendron	Least Concern
28	<i>Salix wallichiana</i>	Bedah	Wallich Willow	-NA-
29	<i>Taxus wallichiana</i>	Rakhaal	Himalayan Yew	-NA-
30	<i>Ulmus wallichiana</i>	Maral	Himalayan elm.	Vulnerable

B. LIST OF SHRUBS

Sr. No	Scientific Name	Local Name	English Name	IUCN Status
1.	<i>Berberis aristata</i>	Kemel	Indian Barberry	Least Concern
2.	<i>Coria nepalensis</i>	Ancha	Masuri Berry	-NA-
3.	<i>Cotoneaster microphyllus</i>	-	Rockspray Cotoneaster	-NA-
4.	<i>Daphne mucronata</i>	-	Kashmir Daphne	-NA-
5.	<i>Elsholtzia fruticosa</i>	-	Shrubby Mint	-NA-
6.	<i>Girardinia diversifolia</i>	Jungli/Pahari Ahem	Himalayan Nettle	-NA-
7.	<i>Juniperus communis</i>	Bitthal	Common Juniper	Least Concern
8.	<i>Juniperus indica</i>	Bitthal	Black Juniper	Least Concern
9.	<i>Juniperus recurva</i>	Bitthal	Drooping Juniper	Least Concern
10.	<i>Neilliaru briflora</i>	-	East Himalayan Neillia	-NA-
11.	<i>Rhododendron anthopogon</i>	-	Dwary Rhododendron	Least Concern
12.	<i>Rosa macrophylla</i>	-	Big Hip Rose	-NA-
13.	<i>Rosa moschata</i>	Ban Gulab	The Musk Rose	-NA-
14.				
15.	<i>Rubus ellipticus</i>	Aakhee	Golden Himalayan Raspberry	Least Concern
16.				
17.	<i>Salix denticulata</i>	Chota Bedah	Elegant Willow	Least Concern
18.	<i>Saussurea albescens</i>	-	Pink Saw Wort	-NA-
19.	<i>Sorbaria tomentosa</i>	-	Kashmir False Spirea	Near Threatened
20.	<i>Spiraea canescens</i>	-	Grey Stem Spiraea	Least Concern
21.	<i>Urtica dioica</i>	Alun	Stinging Nettle	Least Concern
22.	<i>Viburnum grandiflorum</i>	Trandolu	Grand	-NA-



			Viburnum	
23.	<i>Wikstroemia canescens</i>	Chambat	Himalayan Tie Bush	-NA-
24.	<i>Zanthoxylum armatum</i>	Timber	Winged Prickly Ash	Least Concern

A. LIST OF CLIMBERS

Sr. No	Scientific Name	Local Name	English Name	IUCN Status
1.	<i>Hedera nepalensis</i>	-	Himalayan Ivy	-NA-
2.	<i>Parthenocissus semicordata</i>	-	Himalayan Woodbine	-NA-
3.	<i>Smilax glaucophylla</i>	-	Elegant Smilax	-NA-

D. LIST OF MEDICINAL PLANTS

Sr. No	Scientific Name	Local Name	English Name	IUCN Status
1.	<i>Acomastylis elata</i>	-	High Avens	-NA-
2.	<i>Aconitium chasmanthum</i>	Keri Patis	Gaping Monkshood	Critically Endangered
3.	<i>Aconitium heterophyllum</i>	Mithi Patis	Patis	Endangered
4.	<i>Aconitum violaceum</i>	Dudhia/Mitha Telia	Violet monkshood	Vulnerable
5.	<i>Actea spicata L. varacuminata</i>	-	Himalayan baneberry	-NA-
6.	<i>Anaphalis margaritacea</i>	Bhull	Western Pearly Everlasting	Least Concern
7.	<i>Anaphalis triplinervis</i>	-	Wooly Pearly Everlasting	Least Concern



8.	<i>Melanoseris macrorhiza</i>	Chyate	Violet Dandelion	-NA-
9.	<i>Androsa ceprimuloides</i>	-	Rock Jaismine	-NA-
10.	<i>Androsace rotundifolia</i>	-	Round Leaf Rock Jasmine	-NA-
11.	<i>Androsaces armentosa</i>	-	Rock Jaismine	-NA-
12.	<i>Anemonastum obtusilobum</i>	Ratan Jot	Himalayan Thimble Weed	-NA-
13.	<i>Angelica glauca</i>	Chaura	Smooth Angelica	Endangered
14.	<i>Aquilegia pubiflora</i>	-	Himalayan Colimbine	-NA-
15.	<i>Arisaema flavum</i>	-	Yellow Cobra Lilly	-NA-
16.	<i>Aster albescen's</i>	-	Fading Himalayan Aster	-NA-
17.	<i>Aster thomsonii</i>	-	Thomson's aster	-NA-
18.	<i>Astragalus grahamianus</i>	-	Grahm's Milk Vetch	-NA-
19.	<i>Bergenia ciliata</i>	-	Frilly bergenia	-NA-
20.	<i>Caltha palustris</i>	-	Marsh Marigold	Least Concern
21.	<i>Cassiope fastigiata</i>	-	Himalayan Heather	-NA-
22.	<i>Chaerophyllum reflexum</i>	-	Kashmir Chervil	-NA-
23.	<i>Cirsium falconeri</i>	Pahari sentha	Falconers Thistle	-NA-
24.	<i>Fragaria nubicola</i>	-	Himalayan Strawberry	-NA-
25.	<i>Corydalis govaniana</i>	-	Govan's Corydalis	-NA-
26.	<i>Cremathodium arnicoides</i>	-	Himalayan Daisy	-NA-
27.	<i>Dactylorhiza hatagirea</i>	Salam Panja	Himalayan Marsh Orchid	-NA-



28.	<i>Delphinium cashmerianum</i>	-	Kashmir Larkspur	-NA-
29.	<i>Delphinium roylei</i>	-	Royale's Larlaspur	-NA-
30.	<i>Dolomiaea macrocephala</i>	Pahari Dhoop	Himalayan Dolomiaea	-NA-
31.	<i>Epilobium wallichiana</i>	-	Willow Herb	-NA-
32.	<i>Erigeron multiradiatus</i>	-	Himalayan Fleabane	-NA-
33.	<i>Euphorbia cognate</i>	-	-	-NA-
34.	<i>Frageri anubicola</i>	-	Himalayan Strawberry	-NA-
35.	<i>Fritilaria roylei</i>	Jungli Kufera	Yellow Himalayan fritillary	Critically Endangered
36.	<i>Gentiana carinata</i>	Kadu	Dark Blue Gentia	-NA-
37.	<i>Gentiana kurroo</i>	-	Himalayan Gentian	Critically Endangered
38.	<i>Geranium himalayense</i>	Lal Jari	Himalayan Geranium	-NA-
39.	<i>Geranium wallichianum</i>	Lal Jari/Ratan Jot	Wallich Geranium	-NA-
40.	<i>Gerbera gossypina</i>	Jhulu Kuferu	Hairy Gerbera Daisy	-NA-
41.	<i>Gypsophila cerastioides</i>	-	Himalayan Baby Breath	-NA-
42.	<i>Hackelia uncinata</i>	-	Hooked stickseed	-NA-
43.	<i>Hyoscyamus niger</i>	Kaljager	Blackhenbane	-NA-
44.	<i>Impatiens glandulifera</i>	-	Himalayan Balsan	-NA-
45.	<i>Impatiens scabrida</i>	-	Three horned balsan	-NA-
46.	<i>Indigofera heterantha</i>	Pre	Himalayan Indigo	-NA-
47.	<i>Inula grandiflora</i>	-	Showy Inula	Endangered



48.	<i>Inula royleana</i>	Pauskara	Himalyan Elecampane	-NA-
49.	<i>Iris kemaonensis</i>	-	Kumaon Iris	-NA-
50.	<i>Leontopodium himalayanum</i>	-	Himalayan Edelweiss	-NA-
51.	<i>Lingulariaamplexicaulis</i>	-	Stem Claspineyligularia	-NA-
52.	<i>Logistic kunawurensis</i>	-	Kinnaur Lagotis	-NA-
53.	<i>Lomatogonium carinthiacum</i>	-	Blue Felt Wort	-NA-
54.	<i>Meconopsis aculeata</i>	Kanta	Blue Poppy	-NA-
55.	<i>Megacarpaea polyandra</i>	Ban Palak	Barmola Rook	-NA-
56.	<i>Melanoseris macrorhiza</i>	Chyate	Violet Dandelion	-NA-
57.	<i>Morina coulteriana</i>	-	Yellow Whorl Flower	-NA-
58.	<i>Morina longifolia</i>	-	Himalayan Whorl Flower	-NA-
59.	<i>Morina polyphylla</i>	-	Many Leaved Whorl Flower	-NA-
60.	<i>Myosotis sylvatica</i>	-	Wood Forget-me- not	-NA-
61.	<i>Oxytropis lapponica</i>	-	Northen Milk Vetch	-NA-
62.	<i>Pedicularis bicornuta</i>	-	Horned Lousewort	-NA-
63.	<i>Pedicularis pyramidata</i>	-	Pyramid Lousewort	Least Concern
64.	<i>Persicaria nepalensis</i>	-	Spolte dLadysthumb	-NA-
65.	<i>Picrorhia kurroa</i>	Karoo	Kutki	Endangered
66.	<i>Pleurospermum candollei</i>	Gughi	Paper Cup Flower	-NA-



67.	<i>Podophyllum bezecuidrum</i>	Ban Kakri	Himalayan Mapple	Threatened
68.	<i>Polygontum cirrhifolium</i>	-	Coiling Leaf Soloman Seal	-NA-
69.	<i>Polygonum molle</i>	Trod	Sikkim Knotweed	-NA-
70.	<i>Potentilla argyrophylla</i>	-	Himalayan cinquefoil	-NA-
71.	<i>Potentilla atosanguinea</i>	-	Himalayan cinquefoil	-NA-
72.	<i>Potentilla cuneata</i>	-	Five finger cinquefoil	-NA-
73.	<i>Potentilla nepalensis</i>	-	Nepal cinquefoil	-NA-
74.	<i>Primula denticulate</i>	Salkute	Drum Stick Primula	-NA-
75.	<i>Primulain volucrata</i>	-	Tall Pose Primrose	-NA-
76.	<i>Primula macrophylla</i>		Moorcraft Primos	-NA-
77.	<i>Primula reptans</i>	-	Creeping Primrose	-NA-
78.	<i>Pseudomertensia malkioide</i>	-	-	-NA-
79.	<i>Ranunculus diffusus</i>	-	Spreading Butter Cup	-NA-
80.	<i>Rheum austral</i>	Chukhri	Red-veinet Pie Plant	-NA-
81.	<i>Rhodiola himalensis</i>	-	Himalayas Rhodiola	-NA-
82.	<i>Rhodiola imbricate</i>	Rose Root	Rhodiola	-NA-
83.	<i>Ribes griffthi</i>	-	-	-NA-
84.	<i>Roscoeia purpurea</i>	-	Purple Roscoe Lily	-NA-
85.	<i>Saussurea albescens</i>	Pirya	Pink Saw Wort	-NA-
86.	<i>Saussurea graminifolia</i>	Baan	Grass leaved Saw Wort	-NA-



87.	<i>Saussurea nepalensis</i>	-	Nepal Saw Wort	-NA-
88.	<i>Saxifraga sibirica</i>	-	Siberian saxifrage	-NA-
89.	<i>Selium vaginatum</i>	-	Bhut Keshi	-NA-
90.	<i>Semenovia candicans</i>	-	White leaf Hogweed	-NA-
91.	<i>Senecio chrysanthemoides</i>	-	Cherful Senico	-NA-
92.	<i>Senerio jacquementianus</i>	-	-	-NA-
93.	<i>Silene edgeworthii</i>	-	Edgeworth's Campion	-NA-
94.	<i>Swertia cordata</i>	-	Heart Leaf Swertia	-NA-
95.	<i>Tanacetum dolichophyllum</i>	Ghuggulu	Himalayan Tansies	-NA-
96.	<i>Thermopsis barbata</i>	-	Black Pea	-NA-
97.	<i>Thymus linearis</i>	Jungli Ajwain	Wild Thyme	-NA-
98.	<i>Trillium govanianum</i>	Naag Chattri	Himalayan Trillium	-NA-
99.	<i>Trollius acaulis</i>	-	Dwarf Globe Flower	-NA-
100.	<i>Valeriana jatamansi</i>	Smak	JatamansiMushkbala	-NA-
101.	<i>Viola biflora</i>	-	Alpine yellow violet	-NA-
102.	<i>Waldheimia globra</i>	-	Smooth Ground Daisy	-NA-
103.	<i>Waldheimia tomentoses</i>	-	White Leaf Ground Daisy	-NA-



Annexure-XVII

LIST OF BIRDS IN SECHU TUAN NALLA WILDLIFE SANCTUARY

Sr.no.	Scientific Name	Common Name	Schedule WLP Act, 1972	IUCN Status
1	<i>Accipiter badius</i>	Shikra	Sch. I Part-B	Least Concern
2	<i>Aquila Chrysaetos</i>	Golden Eagle	Sch. I Part-B	Least Concern
3	<i>Sarcogyps calvus</i>	King vulture	Sch II	Least Concern
4	<i>Gyps fulvus</i>	Griffon vulture	Sch. 1 Part- B	Least Concern
5	<i>Gyps himalayensis</i>	Himalayan griffon vulture	Sch. 1 Part- B	Near Threatened
6	<i>Neophron pescnopterus</i>	Egyptian vulture	Sch. 1 Part- B	Endangered
7	<i>Falco peregrinus</i>	Peregrine falcon	Sch I Part-B	Least Concern
8	<i>Falco tinnuculus</i>	Kestrel	Sch II Part -B	Least Concern
9	<i>Lerwa lerwa</i>	Snow partridge	Sch II Part -B	Least Concern
10	<i>Tetraogallus himalayensis</i>	Himalayan Snow cock	Sch II Part -B	Least Concern
11	<i>Alectoris chukar</i>	Chukor	Sch II Part -B	Least Concern
12	<i>Lophophorus impejanus</i>	Monal	Sch I Part -B	Least Concern
13	<i>Streptopelia chinensis</i>	Spotted Dove	Sch II Part -B	Least Concern
14	<i>Streptopelia decaoto</i>	Indian Ring Dove	Sch II Part -B	Least Concern
15	<i>Columba palumbus</i>	Common Wood Pigeon	Sch II Part -B	Least Concern
16	<i>Cuculus saturates</i>	Himalayan Cuckoo	Sch. II Part -B	Least Concern
17	<i>Eudynamys scolopaceus</i>	Koel	Sch. II Part -B	Least Concern
18	<i>Glaucidium cuculoides</i>	Barred Owlet	Sch. II Part -B	Least Concern
19	<i>Strix aluco</i>	Himalayan wood owl	Sch. II Part -B	Least Concern
20	<i>Collocalia brevirostris</i>	Himalayan swiftlet	Sch. II Part -B	Least Concern
21	<i>Apus melba</i>	Alpine swift	Sch. II Part -B	Least Concern
22	<i>Apus affinis</i>	House swift	Sch. II Part -B	Least Concern
23	<i>Merops orientalis</i>	Small green bee eater	Sch. II Part -B	Least Concern
24	<i>Upupa epops</i>	Hoopoe	Sch. II Part -B	Least Concern
25	<i>Mergalaima virens</i>	Himalayan green barbet	Sch. II Part -B	Least Concern
26	<i>Picuss quamatus</i>	Scaly woodpecker	Sch. II Part -B	Least Concern
27	<i>Dendrocopos himalayensis</i>	Himalyan Pied	Sch. II Part -B	Least Concern



		woodpecker		
28	<i>Lanius schach</i>	Rufous backed shrike	-	Least Concern
29	<i>Dicrurus macrocerus</i>	Black drongo	Sch. II Part -B	Least Concern
30				
31	<i>Urocissa flavirostris</i>	Yellow billed blue magpie	Sch. II Part -B	Least Concern
32	<i>U. erythrorhyncha</i>	Red billed blue magpie	Sch. II Part -B	Least Concern
33	<i>Dendrocitta formosae</i>	Himalayan tree pie	Sch. II Part -B	Least Concern
34	<i>Nucifraga caryocatactes</i>	Himalayan nutcracker	Sch. II Part -B	Least Concern
35	<i>Corvus macrorhynchos</i>	Jungle crow	Sch. II Part -B	Least Concern
36	<i>Pyconotus cafer</i>	Red vented bulbul	Sch. II Part -B	Least Concern
37	<i>Garrulaxal bogularis</i>	White throat laughing thrush	Sch. II Part -B	Least Concern
38	<i>Eumyias thalassina</i>	Verditer Flycatcher	Sch. II Part -B	Least Concern
39	<i>Rhipidura hypoxantha</i>	Fantail flycatcher	Sch. II Part -B	Least Concern
40	<i>Luscinia svecica</i>	Blue throat	Sch. II Part -B	Least Concern
41	<i>Tarsiger cynarus</i>	Orange flanked bush Robin	Sch. II Part -B	Least Concern
42	<i>Phoenicurus ochruros</i>	Black redstart	Sch. II Part -B	Least Concern
43	<i>Phoenicurus frontalis</i>	Blue fronted redstart	Sch. II Part -B	Least Concern
44	<i>Enicarus scoulrea</i>	Forktail	Sch. II Part -B	Least Concern
45	<i>Saxicola caprata</i>	Pied Bushchat	Sch. II Part -B	Least Concern
46	<i>Chaimarrornis leucocephalus</i>	White-capped red start	Sch. II Part -B	Least Concern
47	<i>Monticola solitarius</i>	Blue Rock-Thrush	Sch. II Part -B	Least Concern
48	<i>Monticola cinclohynchus</i>	Blue- headed Rock-Thrush	Sch. II Part -B	Least Concern
49	<i>Turdus merula</i>	Blackbird	Sch. II Part -B	Least Concern
50	<i>Zoothera wardii</i>	Pied Ground-Thrush	Sch. II Part -B	Least Concern
51	<i>Cinclus cinclus</i>	White-Throated Dipper	Sch. II Part -B	Least Concern
52	<i>Pyrus major</i>	Great Tit	Sch. II Part -B	Least Concern
53	<i>Sitta leucopsis</i>	White-cheeked Nuthatch	Sch. II Part -B	Least Concern
54	<i>Certhia himalayana</i>	Himalayan tree	Sch. II Part -B	Least Concern



		creeper		
55	<i>Anthus hodgsoni</i>	Indian tree pipit	Sch. II Part -B	Least Concern
56	<i>Motacilla citreola</i>	Yellow-headed Wagtail	Sch. II Part -B	Least Concern
57	<i>Motacilla cinerea</i>	Grey Wagtail	Sch. II Part -B	Least Concern
58	<i>Motacilla alba</i>	White Wagtail	Sch. II Part -B	Least Concern
59	<i>Passer domesticus</i>	House Sparrow	Sch. II Part -B	Least Concern
60	<i>Carduelis carduelis</i>	Gold Finch	Sch. II Part -B	Least Concern
61	<i>Carduelis spinoides</i>	Himalayan Greenfinch	Sch. II Part -B	Least Concern
62	<i>Carpodacus erythrurus</i>	Common Rosefinch	Sch. II Part -B	Least Concern
63	<i>Columba leuconota</i>	Snow pigeon	Sch. II Part -B	Least Concern
64	<i>Leucosticte nemoricola</i>	Plain Mountain finches	Sch. II Part -B	Least Concern
65	<i>Cinclu spallasii</i>	Brown dipper	Sch. II Part -B	Least Concern
66	<i>Prunella collaris</i>	Alpine accentor	Sch. II Part -B	Least Concern
67	<i>Prunella rubeculoides</i>	Robin accentor	Sch. II Part -B	Least Concern
68	<i>Troglodytes hiemalis</i>	Winter wren	Sch. II Part -B	Least Concern
69	<i>Pyrrhonorax pyrrhonorax</i>	Red billed chough	Sch. II Part -B	Least Concern
70	<i>Pyrrhonorax graculus</i>	Yellow billed chough	Sch. II Part -B	Least Concern
71	<i>Accipiter nisus</i>	Eurasian sparrowhawk	Sch. I Part -B	Least Concern
72	<i>Paerus cinereus</i>	Cinereous Tit	Sch. I Part -B	Least Concern
73	<i>Periparusater</i>	Coal Tit	Sch. I Part -B	Least Concern
74	<i>Myophonus caeruleus</i>	Blue Whistling Thrush	Sch. I Part -B	Least Concern
75	<i>Troglodytes troglodytes</i>	Eurasien Wren	Sch. I Part -B	Least Concern
76	<i>Phoenicurus leucocephalus</i>	White-Capped Water Redstar	Sch. I Part -B	Least Concern
77	<i>Trochalopteron lineatum</i>	Streaked Laughing Thrush	Sch. I Part -B	Least Concern



Annexure-XVIII

LIST OF MAMMALS IN SECHU TUAN NALLA WILDLIFE SANCTUARY

Sr. No.	Scientific Name	Local Name	English Name	Schedule WL Act, 1972	IUCN Status
1	<i>Vulpes vulpes</i>	Lomri	Red Fox	Sch-I Part- (A)	Least Concern
2	<i>Ursus arctos</i>	Bhebu,Lal Bhaloo	Brown Bear	Sch-I Part- (A)	Least Concern
3	<i>Martes flavigula</i>	Dhiklu	Yellow-Throated Marten	Sch-I Part- (A)	Least Concern
4	<i>Paguma arva</i>	Sakralu	Masked Palm civet	Sch-I Part- (A)	Least Concern
5	<i>Felis chaus</i>	Bilao	Jungle cat	Sch-I Part- (A)	Least Concern
6	<i>Panthera Uncia</i>	Mirg, Bagh	Snow Leopard	Sch-I Part- (A)	Vulnerable
7	<i>Mustela sibirica</i>		Siberian weasel	Sch-I Part- (A)	Least Concern
8	<i>All species of the Genus petaurista</i>		giant flying squirrel	Sch-I Part- (A)	Least Concern
9	<i>Moschus leucogaster</i>	Rons, Rastura	Himalayan Musk Deer	Sch-I Part- (A)	Vulnerable
10	<i>Hemitragus jemlahicus</i>	Karath	Himalayan Tahr	Sch-I Part- (A)	Near threatened
11	<i>Capra siberica hemalayanus</i>	Koras	Himalayan ibex	Sch-I Part- (A)	Least Concern
12	<i>Marmota himalayana</i>	JungliChuha	Himalayan Marmot	Sch-I Part- (A)	Least Concern



13.	<i>Ochotona roylei</i>	Chuhah	Royle's Pika	Sch-I Part- (A)	Least Concern
14	<i>Pseudois nayaur</i>	Bharal	Blue Sheep	Sch-I Part- (A)	Least Concern
15	<i>Ursus thibetanus</i>	Kala Bhalu	Black Bear	Sch-I Part- (A)	Least Concern
16	<i>Naemorhedus goral</i>	Goral	Goral	Sch-I Part- (A)	Least Concern



Annexure-XIX

LIST OF BUTTERFLIES IN SECHU TUAN NALLA WILDLIFE SANCTUARY

Sr. no.	Name of Butterfly	Scientific Name	Family	IUCN Status
1	Dark Clouded Yellow	<i>Colias fieldii</i>	Pieridae	Least Concern
2	Large Cabbage White	<i>Pieris brassicae</i>	Pieridae	Least Concern
3	Indian Cabbage White	<i>Pieris canidia</i>	Pieridae	Least Concern
4	Common Yellow Swallow tail	<i>Papilio machaon</i>	Papilionidae	Least Concern
5	Common Copper	<i>Lycaena phlaeas</i>	Lycaenidea	Least Concern
6	Pea Blue	<i>Lampides boeticus</i>	Lycaenidea	Least Concern
7	Painted Lady	<i>Vanessa cardui</i>	Nymphalidae	Least Concern
8	Scarce Mountain Agrus	<i>Paralasa kalinda Moore</i>		Least Concern
9	Hybrid Argus	<i>Callerebia hybrida Butle</i>	Papilionidae	Least Concern
10	Indian Tortoise shell	<i>Aglaiscas chmirensis</i>	Nymphalidae	Least Concern
11	Queen of Spain Fritillary	<i>Issoria lathonia</i>	Nymphalidae	Least Concern
12	Fritillary sp.		Nymphalidae	Least Concern



Annexure-XX

TENTATIVE APO OF THE SANCTUARY (2025-26 TO 2034-35)

Proposed Year-Wise Budget Summary for the next 10 Years 2025-26 to 2034-35 (In Lakhs)																						
I. Habitat Improvement.																						J.
S r. N o	Item of Work	2025-26		2026-27		2027-28		2028-29		2029-30		2030-31		2031-32		2032-33		2033-34		2034-35		Remarks
		Ph y	Fin	Ph y	Fi n	Ph y	Fi n	Ph y	Fi n	Ph y	Fi n	Ph y	Fi n	Ph y	Fi n	Ph y	Fin	Ph y	Fin	Phy	Fin	
1	Fodder, Fruit plantation	-	-	2 Ha c.	2.9 0	-	-	-	-	2 Ha c	2.9 0	-	-	-	-	-	-	-	-	-	-	
2	1 st year Maintenance	-	-	-	-	2 Ha c.	1.0	-	-	-	-	2 Ha c	1.0	-	-	-	-	-	-	-	-	
3	2 nd year Maintenance	-	-	-	-	-	-	2 Ha c.	0.5	-	-	-	-	2 Ha c.	0.5	-	-	-	-	-	-	
4	3 rd year Maintenance	-	-	-	-	-	-	-	-	2 Ha c.	0.2 5	-	-	-	-	2 Ha c.	0.2 5	-	-	-	-	
6	Maintenance of nurseries	L/ S	1.5	L/ S	1.5	L/ S	1.7 5	L/ S	1.7 5	L/ S	1.7 5	L/ S	2	L/ S	2	L/ S	2	L/ S	2	L/S	2	



S N	Item of Work	2025-26		2026-27		2027-28		2028-29		2029-30		2030-31		2031-32		2032-33		2033-34		2034-35		Remarks
		Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	
C. Forest Protection																						
1	Survey and Demarcation	-	-	-	-	L/S	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Survey will be done with the help of Revenue Department to demarcate and construction of new boundary pillars.
2	Construction of New Boundary Pillars	-	-	-	-	-	-	-	-	-	-	100	12.5	-	-	-	-	-	-	-	-	
3	Create New Fire Lines	-	-	-	-	2 Km	1.25	2 Km	1.25	-	-	-	-	-	-	-	-	-	-	-	-	Sechu and Tuan Beat
4	Antipoaching activities	300 man days	5.0	300	5.5	300	6.0	300	6.5	300	6.5	300	7.0	300	7.5	300	8.5	300	9.0	300	9.5	
5	Fire Watcher	L/S	2.0	L/S	2.0	L/S	2.0	L/S	2.25	L/S	2.25	L/S	2.25	L/S	2.50	L/S	2.50	L/S	2.50	L/S	2.75	
6	Antigrazer	L/S	2.0	L/S	2.0	L/S	2.0	L/S	2.25	L/S	2.25	L/S	2.25	L/S	2.50	L/S	2.50	L/S	2.50	L/S	2.75	



S r. N o	Item of Work	2025-26		2026-27		2027-28		2028-29		2029-30		2030-31		2031-32		2032-33		2033-34		2034-35		Remarks
		Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	
7	Maintenance of Patrolling Path	L/S	5.0	L/S	5.0	L/S	5.5	L/S	5.5	L/S	6.0	L/S	6.0	L/S	6.5	L/S	6.5	L/S	7.0	L/S	7.5	
8	Construction of Bunker	-	-	L/S	3.0	-	-	L/S	3.5	-	-	-	-	-	-	L/S	4.0	-	-	-	-	
9	Maintenance of Bunker	-	-	-	-	-	-	1	.80	1	.80	-	-	1	1.25	1	1.25	-	-	1	1.25	
10	Purchase of motor bikes for patrolling	-	-	2	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
11	Engaging people for monitoring and driving away of problematic wild animals	L/S	1.5	L/S	1.5	L/S	1.75	L/S	1.75	L/S	1.75	L/S	1.85	L/S	1.85	L/S	2.0	L/S	2.0	L/S	2.0	



Sr No	Item of Work	2025-26		2026-27		2027-28		2028-29		2029-30		2030-31		2031-32		2032-33		2033-34		2034-35		Remarks
		Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	
K. Soil and Water Conservation Works																						
1	De-silting of existing Water ponds	3	2.0	3	2.0	5	4.0	3	2.25	3	2.50	5	2.50	5	4.50	5	4.50	3	2.50	3	2.50	
2	Construction of Dry Stone Check-Wall	100	50.0	100	50.0	100	75.0	100	75.0	100	75.0	100	85.0	100	85.0	100	95.0	100	95.0	100	95.0	
L. Training and Workshops																						
1	Exposure visit for staff within and outside state	-	-	L/S	3.0	-	-	L/S	4.0	-	-	L/S	4.0	-	-	L/S	4.0	-	-	L/S	4.0	
2	Education and awareness	L/S	2.0	L/S	2.0	L/S	2.0	L/S	3.0	L/S	2.0	L/S	2.0	L/S	3.0	L/S	3.0	L/S	3.0	L/S	3.0	
3	Wildlife Week Celebration	L/S	2.0	L/S	2.0	L/S	2.25	L/S	2.25	L/S	2.50	L/S	2.50	L/S	2.50	L/S	2.75	L/S	2.75	L/S	3.0	
4	Training to field staff regarding wildlife techniques & others	L/S	1.5	L/S	1.5	L/S	1.75	L/S	1.75	L/S	1.75	L/S	2.0	L/S	2.0	L/S	2.50	L/S	2.50	L/S	2.75	
5	Workshops/Se minars	L/S	1.5	L/S	1.5	L/S	1.5	L/S	1.75	L/S	1.75	L/S	1.75	L/S	2.0	L/S	2.0	L/S	2.5	L/S	2.5	



S r. N o	Item of Work	2025-26		2026-27		2027-28		2028-29		2029-30		2030-31		2031-32		2032-33		2033-34		2034-35		Remarks
		Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	
M. Staff Welfare Activities																						
1	Amenities of staff	L/S	1.0	L/S	1.0	L/S	1.5	L/S	1.5	L/S	1.5	L/S	1.75	L/S	1.75	L/S	1.75	L/S	2.0	L/S	2.0	
2	Connectivity Charges to Staff	L/S	0.10	L/S	0.10	L/S	0.10	L/S	0.20	L/S	0.20	L/S	0.20	L/S	0.20	L/S	0.30	L/S	0.30	L/S	0.30	
3	Provision of ration for patrolling parties	L/S	1.5	L/S	1.5	L/S	1.75	L/S	1.75	L/S	1.75	L/S	2.0	L/S	2.0	L/S	2.5	L/S	2.5	L/S	2.5	
N. Infrastructure																						
1	Maintenance of staff quarters and Range Office	L/S	3.0	L/S	3.0	L/S	3.0	L/S	4.0	L/S	4.0	L/S	4.0	L/S	4.0	L/S	5.0	L/S	5.0	L/S	5.0	
2	Maintenance FRH Chasak-Bhatori, I/Hut Sechu and I/Hut Tuan	L/S	3.0	*	*	*	*	L/S	4.0	*	*	L/S	4.0	*	*	*	*	L/S	5.0	*	*	



S r. N o	Item of Work	2025-26		2026-27		2027-28		2028-29		2029-30		2030-31		2031-32		2032-33		2033-34		2034-35		Remarks
		Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	
4	Construction of Patrolling Hut (Chasak-Bhatori/Murch/ Tuan/Chiroti and other places)	-	-	1	20.0	1	20.0	-	-	1	20.5	1	20.5	-	-	1	20.75	1	20.75	-	-	
8	Maintenance of Trekkers Hut	-	-	-	-	-	-	L/S	1.75	-	-	L/S	2.0	-	-	-	-	L/S	3.0	-	-	
9	Construction of Gang Hut at Murch	-	-	-	-	1	20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
10	Construction of Gang Hut at Bhatori	-	-	-	-	-	-	1	20.0	-	-	-	-	-	-	-	-	-	-	-	-	



Sr N o	Item of Work	2025-26		2026-27		2027-28		2028-29		2029-30		2030-31		2031-32		2032-33		2033-34		2034-35		Remarks
		Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	
O. Equipments																						
1	Purchase of field equipments and other Misc.items for staff	L/S	5.0	L/S	3.0	L/S	3.50	L/S	5.0	L/S	3.0	L/S	3.5	L/S	3.0	L/S	3.5	L/S	4.0	L/S	3.5	
P. Eco-Tourism Development																						
1	Construction of Wildlife Entrance Gate Sanctuary at Sechu	-	-	-	-	1	20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2	Construction of Rain Shelter/ Resting place	10	2.0	-	-	2	10.0	-	-	2	10.0	-	-	-	-	-	-	1	7.0	-	-	
3	Construction of Gazebo	2	10.0	-	-	2	10.0	-	-	2	10.0	-	-	2	15.0	-	-	1	7.0	-	-	
4	Printing sanctuary publicity literature	L/S	1.0	L/s	1.0	L/s	1.0	L/s	1.0	L/s	1.0	L/s	1.5	L/s	1.5	L/s	2.0	L/s	2.0	L/s	2.0	
5	Information Sign Boards	L/S	1.5	L/s	1.5	L/s	2.0	L/s	2.0	L/s	2.0	L/s	1.5	L/s	2.0	L/s	2.0	L/s	2.0	L/s	2.5	



S r. N o	Item of Work	2025-26		2026-27		2027-28		2028-29		2029-30		2030-31		2031-32		2032-33		2033-34		2034-35		Remarks
		Ph y	Fin	Ph y	Fin	Ph y	Fin	Ph y	Fin	Ph y	Fin	Ph y	Fin	Ph y	Fin	Ph y	Fin	Ph y	Fin	Phy	Fin	
Q. Eco Development Activities																						
1	Skill development for village	L/S	2.0	L/s	2.5	L/s	2.5	L/s	2.0	L/s	2.5	L/s	2.75	L/s	2.75	L/s	3.0	L/s	3.0	L/s	3.0	
2	Community welfare activities (Installation of dustbin/solar lights and other amenities for villages)	L/s	2.25	L/s	2.50	L/s	2.50	L/s	2.75	L/s	2.75	L/s	2.75	L/s	3.0	L/s	3.0	L/s	3.0	L/s	3.0	
3	Development/Repair of Camping sites	-	-	L/S	1.5	L/S	2.0	L/S	2.5	-	-	-	-	L/S	3.0	-	-	-	-	L/S	3.0	
Monitoring and Population Estimation																						
1	Annual population monitoring exercise	L/S	1.5	L/s	1.75	L/s	1.75	L/s	1.85	L/s	1.85	L/s	2.0	L/s	2.0	L/s	2.5	L/s	2.5	L/s	3.0	



S r. N o	Item of Work	2025-26		2026-27		2027-28		2028-29		2029-30		2030-31		2031-32		2032-33		2033-34		2034-35		Remarks
		Ph y	Fin	Ph y	Fin	Ph y	Fin	Ph y	Fin	Ph y	Fin	Ph y	Fin	Ph y	Fin	Ph y	Fin	Ph y	Fin	Phy	Fin	
3	Evaluation and review of management plan	-	-	-	-	-	-	-	-	-	-	1	0.75	-	-	-	-	-	-	-	-	
5	Study on Climate Change	-	-	L/S	2.0	-	-	L/S	2.0	-	-	-	-	L/S	2.0	-	-	L/S	2.5	-	-	
Office Contingencies																						
1	Purchase of furniture articles to Range Office FRH etc.	L/s	3.0	L/s	2.0	L/s	1.0	L/s	1.0	L/s	1.5	L/s	1.5	L/s	2.0	L/s	2.0	L/s	2.0	L/s	1.5	
2	Misc. Office expenses	L/s	2.0	L/s	2.25	L/s	2.25	L/s	2.5	L/s	2.5	L/s	2.75	L/s	2.75	L/s	2.75	L/s	3.0	L/s	3.0	
4	Procurement of vehicle for patrolling	L/S	1.25	L/s	1.25	L/s	1.50	L/s	1.5	L/s	1.5	L/s	1.75	L/s	1.75	L/s	1.75	L/s	2.0	L/s	2.0	
	TOTAL	111.25		138.25		222.1		180.55		183.7		189.8		172.3		196.5		209.8		181.3		
TOTAL PROPOSED OUTLAY 2025-26 to 2034-35																					1785.55	



Annexure-XXI

ACTIVITY WISE DETAILS OF BUDGET OUTLAY OF MANAGEMENT PLAN OF SAICHU-TWAN (2011-12 TO 2020-21)

Activity wise details of Management Plan of Saichu-Twan		2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	Total
Sr. No.	Name of Activity											
A.	Non-Recurrent Activities											
1.	Management planning in PAs and other high value biodiversity area/recovery programme etc.	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50	1.50	4.00
2.	Preparation of inventory of resources, survey of critically endangered species/habitats etc.	1.00	1.00	1.00	1.00	1.00	1.50	1.50	1.50	2.00	2.00	13.50
3.	Preparation of management plans/Biodiversity conservation plans/Recovery Plans etc	1.00	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00	1.50	3.50
4.	Preparation of Eco-Development Plans etc.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.	Undertake ecological and socio-economic survey, seminar, workshop etc.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.	Construction of offices, field camps, staff quarters, patrolling camps, watch tower etc	40.00	50.00	50.00	20.00	20.00	0.00	0.00	0.00	0.00	0.00	180.00
7.	Creation of up	2.00	1.50	1.50	1.00	1.00	1.00	1.00	1.50	1.00	1.00	12.50



	gradation of road network, patrolling roads, B/Path, bridge, canals etc.											
8.	Boundary demarcation creation & improvement	0.25	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00	0.00	1.25
9.	Establishment of communication network.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.	Purchase of Arms.	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
11.	Procurement of field gear, night vision devices, camera trap, binoculars & computer etc.	2.00	2.50	1.50	1.50	0.00	0.00	0.00	1.50	2.00	2.00	13.00
12.	Procurement of field equipments, Computers, GPS, camera trap, GIS Hard & Software, Compass, map digitization facility, research and education of WL habitat etc.	3.00	3.00	2.00	2.00	2.00	0.00	0.00	0.00	2.00	2.00	16.00
13.	Undertake various retrofitting activities like underground laying of electric cable, irrigation channels, relaying of roads, building, bridges etc.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14.	Provide residential accommodation for the children of front line staff in nearby town/village	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.	Habitat improvement practices like afforestation, planting etc.	6.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	3.00	3.00	47.00
16.	Soil conservation	4.00	5.00	5.00	5.00	5.00	4.00	4.00	4.00	4.00	4.00	44.00



	measures.											
17.	Fire Protection measures.	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	5.00
18.	Non periodic removal of unwanted species of flora, fauna & invasive alien spp.	1.00	1.00	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	6.00
19.	Installation of various animal barriers like electric, solar B/wire, live hedges etc.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20.	Capturing and relocation of problematic animals.	1.00	1.00	1.25	1.25	1.50	1.50	1.75	1.75	2.00	2.00	15.00
21.	Support for livelihood activities	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	10.00
22.	Survey and status of wild animals.	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	5.00
23.	Establishment of permanent preservation plot, monitoring plots etc.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	10.00
24.	Coordination with foreign/international agencies.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25.	Strengthening wildlife veterinary care.	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	5.00
26.	Vaccination of livestock & facilities for captive breeding of endangered species.	0.75	0.75	0.75	0.75	0.75	5.00	5.00	5.00	5.00	5.00	28.75
B.	Recurrent activities.											
1.	Maintenance of existing fire lines.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.	Annual maintenance and deepening of water bodies, etc.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	10.00
3.	Annual weeding operations, etc.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.	Running of vehicles,	1.50	1.50	1.75	1.75	2.00	2.00	2.25	2.25	2.50	2.50	20.00



	POL & Office exp.											
5.	Annual maintenance of buildings etc.	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	15.00
6.	Constitution of awards for exemplary work to subordinate staff etc.	0.50	0.50	0.75	0.75	0.75	1.00	1.00	1.00	1.25	1.25	8.00
7.	Maintenance of captive animals & animal rescue centers etc.	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	2.50
8.	Provision of reward to informers.	0.25	0.25	0.25	0.30	0.30	0.30	0.35	0.35	0.35	0.50	3.20
9.	Engaging daily wage mazdoors for strengthening infrastructure etc.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.	Maintenance of signages, etc.	1.00	1.00	1.25	1.25	1.50	1.50	1.75	1.75	2.00	2.00	15.00
11.	Hiring of vehicles for protection/patrolling, etc.	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	5.00
12.	Deployment of police/home guards etc for organizing surprise raids to apprehend offenders.	0.50	0.50	0.75	0.75	0.80	0.80	0.85	0.85	0.90	0.90	7.60
13.	Supply of field Ration to various protection units, etc	0.50	0.55	0.60	0.70	0.75	0.75	1.00	1.00	1.00	1.00	7.85
14.	Legal support for defending court cases, etc.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.	Transportation and pumping of water, etc.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16.	Cleaning of fire lines, etc.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17.	Providing insurance cover for life, crops and property against animal depredation, etc.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



18.	Public awareness programmes for children, other stake holder and public etc.	1.00	1.00	1.00	1.00	1.00	1.00	0.75	0.75	0.50	0.50	8.50
19.	Maintenance of captive animal population, etc.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20.	Supply of kerosene medicine, field kit, torch etc.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21.	Training in the use of GIS, GPS camera traps, anti poaching operations etc.	1.00	1.00	1.00	1.00	1.00	0.50	0.00	0.00	0.00	0.00	5.50
22.	Undertake study tours for the appraisal of good practices in other PAs, specialized trainings in park	1.50	1.50	1.50	1.50	1.00	1.00	1.00	2.00	2.00	2.00	15.00
23.	Undertake various staff welfare measure.	1.00	1.00	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50	11.75
24.	Creating awareness, study tours etc. for hors living in & around PAs	2.00	2.00	2.50	2.50	2.75	2.75	2.75	3.00	3.00	3.00	26.25
25.	Construction of Bunkers etc.	4.00	8.00	3.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.75
26.	Provision of Salt Licks	0.75	0.50	0.25	0.50	0.30	0.00	0.00	0.00	0.00	0.00	2.30
	Total	87.75	98.05	92.85	57.75	57.40	37.60	37.95	41.20	44.25	45.90	600.70



Annexure-XXII

COPIES OF SETTLEMENT OF RIGHTS REPORTS FOR DECLARING ESZ

①

No./ 3042
H.P. Forest Department.

Dated Chamba, the/ 2-1-2013

From: - D.F.O. Wild Life,
Chamba.

To: - C.C.F. Chamba
Circle Chamba.

Subject: - Notification regarding site specific for declaration of Eco-Sensitive Zone around national Park and Wildlife Sanctuary.

Memo:- In continuation to this office Memo. No. 2931 dated 24-12-2012 on the subject cited above.

2. In this regards, it is submitted that the proposal of Eco-Sensitive Zone of Sechu Twan Nalla Wild Life Sanctuary has been prepared as per discussion and suggestions given during the meeting alongwith list of activities.

The two copies proposal of Eco-Sensitive Zone of Sechu Twan Nalla Wildlife Sanctuary is hereby submitted for favour of further necessary action at your end please.

Encl: - As above.


Divisional Forest Officer,
Wild Life Division, Chamba.

Endst. No./ 3042-44 Dated Chamba, the/ 3-1-2013

Copy is forwarded to:-

1. C.C.F. Wild Life (N) Circle Dharamshala in continuation to this office Endst. No. 2932 dated 24-12-2012 for information & necessary action please.
2. R.O. Wild Life Range Sechu for favour of information and necessary action please.

Encl: - As above.


Divisional Forest Officer,
Wild Life Division, Chamba.



②

PROPOSAL TO DECLARE ECOLOGICALLY SENSITIVE ZONE AROUND SECHU TWAN NALLA WILD LIFE SANCTUARY

(TOTAL AREA 390.29 SQ. KMS.)

1. Introduction:

The name of the Sechu Twan Nalla Wild Life Sanctuary is derived from the name of Sechu & Twan villages which are situated in Pangi Sub Division of Chamba Distt. Initially the sanctuary was notified as the game sanctuary in 1962 and was re notified as Wild Life Sanctuary under Wild Life Protection Act, 1972 vide Notification No. - 5-11/70-SF dated 27-03-1974. As per the Notification No. FFE-B-F (6) 3/99 dated 01-11-1999 the area of Sechu Twan Wild Life Sanctuary was 330 Sq. Km. on ground (Notified area 103 Sq. Km.). The latest notification of this sanctuary was issued under Section 18 (1) of Wild Life (Protection) Act, 1972 by Govt. of H.P. vide Notification No. FFE-B-F (6) 11/2005 dated 28th July, 2010 through which the area of sanctuary was extended by 113.27 Sq. Km. to the existing 330 Sq. Km.

The sanctuary is located between $32^{\circ}-11'-40''$ and $32^{\circ}-13'-16''$ North latitude and $76^{\circ}-24'$ and $77^{\circ}-03'-33''$ East Longitude. It falls in the tribal area of Pangi Sub Division of Chamba Distt.

Eco Sensitive Zone

The Eco Sensitive Zone of the Sechu-Twan Nalla Wild Life Sanctuary has been proposed on the Western side along the boundary of Sechu-Twan Nalla Wild Life Sanctuary after rationalization. The proposed Eco Sensitive Zone on the North Western side starts near Shun Glacier and goes up to 9.10 KM. with an average width of 1 KM. and have an area of 9.1 Sq. Km. on the South Western side, the Eco Sensitive Zone starts from Riwas and goes up to Ramdhar Jariun Glacier up to a distance of 17.10 Km. with an average width of 1 Km. and have an area of 17.10 Sq. Km. The Eco Sensitive Zone has also been proposed along the area proposed to be excluded after rationalization to a distance of 40.5 Km. with an average width of 500 Mtrs. and have an area of 20.25 Sq. Km. The total area of the Eco Sensitive Zone of Sechu Twan Nalla



Wild Life Sanctuary is 46.45 Sq. Km. On the Northern side the boundary of the Sechu Twan Nalla Wild life Sanctuary is co-terminus with the state boundary of Jammu & Kashmir and no Eco Sensitive Zone has been proposed on that side which is to be decided at State level. The Eastern and Southern side of the sanctuary have boundary with the Lahoul & Spiti District and no Eco Sensitive Zone has been proposed on that side as the area is inaccessible and is mostly covered with the glaciers and no useful purpose will be served even by declaring this uninhabited area as ESZ.

Physical Features:

(a) Description:

Topography: The area occurs in very steep hills and uneven terrain. The area consists of steep rocks on the sides and snow line and snow cliffs with reasonably alpine zone.

Soil: Schist is very common and occurs in different forms such as gneisses, argillaceous shale and clay etc. Rock system in the general is unstable and of friable nature. Sub soil in the Sechu valley is fairly good.

Land use: Cattle rearing Yak, Choori, Sheep & Goat being the major occupation it is impossible to delink the dependency of people on the forests resources. The quality and quantity of cattle / sheep can however be determined according to the carrying capacity of pasture land so that these are not over grazed. The land is very fertile what so ever used for agriculture purposes can be tilled in a better way so that the nutrient loss is less and erosion etc. is minimized.

Hydrology: The area is rich with perennial Streams/ Nallas. These are mainly snow fed and receive large quantities of fresh water from the melting of snow during the hot weather. The main Nallas / Streams in the sanctuary draining down to Chander Bhaga river are as under: -

1. Twan Nalla.
2. Udeen Nalla.
3. Chalasani Nalla.
4. Chasak Nalla.

5. Sandhan Nalla
6. Jammu Nalla
7. Pipal Nalla
8. Triund Nalla
9. Tangnai Nalla

Climate:

Temperature (Average): Temperature goes down considerably during winter. Sub zero conditions touching -10°C are not rare during the winter season. During summer months however the weather normally remains clear and the temperatures which may go up to 25°C .

Rainfall Pattern and distribution: - The area receives greater proportion of precipitation in the form of rain / snow during the winter season. There however occur the monsoon rains also. The average rain fall is 1430 mm and average snow fall is 2 Mtr. to 6 Mtr.

Wind: Light wind of 8-18 Km/hr velocity can be generally felt in the area. At rare occasions particularly during winter there may be some gentle to moderate winds ranging from 15 to 20 Km/ hr.

(a) Environmental quality:

Water: Perennial water sources in the area are springs and Nallas. Various streams and the Nallas form natural drainage system. The quality of water is sufficiently good due to the good health of the catchment.

Soil: Soil quality is good. There is not much pollution in the soil and soil at few places is very deep.

Air: Air quality is sufficiently good in the area throughout the year.



2. Biological features:

The area falls into the Trans Himalaya Zone.

Vegetation types:

The area has a temperate zone followed by alpine zone with some perpetual snow area. Conifers and broad leaved species of temperate zone are present in the lower elevations whereas the alpine zone has mainly the pastures and rocky cliffs.

FOREST TYPES: -

According to the classification of Champion & Seth, the forests types of the Sanctuary are categorized into the following forest types: -

3.1 Type 12/C1d: - Western mixed coniferous forests (Spruce, blue pine, Silver fir).

These are mixed coniferous forests of Kail (*Pinus excelsa*) Spruce (*Picea morinda*) and silver fir (*Abies pindrow*). They occur between the altitudinal zones of 2000 meters to 3500 meters. Annual rainfall is 1250 mm to 2250 mm, received in the form of rain and snow almost in equal proportions. Deodar is found on the well drained sunny aspects in the lower belt. On the cool northerly aspects, *Taxus baccata* forms the under storey. The deciduous associates interspersed in these forests, are *Aesculus indica*, *Juglans regia*, *Acer* species, *Celtis australis*, *Pinus padus*, *Ulmus wallichiana*, *Fraxinus floribunda*, *Morus serrata*, *Machilus* sp. *Litsea* sp. etc. The under growth and herbaceous flora are fairly thick and consists of *Berberis*, *Lonicera*, *Artemisia*, *Viburnum*, *Deutzia*, and *Potentilla*, *Anemone*, *Viola*, *Valeriana*, *Fragaria* etc.

3.3.2 Type 12/ C la: - Moist temperate deciduous forest.

This type is found from an elevation of about 1800 to 2750 meters in moist hollows and depression. Due to extremely moist conditions, the conifers retreat from such places in favour of deciduous species, but on comparatively better drained sites, silver fir in the upper zone and Kail in the lower zone, come up. The Predominant species are *Aesculus indica*, *Corylus colurna*, *Acer pictum*, *Acer cesium*, *Juglans regia*, *Prunus cornata*, *Abies pindrow*, *Picea smithiana*, *Taxus baccata*, *Rhododendron* etc.

3.3.3 Type 12/ 2 SI Low level blue pine forests.

This type generally occurs from an elevation of 1500 to 2400 meters, though on the spurs it extends to much higher limits. Kail is the main species which occurs in pure and dense stands.

3.3.4 Type 15/C2: Deciduous alpine forest.

Essentially this formation is not a tree type, and it lies between the sub - alpine forest and alpine pastures. It is characterized by low deciduous shrubs usually about one meter high. Patches of dwarf *Rhododendron*, *Junipers*, *Betula*, etc. are the only remnants of tree growth. Grass glades are interspersed here and very frequently

3.3.5 Type 15/C3 Alpine Pastures.

Above the tree limit, lie the vast and extensive grass lands and pastures, which are much prized by the Gaddies and Gujjars for grazing their flocks and buffaloes. These grass lands are the abodes of a number of important medicinal plants and herbs. The more significant of these plants are *Jurinea macrocephala* (Dhoop) *Aconitum - nepellus* (Mohari), *Aconitum heteroplyllum* (Patis), *Picrorhiza Kurrooa* (Kaur), *Sassurea lappa* (Kuth), *Viola odorata* (Banafsha) *Pedophyllum remodi* (Bankakru) *Valeriana* -

wallichii (Muskwala). *Salvia moorcroftiana* (Thuth), are found growing gregariously in the deodar and fir zone. These grass lands receive very heavy snow fall during winter.

The main Spp. of flora area: -

A. TREES

Scientific Name	Local Name	English Name
<i>Abies pindrow</i>	Rai	Silver Fig
<i>Acer caesium</i>	Mandhar	Maple
<i>Acer Caudatum</i>	Mandhar	Maple
<i>Acer pictum</i>	Mandhar	Maple
<i>Acer villosum</i>	Mandhar	Maple
<i>Aesculus indica</i>	Goon	Horse chestnut
<i>Alnus nepalensis</i>	Piak	Alder
<i>Alnus nitida</i>	Piak	Alder
<i>Betula Alnoides</i>	Bhuj	Birch
<i>Betula utilis</i>	Bhuj	Birch
<i>Cedrela serrata</i>	Dhor	
<i>Celtis australis</i>	Khark	Nettle Tree
<i>Cearus deoara</i>	Diyar	Deodar
<i>Fraxinus floribunda</i>	Sunnu	Ash
<i>Juglans regia</i>	Khor	Walnut
<i>Litsea umbrosa</i>	Chirindi	
<i>Morus serrata</i>	Karun	Mulberry
<i>Morus alba</i>	Karun	Mulberry
<i>Picea morinda</i>	Tos	Spruce
<i>Pteris ovalifolia</i>	Ailan	
<i>Populus baurei</i>	Chaloon	Foplar
<i>Prunus armenika</i>	Chir	Apricot
<i>Prunus communis</i>	Aloocha	Plum
<i>Prunus pardus</i>	Jammu	Birce cherry

Prunus persica
Pyrus malus
Ulmus wallichiana

Aru
 Seo
 Maral

Peach
 Wild apple

B. SHRUBS

Scientific Name	Local Name	English
<i>Berberis aristata</i>	Kemal	
<i>Berberis 7aurel</i>	Kemal	
<i>Berberis nepalensis</i>	Kemal	
<i>Berberis vulgarism</i>	Kemal	
<i>Cannabis sativa</i>	Bhang	
<i>Cornus capitata</i>	Halen	Dog wood
<i>Cotoneaster bacillaris</i>	Reuns	
<i>Cotoneaster macrophylla</i>	Reuns	
<i>Cotoneaster vulgris</i>	Reuns	
<i>Daphne cannabina</i>	Niggi	
<i>Daphne oleodes</i>	Niggi	
<i>Desmodium tiliacifolium</i>	Pre	
<i>Deutzia corymbosa</i>	Bhatti	Wild syringe
<i>Deutzia steminei</i>		
<i>Eragaria indica</i>		
<i>Grandiana hetrophylla</i>	Ain	
<i>Ilex dipyrena</i>	Khendru	The Holly
<i>Indogofera gerardiana</i>	Kathi	Indigofera
<i>Indogofera puichella</i>	Kathi	Indigofera
<i>Juniperus communis</i>	Bither	Cedar

<i>Juniperus recurva</i>	Bither	Cedar
<i>Lonicera angutifolia</i>	Katias	Honey
Suckle		
<i>Lonicera hispida</i>		
<i>Lonicera quinquelocularis</i>	Bakru	Honey Suckle
<i>Myrsine Baurelba</i>		
<i>Parrotia jacquemontiana</i>	Killar	Wychhazel
<i>Plectranthus rugosus</i>	Kuthal	
<i>Prinsepia utilis</i>	Kangora	
<i>Rosa macrophylla</i>	Karer	
<i>Rosa moschata</i>	Karer	
<i>Rubus biflorus</i>	Akre	Raspberry, red
<i>Rubus Pasiocarpus</i>	Akre	Raspberry, red
<i>Rubus niveus</i>	Akre	
Raspberry, Yellow		
<i>Rubus paniculatus</i>	Akre	
Raspberry, Yellow		
<i>Skimmia Baurel</i>		
<i>Spraea pindleyana</i>	Kande	
<i>Staphylea emodi</i>	Chitra	Snake wood
<i>Syringa emodi</i>	Chara	
<i>Viburnum cotinifolium</i>	Talanj	
<i>Viburnum foetus</i>	Talanj	
<i>Woodfordia floribunda</i>		

C. CLIMBERS

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Scientific Name	Local Name	
English Name		
Clematis Montana	Garol	
Traveller's joy		
Clematis buehananiana	Garol	
Traveller's joy		
Hedera helix	Kural	Ivy
Rosa moschata	Ban gulab	
Smilax Parviflora		
Vitis latifolia	Pani bel	

D. MEDICINAL PLANTS

Scientific Name	Local Name	English
Name		
Aconitum heterophyllum	Patish	
Anglica glauca	Chora	
Anseama helleberifolium	Ki-Kukri	Cobra plant
Atropa belladonna	Shafoo	Belladonna
Picornhiza kurroo	Kaur	
Podophyllum	Ban Kakri	
Rumax hastatus	Amiora	
Saufraga ligulata	Pathar Tor	
Solanum indicum	Ban Tobacco	
Solanum verbasifolium	Ban Tobacco	
Thalictrum foliosum	Machhar Mar	
Thymus serphyllum	Pahari Ajwain	
Valeriana wallichii	Smak	
Verbascum thaspos		
Viola odorata	Banafa	

Fauna:

This high altitude sanctuary with many precipitous rocky cliffs remaining almost undisturbed, a good interface of blank pastures with forested area give shelter as well as the feeding grounds to many herbivores and bird species.

Socio economic condition, the old culture and living pattern have also a great bearing upon the wild life distribution. With some intensive management and effective protection the status of wild life in this sanctuary is satisfactory.

The area provides habitat for a variety of mammalian spp. that include: -

Carnivores: - Snow Leopard, Leopard Cat, Indian Fox, Mongoose

Omnivores: - Brown Bear,

Herbivores: - Musk deer, Goral, Himalayan Thar (Ibex).

Pheasants: - Monal, Koklas, Kalij, Chir.

Birds :- Chakor, Snow Cock

S. No.	Common Name of Spp.	Zoological name
1	Snow leopard.	<i>Uncia uncia</i>
2	Leopard cat.	<i>Felis beghalensis</i> .
3	Brown bear.	<i>Ursus arctos</i> .
4	Musk deer.	<i>Moschous moschiferus</i> .
5	Goral.	<i>Nemorhaedus goral</i> .
6	Himalayan Thar (Ibex).	<i>Hemitragus goralicus</i> .
7	Monal.	<i>Lophophorus impejanus</i> .
8	Koklas.	<i>Pucrasia acrolopha</i> .
9	Kalij.	<i>Lophura leucomelanos</i> .
10	Chir.	<i>Catreus walliichi</i> .
11	Chakor.	<i>Alectoris chukor</i> .

Data regarding Pvt. /agricultural land in respect of Sechu Tuan Wild Life Sanctuary: -

Sr. No.	Name of village/mohal.	Area in ha.
1.	Hillu Twan	12.00 ha.
2.	Chask Bhaturi	10.00 ha.
3.	Udeen	36.02 ha.
4.	Sandhan	12.96 ha.
5.	Chasak	48.75 ha.
6.	Sechu	40.15 ha.
7.	Murch	10.12 ha.
	Total	170.80ha.

4) Socio economic features

Population and Literacy:

Sr. No.	Name of Village.		Male.	Female.	Children.	Total.	Literate.
1.	Hillu Twan	Gen.	-	-	-	-	-
		SC.	24	21	-	45	-
		BT.	118	123	-	241	-
2.	Udeen Sandhan	Gen.	-	-	-	-	-
		SC.	35	37	-	72	-
		BT.	144	121	-	265	-
3.	Chasak.	Gen.	5	-	-	5	-
		SC.	55	66	-	121	-
		BT.	185	184	-	379	-
4.	Chasak	Gen.	-	-	-	-	-

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	Bhatlary						
		SC	-	-	-	-	-
		ST	30	35	-	65	-
5	Sechu	Gen	17	7	-	24	-
		SC	30	37	-	67	-
		ST	72	74	-	144	-
6	Murch	Gen	-	-	-	-	-
		SC	-	-	-	-	-
		ST	32	32	-	64	-

Livestock data:

Sr. No.	Name of Village.	Buffalo	Cow/Ox	Sheep	Goat	Horse	Others	Total
1.	Hillu Twan	-	300	600	400	-	400	1700
	Udeen	-	-	-	-	-	-	205
2.	Sandhari	-	400	700	500	-	450	1650
3.	Chasak	-	600	900	700	-	500	2700
	Chasak	-	-	-	-	-	-	145
4.	Bhatlary	-	50	700	500	-	200	1450
5.	Sechu	-	250	700	500	-	300	1750
6.	Murch	-	200	650	600	-	200	1650



5. Ecological Parameters:

(a) Primary criteria:

The Eco Sensitive Zone of the Sechu-Twan Nalla Wild Life Sanctuary has been proposed on the Western side along the boundary of Sechu-Twan Nalla Wild Life Sanctuary after rationalization. The proposed Eco Sensitive Zone on the North Western side starts near Shun Glacier and goes up to 9.10 KM. with an average width of 1 KM. and have an area of 9.1 Sq. Km. On the South Western side the Eco Sensitive Zone starts from Riwas and goes up to Ramdhar Janun Glacier up to the distance of 17.10 Km. with an average width of 1 Km. and have an area of 17.10 Sq. Km. The Eco Sensitive Zone has also been proposed along the area proposed to be excluded after rationalization to the distance of 40.50 Km. with an average width of 500 Mtrs. and have an area of 20.25 Sq. Km. The total geographical area of the proposed Eco Sensitive Zone of Sechu Twan Nalla Wild Life Sanctuary is 46.45 Sq. Km. On the Northern side the boundary of the Sechu Twan Nalla Wild life Sanctuary is co-terminus with the state boundary of Jammu & Kashmir and no Eco Sensitive Zone has been proposed on that side which is to be decided at State level. The Eastern and Southern side of the sanctuary have boundary with the Lahoul & Spiti District and no Eco Sensitive Zone has been proposed on that side as the area is inaccessible and is mostly covered with the glaciers.

The wide range of altitudinal variations and gradual precipitous slopes combine together makes it very rich in flora and fauna. It acts as a buffer zone of the wildlife sanctuary including many rare and endangered spp. like Snow Leopard, Common Leopard, Musk Deer, Himalayan Thar, Himalayan Black, Brown Bear, Cheer pheasant, Himalayan Monal, Koklass, Chakor and Kaleej pheasants. The area itself supports many important wildlife spp. The birds utilize a range of habitat for their feeding and breeding and most of them are local migrants. The area provides a variety of habitat types for the residence and breeding for these birds. Endemism among the birds in this region is higher than among mammals.



(b) **Auxiliary Criteria based.**

Many perennial rivers forming tributaries flowing into the river Chandrabhaga originate from this sanctuary. Rich in scenic beauty, lush green forests, endless landscape, and snow clad peaks and panoramic views changes from place to place are paradise for the nature and adventure loving people. The area is rich in medicinal herbs like Ban Kakri (*Pedophyllum hexandrum*), Guchhi (*Morchella esculenta*), Banafsa (*Viola canescens*), Ban Ajwain (*Thymus serpyllum*) etc. which are one of the sources of income for the local inhabitants.

6. **Impacts of Developmental Activities on the Ecology of the proposed area for ESZ:**

The area itself is a habitat of many important wildlife spp. and also act as buffer zone for the Sechu Twan Nallah Wildlife sanctuary. Various kinds of developmental activities like excavation, drilling, blasting, foundation, tunneling, deployment of machinery, erection, transportation, dumping during mining, road construction etc in this area will definitely have an adverse impact on wildlife and ecology of the area. This also results in noise and dust pollution.

Following possible impacts of the developmental activities can be forecast if the existing areas adjoining to the Sechu WLS are not declared as ESZ with some management interventions:

1. Reduced reproduction and populations of wildlife due to habitat modification and loss and indirect disturbance from noise and fumes.
2. Shrinkage of existing forest cover, due to increased human activity in the buffer zone in the absence of eco-sensitive zone
3. Degradation of vegetation and soil from flooding of contaminated water sources and the biotic interference.
4. Modification of vegetation due to introduction of non endemic spp.
5. Stream siltation and other forms of degradation of surface water by soil erosion from disturbed areas.



6. Downstream water quality impairment and damage to aquatic flora and fauna.
7. Contamination of surface water and ground water.
8. Reduction in local water supply.
9. Loss of existing land use.
10. Changes in drainage pattern.
11. Degradation in air quality and visibility.
12. Disruption and modification of landscape.
13. Frequent human animal conflicts if no eco-sensitive zone is created.

7. Proposed Monitoring Mechanism for the Present and Future Development Activities:

Monitoring is important for any developmental activity. All such developmental activities have to be closely and regularly monitored. The procedure will be followed as per prevalent rules and regulations.

8. Justification for Establishing Ecological sensitivity:

This area is very important from ecological, geomorphologic, geographical, faunal, floral, natural, & Zoological point of view. The wide range of altitudinal variations gradual to precipitous slopes combined together make it very rich in flora and fauna. The area also forms catchment of three main streams viz. Twan Nalla, Udeen Nalla, Chalasari Nalla, Chasak Nalla, Sandhari Nalla, Jammu Nalla, Pipal Nalla, Triund Nalla, & Tangnai Nalla which ultimately drain in to Chandra Bhaga River. Hence, the area qualifies to be declared as ecological sensitive area.

...
 Divisional Forest Officer
 Wild Life Division,
 CHAMBA (H.P.)



ANNEXURE-3

List of activities which are allowed, regulated or prohibited in eco-sensitive area around Sechu Tuan Nalla Wildlife sanctuary are as follows:-

SN	Activity	Prohibited	Regulated	Permitted	Remarks
1	Commercial Mining	Y			Regulation will not prohibit the digging of earth for construction or repair of houses and for manufacture of country tiles or bricks for housing for personal consumption
2	Felling of trees		Y		With permission from appropriate authority for religious ceremonies viz, marriage, for funeral, for making agricultural tools and other bonafide uses in private land. And for sale under 10 years felling cycle.
3	Setting of saw mills	Y			
4	Setting of industries causing pollution (Water, Air, Soil, Noise, etc.)	Y			Small scale and cottage industries will be allowed after obtaining permission from the competent authority
5	Establishment of hotels and resorts		Y		As per approved master plan, which takes care of habitats allowing no restriction on movement of wild animals
6	Commercial use of firewood	Y			For hotels and other business related establishment
7	Drastic change of agriculture systems		Y		Only introduction of advanced mechanised agriculture tools causing pollution are included to be regulated and change of crop is not to be regulated
8	Commercial use of natural water resources including ground water harvesting		Y		After obtaining permission from the regulatory authority
9	Establishment of major hydroelectric projects	Y			
10	Erection of electrical cables		Y		there will be no restriction on individual house hold connection through distribution cables

11	Ongoing agriculture and horticulture practices by local communities			Y	
12	Rain Water harvesting			Y	Should be actively promoted
13	Sanitizing of premises of hotels and lodges			Y	
14	Organic farming			Y	Should be actively promoted
15	Use of polythene bags by shopkeepers	Y			
16	Use of renewable energy sources			Y	Should be actively promoted
17	Widening of roads		Y		After obtaining permission from the regulatory authority
18	Movement of vehicular traffic at night		Y		For commercial purpose
19	Introduction of exotic species	Y			
20	Use or production of any hazardous substances	Y			
21	Discharge of effluents and solid waste in natural water bodies or terrestrial area	Y			
22	Air and vehicular pollution		Y		
23	Sign boards & boardings		Y		Only forest and wildlife awareness sign board and boardings permitted
24	Adoption of green technology for all activities			Y	Should be actively promoted
25	Exercise of Rights			Y	As per the Forest Settlement Report and approved working plan of the division

Divisional Forest Officer
Wild Life Division,
CHAMBA (H.P.)

Chairman-cum-
Chief conservator of Forest
Chamba



No. / 3286
H.P. Forest Department.

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Dated Chamba, the/ 19-01-2013

- D.F.O. Wild Life,
Chamba.

To: - C.C.F. Wild Life (N)
Circle Dharamshala.

Subject

Information regarding Eco-Sensitive Zone of various sanctuaries under the jurisdiction of Chamba Wild Life Division.

Memo:

Kindly refer to your telephonic directions dated 19-01-2013 on the subject cited above. The point wise reply in respect of Eco-Sensitive Zone of various sanctuaries under the jurisdiction of Chamba Wild Life Division is as under:-

1. **Width of the Eco Sensitive Zones:** - The average width of the Eco Sensitive Zones of various sanctuaries under Wild Life Division, Chamba has been taken as 0 Km. to 1 Kms. depending upon the location. The sanctuary wise detail of the width of Eco Sensitive Zone is as follows : -
 - i) **Kalatop- Khajjiar Wild Life Sanctuary:** -
 - a) ESZ Proposed to be *all around* the Boundary of sanctuary created after rationalization still to be finalized.
 - b) The average width of Eco-Sensitive Zone has been proposed to be 500 Mtrs. from the boundary of the sanctuary after rationalization.
 - c) The area of Eco-Sensitive zone will be approximately 9.95 Sq. Km.
 - ii) **Gangul Siyabehi Wild Life Sanctuary:** -
 - a) The Eco sensitive zone is proposed on the periphery of the Gangul Siyabehi Wild Life Sanctuary created after rationalization on the Southern side and on the Northern Western side.
 - b) The boundary of the sanctuary is co-terminus with the boundary of Jammu & Kashmir on Northern and North Western side, hence no eco sensitive zone is proposed along the boundary adjoining Jammu & Kashmir which is to be decided at the state level.



c) On the Southern side Eco-Sensitive Zone to the extent of width of 1 Km. has been proposed for a total length of 3 Km with an area of 3 Sq. Km. along with the boundary of area included in the sanctuary after Notification No. -FFE/B/F (6) 11/2005 dated 28th July, 2010.

d) The area of 15.6 Sq. Km. proposed to be excluded after rationalization is also proposed as the part of Eco-Sensitive Zone.

e) On the Eastern side, the eco sensitive zone has been proposed for the length of 10.3 Km. with an average width of 1 Km. having an area of 10.30 Sq. Km.

iii) **Kugti Wild Life Sanctuary: -**

a) The Eco Sensitive Zone of the Kugti Wild Life Sanctuary has been proposed on the Eastern, Southern and Western side along the boundary of Kugti Wild Life Sanctuary after rationalization for a distance of 54.9 Km. with an average width of 1 Km. and have an area of 54.9 Sq. Km.

b) Eco Sensitive Zone have not been proposed on the Northern, North-Eastern and North-Western side as the area is snow bound and covered with glaciers and also have no habitation.

c) The area of 8.81 Sq. Km. is proposed to be excluded after rationalization is also proposed to be the part of Eco Sensitive Zone.

d) Thus the total area of proposed Eco Sensitive Zone comes to 63.70 Sq. Km.

iv) **Tundah Wild Life Sanctuary: -**

a) The proposed eco-sensitive zone is situated at the boundary of Tundah Wild Life Sanctuary after the rationalization.

b) The length of proposed Eco-sensitive zone is 14.9 Km. towards East-Southern side and 15 Km. towards Western side with an average width of 1 Km.



- c) The Eco Sensitive Zone with an width of 250 Mtrs. has been proposed along the area proposed to be excluded from the sanctuary area after rationalization.

Sechu Twan Nalla Wild Life Sanctuary: -

- a) The Eco Sensitive Zone has been proposed on the Western side along the boundary of Sechu-Twan Nalla Wild Life Sanctuary after rationalization.
- b) The proposed Eco Sensitive Zone on the North Western side starts near Shun Glacier and goes up to 9.10 KM. with an average width of 1 KM. and have an area of 9.1 Sq. Km.
- c) On the South Western side, the Eco Sensitive Zone starts from Riwas and goes up to Ramdhar Jariun Glacier up to a distance of 17.10 Km. with an average width of 1 Km. and have an area of 17.10 Sq. Km.
- d) The Eco Sensitive Zone has also been proposed along the area proposed to be excluded after rationalization to a distance of 40.5 Km. with an average width of 500 Mtrs. and have an area of 20.25 Sq. Km.
- e) The total area of the Eco Sensitive Zone of Sechu Twan Nalla Wild Life Sanctuary is 46.45 Sq. Km.
- f) On the Northern side the boundary of the Sechu Twan Nalla Wild life Sanctuary is co-terminus with the state boundary of Jammu & Kashmir and no Eco Sensitive Zone has been proposed on that side which is to be decided at State level.
- g) The Eastern and Southern side of the sanctuary have boundary with the Lahoul & Spiti District and no Eco Sensitive Zone has been



22
proposed on that side as the area is inaccessible and is mostly covered with the glaciers.

2. Consent of the local people: - The meeting regarding declaration of Eco Sensitive Zone of the sanctuaries under Wild Life Division, Chamba was held on 07-12-2012 in the Conference Hall of C.C.F. (T) Chamba under the Chairmanship of Sh. A.R.M. Reddy, IFS C.C.F. Chamba. The meeting was attended by the local representatives of various sanctuaries along with the forest staff. In all the meeting was attended by 35 participants. The Eco Sensitive Zones has been proposed after taking into consideration various suggestions / objections raised by the local representatives. Photocopy of the attendance sheet of the participants is attached.

This is for favour of information and further necessary action at your end please.

Encl:- As above.


Divisional Forest Officer,

Wild Life Division, Chamba. O/C

Encl. No/ 3287-55 Dated Chamba, the/ 19-01-2013
19/1/2013

Copy is forwarded to:-

1. Pr. C.C.F. (Wild Life) H. P. Shimla.
2. C.C.F. (T) Chamba

For favour of information and necessary action please.

Encl:- As above.


Divisional Forest Officer,

Wild Life Division, Chamba. O/C

19/1/2013



ATTENDANCE SHEET FOR THE MEETING REGARDING WILDLIFE
HELD ON 07-12-2012 AT CONFERENCE HALL CIRCLE OFFICE CHAMBA.

23

Sl. No.	Name of officer/ officials	Designation	Signature
1	Sh. A. B. M. Reddy	CCERT/ID	[Signature]
2	Dinakar Sharma - Deputy	DEO Chamba	[Signature]
3	Rajesh Kumar	DEO Wildlife	[Signature]
4	Kanwar Sharma	ACF-2nd	[Signature]
5	Mohan Singh Rana	RO Wildlife	[Signature]
6	Yashpal F.R.	RO Wildlife	[Signature]
7	Baldev Ram F.A.	RO Wildlife	[Signature]
8	Tuan Raj Singh Dharmra F. Division	Superintendent	[Signature]
9	Anand Singh Chunab P. Division	Superintendent	[Signature]
10	Rajesh Duggan K.	HM	[Signature]
11	Suresh P. S. Sharma	ACF- Wildlife	[Signature]
12	Dr. Kiran Kumar	DEO Chamba	[Signature]
13	Devendra Sharma	Vice Chairman S.S. Division	[Signature]
14	Sant Ram	Ex. UP Wildlife Chamba	[Signature]
15	Rajesh	LIC Wildlife	[Signature]
16	Shanku Kumari	ST-2nd	[Signature]
17	Mohit Kumar	PS	[Signature]
18	Raj Kumar	Deputy Range Officer	[Signature]
19	Wajid Singh	Deputy Range Officer	[Signature]
20	Jadhav Mohan	FR R.F. Division	[Signature]
21	Mohd. Shabbir	Mr. Asst. D. O. Range	[Signature]
22	Das Raj Sharma	Vice Chairman Block Chamba	[Signature]
23	Uday Singh	Up Wildlife	[Signature]
24	Atul Singh	Up Wildlife	[Signature]
25	Mehboob	Up Wildlife	[Signature]
26	Vijay Kumar	Vice Chairman	[Signature]
27	Dev Raj Sharma EX	Chairman Tunch.	[Signature]
28	Sunil Kumar	Up Wildlife	[Signature]
29	Chand Sharma	KHASIA	[Signature]
30	Mohit Kumar	KHASIA	[Signature]
31	Asish Kumar	KHASIA	[Signature]
32	Santosh Kumar	Pardam	[Signature]
33	Karan Singh	Up Wildlife	[Signature]
34	Madan Lal	Up Wildlife	[Signature]
35	Sham Lal	Up Wildlife	[Signature]

24

No/ 3353
H.P. Forest Department

Dated Chamba, the/ 23-1-2013

From: - D.F.O. Wild Life,
Chamba.

To: - C.C.F. (T) Chamba.

Subject: - Status of rights, entitlements, privileges and obligations of local people of various sanctuaries of Wild Life Division, Chamba.

Memo: Kindly refer to telephonic discussion with your good self on 21-01-2013 on the subject cited above.

2. In this regard, it is intimated that Status of rights, entitlements, privileges and obligations of local people in respect of various sanctuaries viz Kalatop - Khajjar, Gangul Siyabehi, Kugti, Tundah & Sechu Twan Nalla Wild Life Sanctuaries of Wild Life Division, Chamba has been prepared and enclosed herewith for favour of further necessary action at your end please..

Encl: - As above.

Divisional Forest Officer,
Wild Life Division, Chamba.

23/1/2013



25

Status of rights, entitlements, privileges and the obligations of local people in respect of the proposed Eco Sensitive Zone of Sechu Tuan Nalla Wild Life Sanctuary

The Eco Sensitive Zone has been proposed on the Western side along the boundary of Sechu-Twan Nalla Wild Life Sanctuary after rationalization. The proposed Eco Sensitive Zone on the North Western side starts near Shun Glacier and goes up to 9.10 KM. with an average width of 1 KM. and have an area of 9.1 Sq. Km. On the South Western side, the Eco Sensitive Zone starts from Riwas and goes up to Ramdhar Janun Glacier over a length of 17.10 Km. with an average width of 1 Km. encompassing an area of 17.10 Sq. Km. The Eco Sensitive Zone has also been proposed along the area proposed to be excluded after rationalization over a length of 40.5 Km. with an average width of 500 Mtrs. and encompassing an area of 20.25 Sq. Km. Thus the total area of the Eco Sensitive Zone of Sechu Twan Nalla Wild Life Sanctuary is 46.45 Sq. Km. On the Northern side the boundary of the Sechu Twan Nalla Wild life Sanctuary is co-terminus with the state boundary of Jammu & Kashmir and no Eco Sensitive Zone has been proposed on that side which is to be decided at State level. The Eastern and Southern side of the sanctuary have boundary with the Lahoul & Spiti District and no Eco Sensitive Zone has been proposed on that side as the area is inaccessible and is mostly covered with the glaciers.

A part of the area (20.25 Sq. Km.) which is proposed to be excluded from the sanctuary after rationalization shall also constitute part of proposed Eco-Sensitive Zone. At present this area constitutes part of the Sechu Twan Nalla Wild Life Sanctuary and rights and concessions in respect of this area have become extinct after the declaration of the wild life sanctuary. After the finalization of the proposed rationalization, this area will not be a part of the sanctuary and the rights and concessions of the local people will be restored as they existed prior to the declaration of the sanctuary.

In respect of the other areas proposed to be the part of Eco Sensitive Zone as discussed above the existing rights and concessions of the local people are as follows :-

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The rights in reserve forests were settled during 1879 to 1882 and consists of the grazing, the collection of fire wood, grass cutting, torch wood, fodder and right of way etc. The right to timber is at present regulated as per the T.D. Policy of the Govt. of H.P. Notified during the year 2010.

The rights and concessions in old DPFs were settled during 1912 to 1915. ~~Some~~ old DPFs were re-demarcated during 1970 to 1980 and the rights were settled accordingly which consists of grazing, timber, fire wood, wood for agricultural implements, fodder, slate, stone and right of way etc. The right to timber is at present regulated as per the T.D. Policy of the Govt. of H.P. Notified during the year 2010.

In lieu of these rights, the local people have the obligation to protect the forests from fires and other hazards.


Divisional Forest Officer,
Wild Life Division, Chamba. G.C.

Original
23/11/13



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कार्यालय ग्राम पंचायत.....भूख.....

दिनांक 15/8/2014

1.

प्रतिलिपि प्रस्ताव संख्या

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ग्राम पञ्चायत / ग्राम सभा

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निमान रिट २१२१

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अध्ययन

$$= 91/248$$

5.

दिनांक

151814

विषय :- पञ्च प्राणी अथ २०२२ संवत् २०७७ साला अर्थात् २०२० ई. २०२१ ई. २०२२ ई. २०२३ ई. २०२४ ई. २०२५ ई. २०२६ ई. २०२७ ई. २०२८ ई. २०२९ ई. २०३० ई. २०३१ ई. २०३२ ई. २०३३ ई. २०३४ ई. २०३५ ई. २०३६ ई. २०३७ ई. २०३८ ई. २०३९ ई. २०४० ई. २०४१ ई. २०४२ ई. २०४३ ई. २०४४ ई. २०४५ ई. २०४६ ई. २०४७ ई. २०४८ ई. २०४९ ई. २०५० ई. २०५१ ई. २०५२ ई. २०५३ ई. २०५४ ई. २०५५ ई. २०५६ ई. २०५७ ई. २०५८ ई. २०५९ ई. २०६० ई. २०६१ ई. २०६२ ई. २०६३ ई. २०६४ ई. २०६५ ई. २०६६ ई. २०६७ ई. २०६८ ई. २०६९ ई. २०७० ई. २०७१ ई. २०७२ ई. २०७३ ई. २०७४ ई. २०७५ ई. २०७६ ई. २०७७ ई. २०७८ ई. २०७९ ई. २०८० ई. २०८१ ई. २०८२ ई. २०८३ ई. २०८४ ई. २०८५ ई. २०८६ ई. २०८७ ई. २०८८ ई. २०८९ ई. २०९० ई. २०९१ ई. २०९२ ई. २०९३ ई. २०९४ ई. २०९५ ई. २०९६ ई. २०९७ ई. २०९८ ई. २०९९ ई. २१०० ई.

[The handwritten Devanagari script in this section is extremely faint and largely illegible due to fading.]

Panchayat Sahasrab
Gram Panchayat Sahasrab
Teh. Pangi Distt. Chambe

29

प्रस्ताव प्रतिलिपि प्रपत्र

कार्यालय ग्राम पंचायत.....

विकास खण्ड पांगी, जिला चम्बा (हि.प्र.)

दिनांक 15/08/14

प्रतिनिधि प्रस्ताव संख्या : 14

विकास : ग्राम पंचायत/ग्राम सभा

अध्यक्षता : श्री राम राम

उपस्थिति : 206

दिनांक : 15/08/14

विषय : बन्य प्राणी अभयारण्य को इनको सेंद्रिय जून में लाने बारे।

यह है कि आज की ग्राम सभा की बैठक में प्रधान महोदय/वन रक्षक महोदय द्वारा बताया गया कि ग्राम पंचायत से दूर में जो अब नई बन्य प्राणी अभयारण्य बनाई गई है इसके साथ लगते 1/2 कि.मी. का दायरा इनको सेंद्रिय जून में निष्काद किया जा रहा है। इस 1/2 कि.मी. क्षेत्र को इनको सेंद्रिय जून में लाने से स्थानीय लोगों को कोई एतराज नहीं है तथा सभी में उपस्थित व्यक्तियों द्वारा यह भी बताया गया कि इसमें स्थानीय लोगों के हक हकम व बिनास कार्य को करने में कोई बाधा नहीं आती - चाहे। बैठक में अंत प्रस्ताव पर काफी समय तक विचार-विमर्श किया गया। निष्कर्ष के तौर पर प्रस्ताव को सर्वसम्मति से पारित कर दिया गया। तथा यह भी निर्धारित किया गया कि इस प्रस्ताव को सदन की वेबसाइट पर भी अपलोड कर दिया जाए।

श्री. राम राम

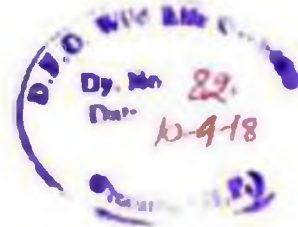
ग्राम पंचायत, पांगी, जिला चम्बा (हि.प्र.)

No. EDN-CMM-GCC(Misc)/2018 25
 Office of the Principal
 Government College Chamba Distt Chamba HP
 Accredited "B+" by NAAC
 principalgchamba@gmail.com 01899-222207

Dated 06-4-18

To

The Divisional Forest Officer
 Wildlife Division Chamba
 Distt Chamba HP



Subject: - Regarding constitution of Monitoring Committee for Eco Sensitive Zone of Saichu Tuan Nalla Wildlife Sanctuary in Pangl Valley.

Sir,

Jai Hind

This has a reference to your office letter no. 3196-97 dated 22-03-2018 on the above cited subject vide which the names of experts in the field of Ecology / Environment/ Wildlife along with their qualification are required.

As desired the requisite information relating to experts in the field of Ecology/ Environment/ Wildlife in r/o two Asso. Prof. / Asstt. Prof. of G.C. Chamba are enclosed as under

Sr. No.	Name of the Teacher/ Expert	Address	Contact No.	Qualification, Experience and research papers details attached an annexure
1	Dr. Mehinder Slariya, Asso. Professor, Deptt of Sociology.	VPO Saru Tehsil & District Chamba HP	94180-41374	Annexure - A
2	Dr. Manesh Verma, Asstt. Professor, Deptt. Of Zoology	VPO Sarol Tehsil & District Chamba HP	70183-80121	Annexure - B

This is for your kind information please.

Handwritten signature and initials
 Upwd.
 01/4/

Handwritten signature
 06.04.18
 Principal
 Government College, Chamba
 Govt College Chamba (H.P.)
 Distt Chamba



CURRICULUM VITAE**Dr. MOHINDER KUMAR SLARIYA**

Associate Professor,
Department of Sociology,
Government Post Graduate College,
Chamba, Himachal Pradesh,
India-176310
E-mail: mkslariya@gmail.com



PRESENTLY WORKING:
WORKING SINCE:

Associate Professor of Sociology
28.10.1997 to date

QUALIFICATION:

2011-15

Post-doctorate, "Examining the Role of Changing Agricultural Production in Context of Livelihood Security" from Faculty of Mathematics and Natural Sciences, Department of Geology and Geography, University of Turku, Finland sponsored by Finnish Science Academy, Finland.

2009

Ph.D. (Sociology), "A Study of Impacts of Hydroelectric Power Projects on Ecology and Society in Chamba district of Himachal Pradesh", from MJP Rohilkhand University, Bareilly (UP)

1996

Master of Sociology

1995

NET (National Eligibility Test) qualified, conducted by University Grants Commission, New Delhi.

1994

Graduation (Arts; with English, Hindi, History and Sociology) (Second Division)

1991

Senior Secondary (10+2) (second division)

1985

Matriculation (HP Board of School Education) (Second division)

SPECIALIZATION:

Environmental Sociology

INTERNATIONAL CONFERENCES ATTENDED:

International Conference on Development, Biodiversity and Climate Change: Issues and Challenges" organized by Department of Sociology, Govt. PG College, Chamba, India in collaboration with Asia Climate Education Centre, Jeju, South Korea from 3rd to 5th of October, 2014 and Presented Paper entitled, "Damming of Himalayan Rivers: Gambling With the Lives of People: A Case Study



Existence of River, Life and Livelihood of Mountain Inhabitants: A Study of Himalachal Himalayas " <http://www.tribuneonline.in/>

Participated as Indian delegate in 2nd Indo-German Science Conference entitled, "Science and Technology- Drivers for a Sustainable Future; International Dialogue for Sustainability" organised by Federal Ministry of Education and Research Germany and Department of Science and Technology Govt. of India and presented a paper on the topic "Energy Generation -Needs a New Model of Development", on 27.4. 2009 at United Nations University Campus, Bonn, Germany.
<http://www.vie.unu.edu/article/read/science-for-sustainability-driver-for-a-sustainable-future>

7th International Science Conference on Human Dimension of Social Change (opening meeting), Bonn, Germany, held on 26-30 April, 2009, presented research Paper, "The Other Side of Hydroelectric Power Development- A Case Study of NHPC Owned Power Projects in India".
http://en.wikipedia.org/wiki/Earth_System_Governance_Project

People SAARC Conference held at Kathmandoo, on 22-24 March, 2007, and present research based research paper, "Developmental Concerns in Himachal Pradesh- A Hydroelectric development Perspective", organized by Actionaid International and Indian social Institute, New Delhi.
<http://www.people-saarc.org/index.php/people-saarc-declarations/6-pledgements-2007>

PAPER ACCEPTED FOR INTERNATIONAL CONFERENCE

XIX ISA World Congress of Sociology, Power, Violence and Justice: Reflections, Responses and Responsibilities Toronto, Canada, July 15-21, 2018, going to organize session, entitled, "Human Dimensions of Hydro Based Development in Mountainous Regions: Socio-Psychological Perspectives"
"https://nacon1.confex.com/nacon1/oc2018/webprogram/prefliminary/Session10718.html"

2014 Asia Global Land Project Conference in Taipei, Taiwan, Going to held from September 24-26, 2014 and going to chair a session entitled: Water, Development and Environment: Issues and Challenges in Himalayas and Session ID: all106
http://www.sdp.taipei.org.tw/Asia_Conference_2014

XVIII ISA World Congress of Sociology: Facing an Unequal World: Challenges for Global Sociology, going to be held from 13-19 July, 2014 at Yokohama, Japan, going to chair session and present paper



<http://www.isa-sociology.org/congress2014/>

17th World Congress of International Union of Anthropological and Ethnological Sciences IUAES-2013, held at University of Manchester, UK from 5-10 August, 2013 and could not present accepted paper entitled "*Hydroelectric power projects as a threat to existing traditional knowledge: a study of power projects in Ravi basin in Chamba district of Himachal Pradesh, India*" <http://www.nomadit.co.uk/iuaes/iuaes2013/panels.php?PanelID=1003#>

"International Conference on Water and Society-2011" organized by Wessex Institute of Technology at Las Vegas USA held 5-7 December, 2011 could not present paper accepted paper "*A Critical Appraisal of Environmental Regulations Implemented in Hydroelectric Power Developmental Projects-A Case Study of Ravi Basin chamba Himalaya*" in Lesson Learn Session.
http://www.wessex.ac.uk/components/cms_forms/uploads/

14th International River Symposium held at Brisbane, Australia from 26-29 Sept. 2011 and could not present the accepted paper "*Psycho-Traumatic Analysis of Displaced and Native People of Chamara-I in Chamba district of Himachal Pradesh India-Failure of the Impact Assessment Studies*"
<http://www.riversymposium.com/papers>

"International Scientific Conference Science for Environment-Environment for Society" held at Aarhus University, Denmark from 5-6 October, 2011, could not present accepted paper "*Viability of CDM Projects in India: A Study of Chanju CDM Project in Chamba District of Himachal Pradesh India*"
<http://www.dmu.dk/en/news/arrangements/conferences/symposiumenvironmentconference2011/>....

"International Workshop on Innovation, Infrastructure and Village Information System for Development Planning" held at Sultanpur, UP being organised by NRDMS, Department of Science and Technology, Govt. of India from 10-11 November, 2011 and could not present the accepted paper "*Hydroelectric Power Projects-A Threat to Existing Traditional Knowledge: A Study of Power Projects in Ravi Basin in Chamba district of Himachal Pradesh India*"
<http://skunideemo.com/workshop/dsu/2011/>....

ISA Conference-2012 scheduled to be held at Buenos Aires, Argentina from 1-4 August, 2012 could not Chair Scientific Session E, "Climate Change, Food Insecurity and Malnutrition" and present paper: www.isa-sociology.org/buenos-aires-2012/www.php?n=WC05



of Failure of Implemented Environmental Regulations in Ravi Basin in Himachal Himalayas, India"

Hydro-vision International-2014, "**Energizing Innovation**" held at Nashville, Tennessee State, USA from July 22-25, 2014, contributed as panelist in the panel entitled, "Water Resources-05, **How your project affects my river**", and title of my deliberation was "**How Power Projects are Affecting Rivers of Himalayas?**"
www.hydrovisionintl.com.

Presented Research Paper entitled, "**Viability of CDM Projects in India: A Study of Chanju CDM Project in Chamba District of Himachal Pradesh India**" in International Scientific Conference on "Sustainable Land Use and Rural Development in Mountain Areas" held at University of Hohenheim, Stuttgart, Germany on 16-18 April 2012. <https://nplands2012.uni-hohenheim.de/91718?&l=1>

Contributed as Panelist on "**Environmental Issues in Himalayas**" in "International Conference on Peace, Environment and Tourism-2011" held from 20-21 September, 2011 at Pokhara, Nepal

Chaired Scientific Technical session-E of "International Conference on Peace, Environment and Tourism-2011" held from 20-21 September, 2011 at Pokhara, Nepal

Presented Research paper in "International Conference on Peace, Environment and Tourism-2011" held from 20-21 September, 2011 at Pokhara, Nepal and presented paper entitled, "**Scramble for Water in Himalayas: A Case Study of Water Looting in Ravi basin in Himachal Himalayas**" <http://www.jumeca.org/s2F&name=Mohinder+Kumar+Slariva&cat=filter&showads=1>

Participated as Sponsored delegate and presented paper in "13th International River Symposium" held at Perth, Western Australia, from 11-14 October, 2010. The title of paper was, "**Hydroelectric Power Development: A Threat to lives, Livelihood and Existence of Rivers- A Study of Himachal Himalayas**"
http://archive.riversymposium.com/index.php?element=T_14_R1_Mohinder+Kumar.pdf

International conference on "**Himalayan Environment: Issues and Challenges**", organised by Integrated Institute of Himalayan Studies and Mountain Forum Himalayas, on 22-24 March, 2010. The title of the paper was "**Ecological Concerns of Hydroelectric Power Projects- A Study of Ravi basin in Himachal Himalayas**"

International Conference on "**Cooling the Earth: Tactics for Restoring Climate Order and Saving the Living Planet**" organized by the Department of Environmental Sciences, GP Pant Agricultural University, Pantnagar from 15 to 17 November 2010 and presented paper entitled, "**Hydroelectric Power Developments - A Threat to the**"



"4th BALWOIS 2010 Conference on Water Observation and Information System for Decision Support", held on 25 - 29 May 2010, at Ohrid, Republic of Macedonia, could not present accepted paper *"The Role of Hydroelectric Power Projects in Climate Change: A Case Study of Ravi Basin in Chamba District of Himachal Pradesh India"*

"4th IMA Conference on Analysing Conflict Transformation" as contributions to a discussion session on *"Water Management in India"* held from 28-30 June, 2010 at The Institute of Mathematics and its Applications, Essex, U.K. in the University of Oxford, could not present accepted paper, *"A Critical Appraisal of Environmental Regulations Implemented in Hydroelectric Power Developmental Projects- A Study of Hydroelectric Power Projects in Himachal Pradesh, India."*

2010 International Climate Change Adaptation Conference on *"Climate Adaptation Futures-Preparing for the unavoidable impacts of climate change"* held from 29th June-1st July, 2010 in the University of Queensland, Australia, could not present accepted paper *"Psycho-Traumatic Analysis of Displaced and Native People of Chamera-I in Chamba district of Himachal Pradesh India"*

NATIONAL CONFERENCE

ICSSR sponsored National Seminar on *"Food Security in India: Challenges and Ways ahead"* held at Govt. College, Ghumarwin, District Bilaspur, Himachal Pradesh and contributed as chairperson of technical session and delivered Plenary Address entitled, *"Shifting from Traditional Cropping: A Threat to Food Security"*, from 5-6 April, 2014.

Participated as Presented Paper entitled, *"Hydroelectric Power Development: An Invitation to Disaster"*, at Indian Institute of Technology, Roorkee in National Seminar, *"Revisiting Development Paradigm"*, held from 15-16 February, 2014.
<http://www.iitr.ac.in/>

National Conference on *"Sustainable Use of Water Resources in Context of Climate Change - A Shared Responsibility"*, 11th - 13th March 2011, at Govt. PG College, Chamba, Himachal Pradesh in collaboration with Mountain Forum Himalayas, contributed a paper entitled, *"Industrial Development and Environment: A Sociological Study"*,
<http://www.ssmi.com/est.php?id=189>
<http://www.india-waterportal.org/52Fnode%2F15257&name=Mohinder-Kumar-Srivastava&email=shwada-1>

National Seminar, *"Emerging Consumerism in Context of Climate Change: Issues and Challenges"* organized from 3-5th of October, 2012 in collaboration with IIPA, New Delhi, presented research



paper entitled, "*Shift from Traditional Cropping? A Study of Churah Tehsil of Chamba District*" <http://mksharva.webs.com/seminar>

National Conference on Campaign for Himalayan Policy held at Kullu and presented a presentation entitled "*From Ecological Concerns to Climate Change*" Organised by Indian Social Institute, New Delhi from 6-7 August, 2007

World Social Forum India held at New Delhi from 9-13th of November, 2006 and gave presentation on the topic, "*RR Policy and Environmental Concerns in Chumera Series of Power Projects*" organised by World Social Forum-India and Indian Social Institute, New Delhi

National Conference on Education, held at India Habitat Centre, New Delhi, represents Himachal Pradesh on the issue of "*Educational Backwardness in Himachal Pradesh-A Case Study of Chamba District*" organised by UNDP& PRATHAM (USA), 9-10 October, 2008

Presented a presentation in National Workshop on Glacier Recession, organised by SEEDS India, held at Shimla on the topic, "*Development Induced Climate Change*" on 17th of June, 2008

Give Presentation in *Disaster Fair*, held at Shimla organised by Mountain Forum Himalayas & CASA (Christian Auxiliary for Social Action, New Delhi) and presented two research papers entitled, "*Hampered Physical Environment- An Invitation to Disaster*", and "*Developmental Concerns in Himachal Pradesh- An Environmental Perspective*", from October 6-10, 2007

Present a presentation on *World Earth Day*, organised by Himachal Pradesh Department of Science and Environment, held at Paryavarna Chetna Kendra, Sahoo, Chamba Himachal Pradesh, on the topic, "*Glacier Recession in Lesser Himalayas- A Study of Glaciers in Chamba District*" On 22nd of April, 2007

Gave presentation in Seminar organised by ICSSR (Indian Council of Social Science and Research), at Govt. PG College, Chamba (HP) on the topic, "*Human Survival at a Stake*".

National Level Training Workshop on Climate Change Impacts on Water, Sanitation & Health organised by National Institute of Administrative Research, Lal Bahadur Shastri National Academy of Administration, Mussoorie, Sponsored by Ministry of Drinking water and Sanitation, Govt. of India, from 26-27 June, 2013

2-days Regional workshop on "*Restructuring of Syllabi of Sociology for Undergraduate Classes*", organized by Department of Sociology, SCVB Govt. College, Palampur at CSK HP Agriculture University.

ACADEMIC TRAINING PROGRAMMES ATTENDED



Palampur from 14-15 May, 2013 and contributed as presenter of course contents in Technical Session on Core Courses.

2-days Regional workshop on "Restructuring of Syllabi of Sociology for Undergraduate Classes", organized by Department of Sociology, SCVB Govt. College, Palampur at CSK HP Agriculture University, Palampur from 14-15 May, 2013 and Chaired Technical Session on Identification of Elective Courses.

2-days "Visioning workshop" conducted by Climate Change Community of United Nations Development Programme, held at India Habitat Centre, New Delhi, from 29-30 April, 2010.

3-week Refresher Course (RC-196.2008) organized by UGC-Academic Staff College, HP University, Shimla; from 11.9.2008 to 01.10.2008 and passed with grade "A".

4-day Workshop on "Youth and Democracy" organized by The Educational Resource Centre Trust, New Delhi, sponsored by Friedrich Ebert Stiftung from 20-23 November, 2007.

5-day Training Programme on "Research Methodology: emerging Needs in Designing and Implementing Research Proposals in Social Sciences", organized by Indian Council of Social Science Research North-western Regional Centre, Chandigarh at Academic Staff College, HP University, Shimla; from 16-19th of October, 2006.

5-day Training and orientation Programme, organized by Institute of Development and Communication, Chandigarh, organized at CSK HPKV, Palampur, Himachal Pradesh from 5.6.2005 to 9.6.2005.

3-week Refresher Course (RCSOCIO-134.2003) organized by UGC-Academic Staff College, HP University, Shimla; from 29.3.2004 to 17.4.2004 and passed with grade "A".

4-week Orientation Programme (OP-56) organized by UGC-Academic Staff College, HP University, Shimla; from 11.6.2001 to 7.7.2001.

ORGANISE EVENTS

Organized International Lecture for the college students entitled, "How to Crack Cultural Exchange Programme in European Universities" by expert Dr. Toni Happenen, Post-doc fellow, Department of Geology and Geography, University of Turku, Finland, on 8th of October, 2013.

Organized National Conference on "Sustainable Use of Water Resources in Context of Climate Change - A Shared Responsibility", 11th - 13th March 2011, at Govt. PG College, Chamba, Himachal Pradesh in collaboration with Mountain Forum Himalayas, popularly



known as "Chamba Water Meet-2011" contributed as Organising Secretary.

National Seminar, "Emerging Consumerism in Context of Climate Change: Issues and Challenges" organized from 3-5th of October, 2012 in collaboration with IIPA, New Delhi, contributed as Organising Secretary <http://mbstaniya.webs.com/seminar>

Organised International Conference on "Development, Bio-diversity and Climate Change: Issues and Challenges" from 3rd -5th October 2014 at Government P.G. College Chamba in collaboration with Asia Climate Education Center Jeju South Korea, IUCN, ISA WG-05, RNHS, Sewa Himalayas contributed as Organizing Secretary.

PROJECT COMPLETED:

"Livelihood Security in a Changing Socio-economic Environment in Himachal Pradesh, India" working on Task-I: *(Examine the Role of Changing Agricultural Production in Context of Livelihood Security)*, sponsored by Academy of Finland and executed by Department of Geology and Geography, University of Turku, Finland completed in March, 2015.

University Grants Commission sponsored Minor research Project entitled, "Eco-Psych Perception of the People regarding the Viability of Micro Hydroelectric Power Projects-A Study of Chumju basin in Chamba district of Himachal Pradesh" submitted to UGC in 2013.

University Grants Commission sponsored Minor research Project entitled, "Displacement- A Psychological Trauma: An Ecological Study of Displaced People of Chamera-I" submitted in 2010.

University Grants Commission sponsored Minor research Project entitled, "Ecology of Power Project- An Environmental Study of Hydroelectric Power Projects in Ravi Basin", submitted in 2006.

Industrialization and Environment- A Case Study of ACC Cement Factory in Bilaspur district of Himachal Pradesh", submitted project report to the Department of Sociology, Himachal Pradesh University, Shimla; India in 1995.

ON GOING PROJECT:

Establishment of Greenhouse Gas Reduction System for Enterprises in Juju against Establishing National Reduction Goal", funded by Jeju Green Environment Centre, Jeju Government and Ministry of Environment, South Korea.

FUTURE PROJECT SUBMITTED FOR FUNDING

"Food Security and Livelihood options in Context of Climate Change: A Study of Changing Socio-economic Environment of Churah Tehsil of Chamba District of Himachal Pradesh, India"



http://link.springer.com/chapter/10.1007%2F978-81-431-5486-8_3 79page-1

Contributed a Chapter, entitled "Globalization Led Clean Development Mechanism Based Developmental Projects: A Threat to Natural Ecological Order", Page No. 293-314 in edited book, "Globalization, Economy and Society", published by Concept Publishing Company, New Delhi, ISBN-13: 978-93-5125-059-3.

Published edited book entitled, "Water and Development: A Composite View", ISBN 13 9788176222693 and ISBN 10 8176222691, published by Bio-tech Books, New Delhi, India, <http://www.amazon.co.uk/Water-Development-A-Composite-View/dp/8176222690> and <http://www.dayabooks.com/index.php?p=s&Field=author&String=Sharma,%20Mohinder%20Kumar>

Climate Change in the Himalayas: Preserving the third pole for Cooling the Earth, published by Indus Publishing Company, New Delhi, ISBN-10: 8173872287 and ISBN -13: 9788173872280, Contributed chapter entitled, "Hydroelectric Power Developments—A Threat to the Existence of River, Life and Livelihood of Mountain Inhabitants: A Study of Himachal Himalayas", Page No. 142-164

Water and Development: A Composite View, ISBN 13 9788176222693 and ISBN 10 8176222691, published by Bio-tech Books, New Delhi, India, contributed a chapter entitled, "Industrialization and Environment- A Sociological Analysis of A.C. Barmuna Cement Factory" Page No. 156-162 <http://www.amazon.co.uk/Water-Development-A-Composite-View/dp/8176222690> and <http://www.dayabooks.com/index.php?p=s&Field=author&String=Sharma,%20Mohinder%20Kumar>

Water and Development: A Composite View, ISBN 13 9788176222693 and ISBN 10 8176222691, published by Bio-tech Books, New Delhi, India, contributed a chapter entitled, "Scramble for Water in Himalayas: A Case Study of Water Looting in Ravi basin in Himachal Himalayas" Page No. 68-74 <http://www.amazon.co.uk/Water-Development-A-Composite-View/dp/8176222690> and <http://www.dayabooks.com/index.php?p=s&Field=author&String=Sharma,%20Mohinder%20Kumar>

Mountain Ecosystem and Man, Published by Soil Conservation Society India; edited by Sanjay Arora and title of the chapter is "The other side of Hydroelectric Power Development: A Study of NHPC Owned Power Projects", Page No. 388-406 in 2009
Member of International Sociological Association
Indian Sociological Association

ations:



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

Future", was co-organized and hosted by the United Nations University Vice Rectorate in Europe. The conference took place at the UN Campus Bonn on 27-28 April 2009, presented Paper entitled, "Energy Generation Needs New Model of Development" is available at <http://www.international-environmental-media-C2-German-Indian-Conference-2009-Proceedings-LOW1.pdf>

Participated in National Seminar on "Sustainable Consumption, Climate Change and Consumers- Toward a Better Future", organized by Centre for Consumer Studies, IIPA, New Delhi and contributed a paper entitled, "Impacts of Dams on Climatic Conditions and Agriculture of Hills- A Case study of Chamera-I Hydroelectric Power Project in Ravi basin of Himachal Pradesh" http://www.consumereducation.in/%2Focides10_Pdf&name=Mohinder+Kumar+Slariya&cat=document&showads=1

Dr. Mohinder Kumar Slariya, "The Other Side of Hydroelectric Power Development- A Study of NHPC Owned Power Projects", (pdf), Government PG College, Chamba Himachal Pradesh, http://en.wikipedia.org/wiki/Ravi_River/wiki_note-12

Contributed research paper entitled, "A Critical Appraisal of Environmental Regulations Implemented in Hydroelectric Power Developmental Projects- A Study of Hydroelectric Power Projects in Himachal Pradesh, India: <http://ocs.balwois.com/index.php/conference-BALWOIS&schedConf=BW2012&page=schedConf&on=presentation&searchInitial=M&track=Contributed+as+Reviewer+in+Klima-2011+and+Climate-2012,+from+5-9+November,+2012> <http://www.yasni.com/exi.php?url=http%3A%2F%2Fwww.climate2012.de%2Fen%2Fcommunity&name=Mohinder+Kumar+Slariya&cat=filter&showads=1>

Discussion on developmental issues in Himachal Pradesh <http://himachal.gov.in/ipr/discuss/discuss.asp>

<http://www.yasni.com/exi.php?url=http%3A%2F%2Fwww.doi.ac.com%2Fdocs%2F79733178%2FAbstractBook&name=Mohinder+Kumar+Slariya&cat=filter&showads=1>

CONTRIBUTION:

CATION OF BOOK/TER

"Livelihood Security in Northwestern Himalaya-Case Studies from Changing Socio-economic Environments in Himachal Pradesh, India" Advances in Geographical and Environmental Sciences; Singh, R.B., Hietala, Reija (Eds.) ISBN: 978-4-431-54867-6 (Print) 978-4-431-54868-3 (Online), published by Springer Japan, Tokyo, Contributed Chapter entitled, "Shifting from Traditional Food Cropping to Cash Cropping" published in 2014, Page No. 83-94



February, 2013, Page No. 65-79; <http://www.confahjournals.com/confahjournals/images/612011955128.pdf>

"Hydroelectric Power Generation: Himachal Pradesh's Perspective" published by EXCEL International Journal of Multidisciplinary Management Studies, ISSN 2249- 8834 EUMMS, Vol.3 (5), May (2013); http://zenithresearch.org.in/images/stories/pdf/2013/MAY-IJUMMS/21_EUMMS_VOL3_ISSUE5_MAY2013.pdf; <http://www.indianjournals.com/doi.aspx?target=journal&volume=3&issue=5&article=021>

ARTICLES PUBLISHED OTHER THAN RESEARCH JOURNALS

"Ravi Dances to the Tunes of NHPC: A Study of NHPC owned Power Projects", published by developedNation.Org, Sahayog Mandir Ghamali, Naupada, Thane, Maharashtra, India, http://www.developednation.org/powerprojects_chamba_himachal.html

"The Role of Hydroelectric Power Projects in the Climate Change: A Case study of Ravi basin in Himachal Pradesh" <http://www.indiawaterportal.org/pwa/2863> and also available on <http://www.yasni.com/connect.php?url=http%3A%2F%2Findiaenvironmental.org.in%2Freports-documents%2Frole-hydroelectric-power-projects-climate-change-case-study-ravi-basin-himachal&name=Mohinder+Kumar+Slariya&cat=filter&showads=1>; <http://ebookbrowse.com/hall-the-role-of-remote-sensing-in-climate-change-ppt-d27370255>

"The Other Side of Development: A Case Study of ACC Cement Factory in Himachal Pradesh (India)" www.mtnforum.org%2Fen%2Fcontent%2Fother-side-development-case-study-acc-cement-factory-himachal-pradesh-india&name=Mohinder+Kumar+Slariya&cat=filter&showads=1

Amar Ujala sharing an article on sustainability for future, <http://hillpost.in/2007/03/22/amar-ujala-with-special-himachal-supplychain/1647/latest-news/suodp>

CONFERENCE PROCEEDINGS:

International Scientific Conference on "Sustainable Land Use and Rural Development in Mountain Areas" at University of Hohenheim, Stuttgart, Germany on 16-18 April 2012 an presented paper entitled, "Viability of Clean Development Mechanism (CDM) projects in India: A Study of Chamba CDM project in Chamba district Himachal Pradesh", https://www.uni-hohenheim.de/fileadmin/einrichtungen/uplands2012/fullpaper/Slariya_CDM_Projects.pdf <http://www.indiawaterportal.org/node/26191>

2nd German-Indian Conference on Research for Sustainability, entitled "Science for Sustainability – Driver for a Common



Delivered Lectures on "Disaster Management programme of IGNOU" as Resource Person in National Workshops organised in Chamba district of Himachal Pradesh in 2012

RESEARCH PUBLICATIONS

"Sowing the Seeds of Change: Shifting from Traditional Cropping to Cash Cropping-Some illustrations from Western Himalayas" published by International Journal of Sociology and Social Anthropology ISSN number; ISSN 2321-9548 going to publish in November, 2014 issue.

International Peer Reviewed Scholarly Research Journal for Interdisciplinary Studies; ISSN number e-2278- 8808, print 2319-4766, Vol. July-August Issue; 2013, entitled, "Development and Water Resources in Indian Himalayan Region: An Invitation to Disaster- A Study of Hydroelectric Power Developmental Projects in Himachal Pradesh" <http://www.sriis.com/index.php/80-issues-pdf/623-development-and-water-resources-in-indian-himalayan-region-an-invitation-to-disaster-a-study-of-hydroelectric-power-developmental-projects-in-himachal-pradesh>.

International Journal of Research in Sociology and Social Anthropology; ISSN number; ISSN 2321-9548; Vol. 1 (2) Sept. 2013: 15-25, "Hydroelectric Power Generation and Human Dimension: Psycho-Traumatic Analysis of Chestees and Natives and Natives of Chamera-I" <http://open.ijrssa.com/index.php?journal=ij&page=article&openview&path%5B0%5D=18&path%5B1%5D=16>

"Hydroelectric Power Generation: Himachal Pradesh's Perspective" published by Electrical India, Cherry Publication, Mumbai having it's office in Belgium, Europe, Vol. 53 No. 8, pages 54-67, August, 2013. Earlier appeared in Research journal in form of Research paper in EXCEL International Journal of Multidisciplinary Management Studies, ISSN 2249- 8834 EJMMS, Vol.3 (5), May (2013) and re-produced as article in this magazine. <http://www.electricalindia.in/NEW-electrical/menu%20index.html>

"Hydroelectric Power Projects- A threat to Existing Traditional Knowledge: A Study of Power Projects in Ravi Basin in Chamba District of Himachal Pradesh, India", published by Asian Journal of Multidimensional Research, Vol.2 Issue 3, March 2013, ISSN 2278-4853. <http://www.scribd.com/document/14914914/Asian-Journal-of-Multidimensional-Research-Vol-2-Issue-3-March-2013-4853>

"Globalization Led Clean Development Mechanism Based Developmental Projects: A Threat to Natural Ecological Order", published by Education Confab, ISSN 2320-009X, Vol.2 No.



topic, *"Water Management in India: Social Engineering Perspective"* on 30th of January, 2018.

Delivered expert lecture in regional workshop entitled, *"Towards Achieving Green Growth, Eco-efficiency and SDGs for Urban Sustainability"* held from November 4-5, 2017 at Centre for Research in Rural and Industrial Development (CRRID), Chandigarh and the title of the presentation was, "

Delivered four expert lectures to police personnel organized by Chamba Police on title, *"Barriers of Communication"*, *"Understanding Normal and Abnormal Behaviour"*, *"Individual Behaviour: Body and Mind"* and *"Individual Behaviour and Defense Mechanism"*

Attended workshop and presented paper in *"Regional Training Need Assessment workshop on Integrating Climate Change and Environmental Issues in the Training Framework of North and Central Zone State Administrative Training Institutes"* from 17-18 February, 2014, held at India Habitat Centre, New Delhi.

International Workshop on *"Imperatives for Planning for Equitable and Prosperous Cities"* on February 20-21, 2014 under HUDCO Chair Programme at CRRID, Chandigarh. Delivered expert lecture on *"Towards Improved Environmental Planning: Issues and Alternatives"*

Delivered expert deliberation on the topic, *"Understanding Issues of Urban Development in Context of Himachal Pradesh"* organized by CRRID, Chandigarh on 3rd of December, 2013.

Delivered Expert Lecture as Resource Person in *"Regional workshop on Low Carbon-Green Growth"* organized by CRRID and HUDCO chair, Chandigarh on the topic, *"Role of Representatives of People in Low Carbon-Green Growth"* on 14th of March, 2013

Delivered expert Lecture to the Students of SVNIT, Surat, Gujarat on dated 4th of March, 2013 on the Topic, *"How to Become IAS Officer?"*

Delivered Expert Lecture to M. Tech. & Ph.D. Students of Water Resource Engineering Department in SVNIT, Surat, Gujarat, on the topic, *"Hydro-power Generation: Socio-engineering Perspective"* on 7th of March, 2013.

Delivered Lectures in *"International Workshop aiming to finalize Research /questions"* to the students of M. Phil./Ph.D on the topic, *"How to finalize Research Questions in Primary Research"*, at Faculty of Mathematics and Natural Sciences, Department of Geology and Geography, University of Turku, Finland from 11-14th of April, 2012



WORKED IN INTERNATIONAL AND NATIONAL COLLABORATION:

International Research Collaboration with Rosanne Van Schie, Faculty of Forestry, Wolf Lake First Nation and University of Toronto, Canada

International Research Collaboration with Department of Cultural Anthropology, University of Belgium.

International Research collaboration with Geography Division of Department of Geology and Geography, University of Turku, Finland

Asia Climate Change Education Centre, Jeju South Korea (Jeju National University, South Korea)

Conducted workshops as resource person for Japan International Cooperation Agency (JICA) and Department of Agriculture, Govt. of Himachal Pradesh in seven districts of Himachal Pradesh on the topic, "Diversified Agriculture for Enhanced Farm income of the Farmers of Himachal Pradesh" in February, 2008

Contributed as Resource Person in workshop organised by World Bank on RR issues in Developmental Processes and presented two presentations on the topics "Psycho-traumatic Aspects of Displacement" and "Resettlement and Rehabilitation Policy implemented in Himachal Pradesh", held at Palampur Himachal Pradesh on 22-23 October, 2008

Working as Socio-economic and environment expert with Himachal Pradesh Forest Department sponsored and JP Associates facilitated Project committed to EIA preparation in Ravi basin and also heading research team of the project from 2010-2012

LECTURE DELIVERED

Delivered invited lecture in National Conference on "Quality Enhancement in Higher Education", organized by MES Adasaheb Garware College, Pune, Maharashtra from 23-24 January, 2018, on title "*Internationalization of Higher Education in Perspective of Skill India-2022: Status and Challenges Ahead*"

Delivered Expert Lecture at Department of Water Resources and Civil Engineering, SVNIT Surat, Gujarat on the topic, "Social Engineering Perspective of Water Management" on 25th of January, 2018.

Delivered Expert Lecture at National Centre for Good Governance, Lal Bahadur Shastri Administration Academy, Mussoorie, UK on the



Social Policy expert of IUCN, Switzerland
 Reviewer of International Journal of Renewable and Sustainable Energy (Elsevier) <https://evolve.elsevier.com/>
 Reviewer of International Journal "Human Ecology"
 Reviewer of International Research Journal, "Sociology on Move"
 Member of editorial Board of Global Journal of Interdisciplinary Social Sciences; <http://www.gjiss.org/gjiss/gjissEditorialBoard.aspx>
 Reviewer *International research Journal Sociology Study*, published by David Publishing Company, EL Monte, USA;
<http://downloadpdfz.com/pdf/editorial-board-members-74946160.html>
 Reviewer of National Journal of Social and Natural Sciences, ISSN 2277-6117, an international indexed and peer reviewed journal www.njssrj.com
 Member of Water Community of UNDP, New Delhi
 Member of Disaster Management Community of UNDP, New Delhi
 Member, International River Network (IRN)
 International Water Association (IWA)
 Member of Climate Change, Disaster Management and Water Communities of UNDP
 Member of ICIMOD, Kathmandu, Nepal
 Affiliated to International Human Dimension Programme (IHDP)

Additional Capabilities:

Capable to work on computer on any software and can feed and interpret raw primary data and also capable to type in English with speed of 40-50 words per minute.

Capable to take any research assignment: from formulation of research project to execution

Capable to write policy and research paper for conferences/ workshops, to ministries etc.

Capable to organize academic event of regional/zonal/national/ international level in form of seminar/ conference/workshop/ symposium

Know driving LMV

Personal Details:

Date of Birth: 10.03.1970
 Son of Late Sh. Karam Chand
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 Tehsil and District Chamba Himachal Pradesh
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 Email: mohinderk@gmail.com Web: www.mohinderkariya.in

(Dr. Mohinder Kumar Saini)



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maneshkumar1976@gmail.com

Dr. Manesh Kumar

Date of Birth	02 September, 1976
Qualification	➤ Ph.D. (Zoology) from Panjab University, Chandigarh, 2011. ➤ B.Ed. from H.P. University, Shimla, 2003. ➤ Qualified UGC-NET-JRF 2001, UGC-NET-LS 2002, 2003. ➤ M.Sc. (Zoology) from H.P. University, Shimla with specialization in Animal Physiology 2002. ➤ B.Sc. (Medical) from H.P. University, Shimla, 1999. ➤ 10+2 (Medical) from H.P. Board of School Education, Dharamshala, 1998. ➤ Matriculation from H.P. Board of School Education, Dharamshala, 1997.
Technical Qualification	➤ Practical knowledge of Scanning Electron Microscopy (SEM) and Transmission Electron Microscopy (TEM).
Experience	Eight years Research Experience, Eighteen year teaching in UG classes.
Workshop/Seminars attended	➤ Attended 5 days training programme on "Consumer protection and Consumer Welfare for the members of training Institutions (19th TT)" organized by Indian Institute of Public Administration, New Delhi, India, 16-20 May, 2016. ➤ Attended National conference on "Issues and Challenges in Higher Education" organized by Himachal Pradesh Government College Teachers Association (HGPCA) at Hotel Peterhof, Shimla, 18-19 September, 2015. ➤ Attended 15 days ICAR Short Course on "Application of Molecular Tools in Coldwater Fisheries Management" organized by Directorate of Coldwater Fisheries Research, Bhimtal, Nainital, 2-11 June, 2014. ➤ Attended Refresher Course organized by IIC Academic Staff College, Panjab University, Patiala, 04-24 December, 2012. ➤ National Seminar on "Emerging Consumerism in Context of Climate Change, Issues and Challenges" organized by the Government Post-Graduate College Chamba, Himachal Pradesh, from 3-5th October, 2012. ➤ Attended Short Term Course on "Disaster Management" organized by Academic Staff College, Himachal Pradesh University Shimla-3, 19-21st December, 2011. ➤ UGC-CAS sponsored conference on "Redefining Approaches to Address Current Issues for Sustainable Biodiversity" organized by the Department of Zoology, Panjab University, Chandigarh, 2-3rd December, 2011. ➤ UGC sponsored National conference on "Sustainable Use of water resources in Context of Climate Change-A Shared responsibility" organized by the Government Post-Graduate College Chamba, Himachal Pradesh, 11-13 March, 2011. ➤ National Conference on "Advances in Biological Sciences" organized by the Department of Zoology, Panjab University, Chandigarh, 29-30th March, 2010. ➤ Attended 74th Orientation Course organized by IIC Academic Staff College, Panjab University, Chandigarh, 01-28 June, 2007. ➤ National Seminar on "Environmental Audit of Hydroelectric Projects for Sustainable Development" organized by the Government Degree College Dabpur, Vikramgarh, Dehradun, from 10-11th April 2006.



	➤ UGC Working Conference on "Recent concepts in Cell and Animal Physiology" organized by Department of Zoology, Panjab University, Chandigarh from 10-11th March 2006. ➤ Symposium on "Emerging Trends in Biochemistry" organized by Department of Biochemistry, Panjab University, Chandigarh on 9-10th February, 2006. ➤ Short Course on "Recent Advances in Coldwater Aquaculture" organized by Department of Fisheries COVAS held at C.S.K.H.P.K.V., Palampur from 25 September to 5 October, 2005. ➤ UGC sponsored seminar on "Stem Cell Biology and its Application in Biomedical Science" organized by Centre with Excellence in Biomedical Sciences, Panjab University, Chandigarh on 19th August, 2005. ➤ Training in "Electron Microscopy" organized by the Regional Sophisticated Instrumentation Centre, Panjab University from 16 May to 15 June, 2005. ➤ UGC sponsored National Seminar on "New Trends in Fishery Development in India" organized by Department of Zoology, Panjab University, Chandigarh from 16 – 18 February 2005. ➤ 15th All India Congress of Zoology on "Status of cold water fisheries with reference to fragile Himalayan aquatic ecosystem" organized by P.G. Department of Zoology, University of Jammu, Jammu from 29 – 31 October 2004. ➤ Summer School on Development of Sustainable Aquaculture Technology in Fresh and Saline Water" organized by Department of Zoology and Aquaculture, CCSHAU, Hisar from 14 June to 4 July, 2004. ➤ National Workshop on "Rational Use of Water Resources for Aqua Culture" organized by Department of Zoology and Aquaculture, CCSHAU, Hisar from 18 – 19 March 2004.
Paper	➤ Johal, M.S., Kumar, M and Rawal, Y.K. 2011. Ultrastructure of adhesive organs of two aquatic insects inhabiting highland hillstreams. <i>J. Env. Bio-Sci.</i>, 25 (1): 15-19. ➤ Johal, M.S., Verma, M. and Rawal, Y.K. 2011. Geomorphology and ecology of hillstreams of the River Beas in the vicinity of Upper Himalayas of Himachal Pradesh, India. <i>Panjab University Research Journal (Science)</i>, 60: 119-152.
Abstracts	➤ Johal, M.S., Kumar, M and Rawal, Y.K. 2011. Physico-chemical factors of two hillstreams Tirthan and Sainj of upper Himalayas of Himachal Pradesh and account of macroinvertebrates inhabiting them. <i>Proc: Redefining Approaches to Address the Current Issues for Sustainable Biodiversity under the aegis of Society of Life Sciences, India and Chandigarh Chapters of NASI and ISCA</i> December 2-3, 2011 ➤ Kumar, M. 2011. Hillstreams and their importance in making reservoir a self-sustaining ecological units. <i>Proc: Sustainable Use of water resources in Context of Climate Change-A Shared responsibility.</i> ➤ Verma, M. 2012. A comparative study of two hill streams of upper Himalayan hillstreams based on fish catch for anthropogenic impact. <i>Proc: Emerging Consumerism in Context of Climate Change: Issues and Challenges.</i>

Date: 03.04.2018
MANESH KUMAR



IN VITRO ANTIMICROBIAL ACTIVITY OF MOSS *TIMMIELLA ALATA* HERZOG

*Dinesh K Saxena and Uma Yadav

Department of Botany, Bareilly College, Bareilly, U.P. India

Abstract

The antimicrobial activity of the alcoholic and aqueous extracts of moss *Timmiella alata* Herzog growing on Kumaon hills was investigated against the bacteria *Escherichia coli*, *Bacillus mycoides*, *Staphylococcus aureus*, *Proteus mirabilis*, *Salmonella typhi* and the fungi *Aspergillus fumigatus* and *Fusarium oxysporum*. The study is an attempt to screen antimicrobial activity of moss *T. alata* extract collected from Jageshwar (29° 37.915; 79° 50.650') of Kumaon hills (Uttarakhand), India. Extracts of *T. alata* were tested against pathogens using disk diffusion and micro broth dilution techniques. Both the extracts showed remarkable activity against bacteria *S. typhi* and *E. coli* (20 mm and 15 mm). Minimum inhibitory concentration (MIC) was measured 3.74 and 2.40 mg/mL. For *F. oxysporum* zone of inhibition was 10 mm and MIC 0.851 mg/mL. In both extracts (alcoholic and aqueous), no inhibition was seen against *A. fumigatus* and *P. mirabilis*. Alcoholic extract of *T. alata* was found more effective than the aqueous. Therefore, the present study is on medicinal significance of bryophytes. This is the first time that the antimicrobial activity of the moss *T. alata* is reported. The results of the study need further scientific validation for use of the moss *T. alata* extract as a source of natural antimicrobial substance in the pharmaceutical industry.

Keywords: *Timmiella alata* Herzog, Moss, Antibacterial properties, Antifungal properties.

GEOMORPHOLOGY AND ECOLOGY OF HILLSTREAMS OF THE RIVER BEAS IN THE VICINITY OF UPPER HIMALAYAS OF HIMACHAL PRADESH, INDIA

*M.S. Johal, M. Verma and Y.K. Rawal

Laboratory of Fish & Fisheries, Department of Zoology, Panjab University, Chandigarh-160014, India

Abstract

Geomorphological and ecological studies on hillstreams in the vicinity of upper western Himalayan region have not been carried out scientifically so far. It is estimated that 250 hillstream fish species out of a total of 1042 of the Indian freshwater fish species inhabit the Indian hillstreams, having varied body forms and sizes. The detailed information regarding the geomorphology of the Himalayan hillstreams, their fish fauna, biotic and abiotic factors and their interrelationships is fragmentary as the fish production from hillstreams is insignificant as compared to the fish productions of other water bodies like lakes and reservoirs. According to Hora's Satpura Hypothesis, the hillstreams of the Himalayan region played a very important role during Miocene period, when most of the Indian fish fauna of Malayan region migrated through a corridor which existed in the eastern Himalayas.



The origin of several Indian major rivers lies in the upper Himalayas which are the lifeline of Indian agriculture economy. Surprisingly, the water bodies of this region especially the western Himalayas have never been subjected to any ecological investigations. Keeping this fact in mind, an attempt has been made to study the geomorphology, fish fauna, biotic and abiotic factors and their interrelationships of eight sites of two streams namely Tirtha (Gushaini, Deori, Fagi Pul and Larji) and Sainj (Ropa, Shalwar, Tiara, Bluhali) of the river Beas. In this paper, season-wise, period-wise data is not given, only the final data is presented in the form of tables for the purpose of discussion and to arrive at conclusions. The present communication deals with eight aspects namely stream morphology/hydrology, habitat structure and composition of biota in different habitats, physico-chemical factors, phytoplankton, benthos, zooplankton, ichthyofauna and Morisita-Horn Index. Authors are of the view that the information presented in this communication shall form the base line data for future similar studies and for the comparisons. As no previous data on the ecology of hillstreams of upper Western Himalayas is available and not many studies have been done by earlier workers, the discussion part is comparatively short, whereas, observations have been analyzed in various forms. The plausible reasons for the absence of the earlier data on hillstream ecology are inaccessible terrain, occurrence of relatively poor biodiversity and low economic values of the water bodies in this region.

Keywords: Himalayas, hillstreams, geomorphology, biodiversity.

BRYOLOGICAL FLORA OF KEONJHAR DISTRICT OF ODISHA, INDIA

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²Department of Botany, Banratty College, Banratty, U.P., India

Abstract

Thirty four species of bryophytes comprising twenty four liverworts, two hornworts and eight mosses are being reported during the survey conducted from January 2007 to November 2008 for the first time from both Khondabhar and Gandhamardan hills in Keonjhar districts of Orissa. Some of the noteworthy species like *Comrephalum comsum*, *Dumortiera hirsuta*, *Targionia hypophylla*, *Ptilivernum ivellii*, *Lophoceros balanata*, *Metzgeria hamata*, *Lunularia cruciata* and *Reboulia hemisphaerica* are in peril against the ongoing and upcoming mining activities in this region.

Key words: Bryophytes, Khondabhar hills, mining, conservation.





ULTRASTRUCTURE OF ADHESIVE ORGANS OF TWO AQUATIC INSECTS INHABITING HIGHLAND HILLSTREAMS

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Primarily to understand the exact mechanism of attachment in the fast flowing torrential water of hillstreams, investigations were carried out to understand the process/mechanism of adhesion in aquatic insects to the wide variety of substrates present in the hillstream Tirthan, in Kullu district of Himachal Pradesh. Two insects i.e. *Bibiocephala* spp. and *Isoperla* spp. belonging to order Diptera and Plecoptera, respectively were sampled from the Tirthan stream during summer months (April and May). The SEM investigations of the ventral surface of *Bibiocephala* spp. revealed the presence of a central row of half-a-dozen distinct suckers having mucous pores in center and surrounded by chitinous pad at posterior end of body. In addition to this, distinct papillae occur on the peripheral region, the tip of which contains long and short hairy pads. In the other aquatic insect *Isoperla* spp. the ventral surface revealed the presence of numerous inverted bell like structures, which acts as suckers. The action of adhesion is further aided by the presence of spines and hairy fibrils. It is opined that though both insects are living in the same kind of habitat yet both *Bibiocephala* spp. and *Isoperla* spp. have different mechanism of adhesion to the substrate.

As the hillstreams are usually situated in upland parts of a river, having steep water currents, which in turn impact on its inhabitants. Various adhesive structures are used by organisms of hill streams for the attachment of organism to the substratum in order to cope with these particular conditions of hillstreams. In response to this organisms developed adhesive discs, attachment pad and other adhesive apparatus, in order to stay in these habitat. The aquatic insects inhabiting the highland hillstreams have special devices like adhesive discs and attachment pads. The *Bibiocephala* spp. and *Isoperla* spp. are chosen for present investigation, as these are readily available in these streams and have peculiar structures on their body. The mechanism of adhesion in the other organisms of hillstreams with the SEM investigation have been discussed in past among fishes¹. The detailed attachment structure with the help SEM investigations in case of terrestrial insects have been worked out by several authors²⁻⁴. As far as process of adhesion in aquatic insects are concern light microscopic investigations have been reported⁵. Underwater attachment in current with setose pads of *Epeorus assimilis* have been suggested⁶, but exact mechanism of adhesion and detailed structure of adhesion on other aquatic insects have not been studied so far. Therefore the present investigations were undertaken on the two common insects of Tirthan hillstream of upper Himalaya region of Himachal Pradesh.

MATERIALS AND METHODS

STUDY AREA: The specimens of insects *Bibiocephala* spp. and *Isoperla* spp. were collected from Tirthan stream, which is an important tributary of river Beas in the upper Himalaya region of Himachal Pradesh and collections sites located at various altitudes from 1050-1580 msl (Fig. 1).

To study the adhesive apparatus of two aquatic insects viz. *Bibiocephala* spp. and *Isoperla* spp. were fixed in 2.5% glutaraldehyde in 0.1 M sodium cacodylate buffer pH 7.2-7.4 for 24 hours, rinsed with several washings in double distilled water and dehydrated through various grades of acetone. The specimens after acetone treatment were transferred to emylacetate solution, dried in Polaram critical point dryer and mounted on metal stubs with double adhesive tape, coated with 100 Å thick layers of gold/palladium in JEOL sputter ion coater. The specimens were examined with JEOL JSM 6100 SEM at 20kv and images were observed on screen, and their images were recorded.

OBSERVATIONS AND DISCUSSIONS

Biological attachment devices are functional systems for temporary or permanent attachment of an organism to the substrate, to another organism, or temporary interconnection of body parts within an organism. Their design varies enormously



ULTRASTRUCTURE OF ADHESIVE ORGANS OF TWO AQUATIC INSECTS

in relation to different functional loads. Many systems, located on different parts of the body involve surfaces with particular adhesive or frictional properties. Such systems evolved to attach an insect to the substratum by providing fast and reversible attachment. The present study shows that besides the shape of the body there are some special adhesive structures present on the body of aquatic insects, which help, in fixing the insect to the substratum and cope with the torrential water in these hillstreams.

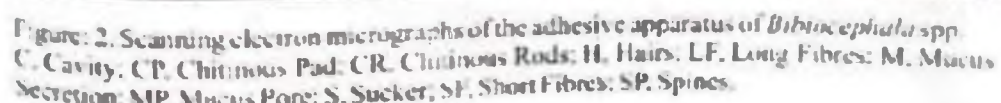
The *Bibiocephala* spp. belongs to order Diptera of Family Blephariceridae. The *Bibiocephala* spp. is an extremely specialized insect, which inhabit these hillstreams and are abundant in the summer months (Figs. 2). The dorsal surface of *Bibiocephala* spp. is smooth and like upper surface of wing of plane, which offers less resistance to flow of water. The adhesive organs are mainly located on the ventral side of body of *Bibiocephala* spp. consisting of a central row of half-a-dozen incompletely rounded suckers, which are surrounded by semicircular, striated chitinous pad at the posterior end of body (Fig. 2 A). The middle part of suckers has a central cavity (Figs. 2 A, B, C & D), which probably secretes mucus required for the process of adhesion. There are lateral projections on the side of the body called papillae (Fig. 2 A), which bears on their tips pads borne from cluster of hairs (Figs. 2 E & F). All these structures aid in the process of adhesion. All these structures seem advance case of hillstream adaptation and help the insect in attachment to surface of even the very smooth stones present in the stream.

The secretion of mucus may further help in adhesion and may also act as a device to protect the adhesive organ from mechanical abrasion. Besides the central suckers and mucus pores, there are present additional short and hairy fibres along the margin of suckers, which showed further aid in the process of adhesion (Fig. 2 D).

The other insect i.e. *Isoperla* spp. belongs to Order Plecoptera of Family Perlodidae (Figs. 3), reveals the presence of numerous bell shaped structures (Fig. 3 A, B & C), which work in tandem with other such structures leading to strong attachment of the insect to the substratum. All these specialized structures have concavity in the center (Fig. 3 C), which may create a vacuum leading to fine attachment of insect. The friction coefficient of the insect is present in form of numerous spiny structures on the appendages of the insects (Figs. 3 D & E). On the leg of *Isoperla* spp., there are present very small cup shaped structures considered to be the attachment pad (Fig. 3 E), on the femur of insect's arm, which may secrete mucus for efficient



Fig. 1. Map showing the collection site Tethan hillstream, a tributary of river Beas in the Kulu District of Himachal Pradesh



ULTRASTRUCTURE OF ADHESIVE ORGANS OF TWO AQUATIC INSECTS

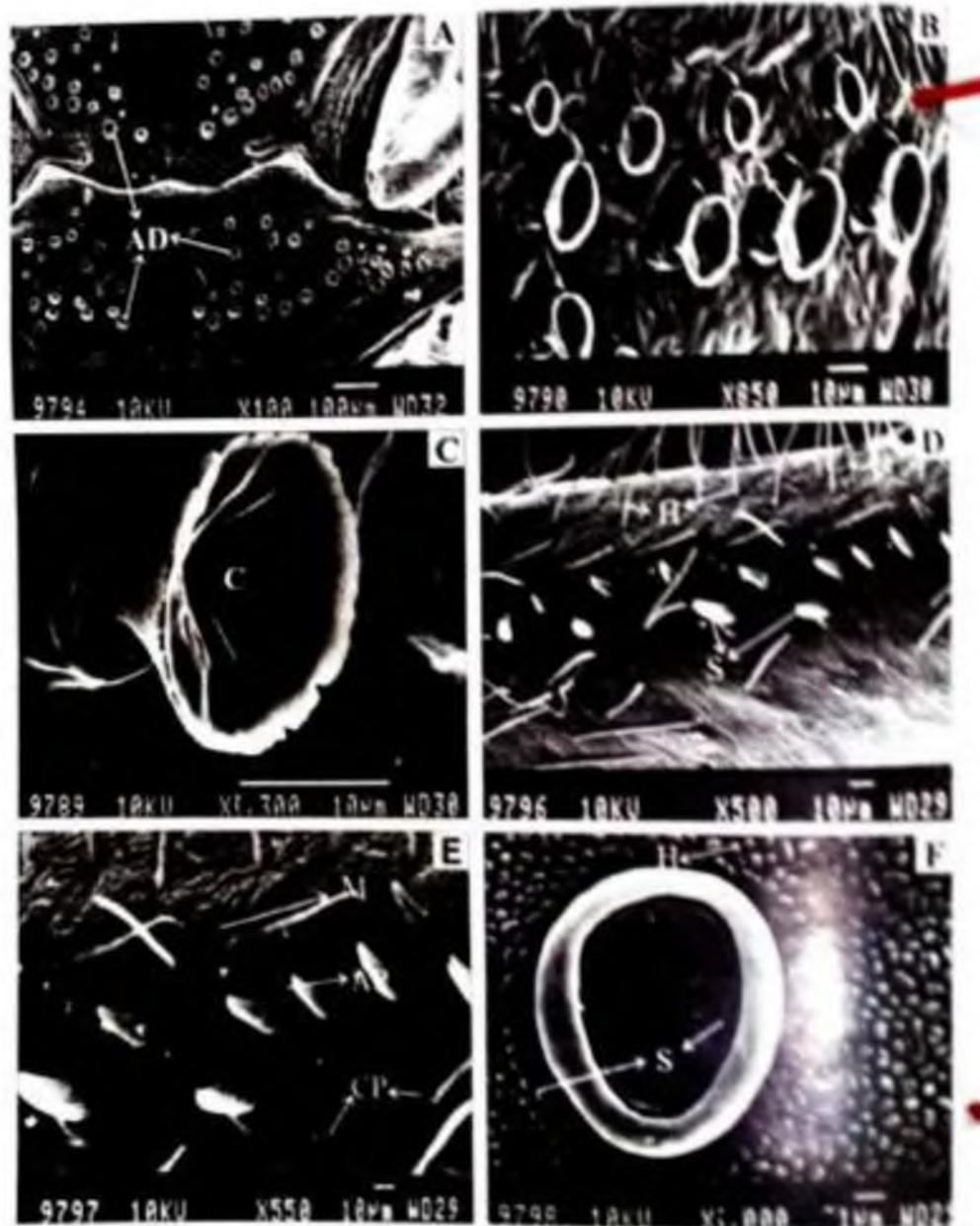


Figure: 3. Scanning electron micrographs of the adhesive apparatus of *Imperia* spp.
 AP, Attachment Pad; C, Concavity; AD, Adhesive Disc; CP, Cuticular Protuberances; H, Cuticular Hair; M, Mucus Secretion; S, Spine.

working of vacuum. The arms of insect shows the presence of hairy structure and numerous spines (Figs. 3 D and E). A close study has revealed that the adhesive apparatus of the *Isoperla* spp. works mainly on the principle of vacuum and friction and aid in attachment by increasing the friction between the substratum and body of insect.

The presence of suckers, chitinous rods, chitinous pads and short fiber like structures have been reported earlier, which adhesive structures appear to be arising from insect's cuticle. Similar observations have already been made¹⁴ and referred to as cuticular systems¹⁵. In a nutshell the above mentioned insects shows the presence of structures such as suction cup, attachment pads, chitinous pads, spines and thread like structures leading to strong attachment of insects to the substratum in the torrential water of hill streams.

ACKNOWLEDGEMENTS

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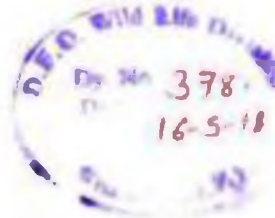
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EDM-GCC-PNG (Misc) 437 dt 24.4.2018

OFFICE OF THE PRINCIPAL G.C. PANGI AT KILLAR, DISTT CHAMBA. (H.P.)

To,

The Divisional Forest Officer
Wildlife Division,
Chamba.



Sub: Regarding Constitution of Monitoring Committee for Eco Sensitive Zone of Sechu
Tuan Nalla Wildlife Sanctuary in Pangi Valley

Sir,

With reference to letter No. 3196-97 dated 22nd March 2018, find enclosed herewith my
bio-data for above cited committee member.

Samir
Principal
Govt. Degree College
Pangi (Killar), Chamba (H.P.)
OOO Code 214

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Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

CURRICULUM VITAE

Name :- Bipan Chand Rathore
Father's Name :- Late Sh. Kailash Chand Rathore
Date of Birth :- 10-01-1964
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Ph.D. on the topic entitled "Ecology of Brown Bear (*Ursus arctos*) with special reference to Human - Brown Bear Conflicts in Kargil Wild life sanctuary Himachal Pradesh and Mitigation Strategies" from Wild Life Institute of India, Dehradun and affiliated with Saurashtra University Rajkot Gujarat .

Research Experience:- 15 Years on Brown bear Ecology

Final Report submitted to UGC (May 2004-April 2006) pertaining to Minor Research Project sanctioned in my favour vide letter No. F.5.1.3 (69)/2004(MRP/NRCB) on ecology of brown bear.

Annual Report submitted to UGC (May 2007-March 2009) pertaining to Minor Research Project entitled "Status of Black bear (*Ursus thibetanus*) and Brown bear (*Ursus arctos*) in Fir Panjal range of Himachal Pradesh, India. Sanctioned in my favour by UGC vide letter No. F.6-1(B)/2007(MRP/Sc/NRCB)

Annual Report submitted to UGC (May 2010-September 2011) pertaining to Minor Research Project entitled "Status and Preliminary Assessment of Snow Leopard (*Uncia uncia*) sign survey in Fir-Panjal Himalayan range, District Chamba, Himachal Pradesh. Sanctioned in my favour by UGC vide letter No. F. No. 8-1(119)/2010 (MRP/Sc/NRCB)



Attended 15th International Conference on Bear Research and Management held at San-Diego, California. 8-13 Feb. 2004 (USA) and presented two research papers.

Attended 6th International Conference on Conservation Science, hosted by Department of Zoology, University of Cambridge (UK) 28th-30th March 2006 and presented a research paper.

Attended 18th International conference on Bear Management and research held at Monterrey city, Mexico November 4 - 11 - 2007.

Attended Darwin 200 and 3rd International Symposium of Integrative zoology organized by International Society for Zoological Sciences and Chinese Academy of Sciences held at Beijing City, China 8-10 July 2009 and presented one paper.

Attended 20th International Conference on Bear Research and Management held at Ottawa, Canada. 17th to 23rd July 2011 and presented two research papers.

Attended 21st International Conference on Bear Research and Management held at New Delhi, India. 26th to 30th November 2012 and presented one Oral presentation.

Attended 23th International Conference on Bear Research and Management held at Thessolniki, Greece 5th October to 11th October 2013 and presented two poster presentations.

Attended 24th International Conference on Bear Research and Management held at Anchorage, Alaska U.S.A. 12th June to 16th June 2016 and presented two poster presentation.

Member of Human-Bear Conflicts Expert Team (HBCET) South Asia. (2009).

Member International Bear Association (IBA)

Teaching Experience :- Since 1989 and Principal since July 2015

(Bipan Chandra Rathore)

24/4/18



Annexure-XXIII

JOURNAL OF THREATENED TAXA (RESEARCH PAPERS)



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

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A case study on utilization and conservation of threatened plants in Sechu Tuan Nalla Wildlife Sanctuary, western Himalaya, India

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Abstract During the course of surveys between 2016 and 2019 in the Sechu Tuan Nalla Wildlife Sanctuary, 57 species were reported of which, two critically endangered, 18 endangered, 13 vulnerable, four data deficient and one endemic to western Himalayas were recorded. All the species recorded are highly prized medicinal herbs. It also discussed the sustainable use and conservation approach adopted by the local people dwelling in the vicinity of the protected area for an endangered medicinal plant, *Erithalis contracta* D. Don.

Keywords Endangered, endemic, *Erithalis contracta*, high altitude, Jangli taluqa, Pangi Valley medicinal plants.

Abbreviations: STRWS—Sechu Tuan Nalla Wildlife Sanctuary | WS—Wildlife Sanctuary | GOI—Government of India | BSJ—Herbarium of Botanical Survey of India, Northern Regional Centre, Dehradun | IUCN—International Union for Conservation of Nature | CAMB—Conservation Assessment and Management Prioritization | CITES—Convention on International Trade in Endangered species of Fauna and Flora | RDBP—Red Data Book of Indian Plants | UT—Union territory.

Author: Arun Arun, Banskali Valsavathi, Rajasthan, India

Date of publication: 26 July 2022 (online & print)

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Funding: The research work was carried out under the Annual action plan project at NRC, Dehradun, Botanical Survey of India.

Competing interests: The authors declare no competing interests.

Author details: Puneet Kumar—worked as cytology of Cold Desert Himalayas region, Govt of STRWS. Currently working as Scientist-C at BSJ-NRC on cytology and plant taxonomy related subjects. Harminder Singh—worked as JRF at BSJ-NRC, Dehradun in BSJ-SIR and BSJ-SIR funded projects. Currently working as herbarial assistant and engaged in plant taxonomy and cytology at BSJ-NRC Shillong. Sushil Kumar Singh—Scientist-C and Head of Office of BSJ-NRC, Dehradun. An ardent nature in field of conservation studies. Currently engaged in plant taxonomy, conservation, botany and other allied fields.

Author contributions: PK and HS did the field surveys and collection as well as drafting of the article. SKS help in making the article.

Acknowledgements: The authors are thankful to the Director, Botanical Survey of India, for providing necessary facilities. Second author is also thankful to scientist-in-charge, Botanical Survey of India, Eastern Regional Centre for library and internet facility. The authors are further grateful to people of Sechu Tuan Nalla (STN) for sharing their knowledge and from Government (STN) for necessary support during field trip.



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)



Image 4. A forest nursery in the vicinity of study area. © Manoj Kumar Singh

threatened plants still need more research to bring them successfully to the farmer's field for cultivation, priority should be given to the restoration and rehabilitation of these medicinal plants in their natural habitat. Otherwise, direct extraction from wild resources may result in the vanishing of these important medicinal plants from this remote area of western Himalaya.

These plants are used by the locals in a sustainable way and not harvested before used in set. The plants are left untouched when local tribes collect fodder for winter stock. As a result, majority of the populations of these medicinal plants are flourishing well near the villages in the vicinity of eco-sensitive zone of the sanctuary. Furthermore, it is suggested local nurseries should be strengthened with recent cultivation techniques of plants of high altitudes and also local people should be made aware of the natural resources around them by conducting awareness programs and workshops. Increasing awareness on the part of people can improve the possibility of endurance of rare, endemic, threatened, and medicinal plant species.

CONCLUSION

The study highlighted the sustainable approach of local people towards the use of resources around the WS. Local people and their efforts are the very essence that has conserved the floral heritage of the Great Himalaya over the centuries. Linking local communities to conservation programs for natural resources and management of forests can be the way forward to biodiversity protection and sustainable development. The study highlighted the sustainable approach of local people towards the use of resources around the WS.

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Annexure-XXIV

A CASE STUDY ON UTILIZATION AND CONSERVATION OF THREATENED PLANTS

(RESEARCH PAPER)

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ARTICLE

Enumeration of Family Fabaceae from Sechu Tuan Nalla Wildlife Sanctuary, Chamba District, Himachal Pradesh (India)

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ABSTRACT

An account of 26 species under 11 genera of the family Fabaceae is presented based upon a thorough study of the collected specimens and field surveys in this paper from Sechu Tuan Nalla Wildlife Sanctuary, Chamba district, Himachal Pradesh. Of these, five taxa are reported for the first time from the Chamba district of the state. The updated nomenclature of the species, local names if any, a brief description of the plant, flowering and fruiting period, distribution in the study area, habitat and ecology and specimens examined have been provided.

1. Introduction

The Sechu Tuan Nalla Wildlife Sanctuary, a high-altitude sanctuary that lies in Sechu valley, a minor sub-valley of the major Punjab valley is located at the extreme northwest end of Chamba district of Himachal Pradesh. The wildlife sanctuary is located in the inner Trans-Himalayan region between two great mountain ranges i.e. The Great Himalayan Range and Pir Panjal Range in the Chamba district of Himachal Pradesh. The sanctuary is situated within the geo-coordinates of North Lat. 33°10'55" N & Long. 76°43'24" E East Lat. 32°57'31" N & Long. 76°46'38" E, South Lat. 32°49'49" N & Long. 76°45'00" E West Lat. 32°54'18" N & Long. 76°31'22" E

(Figure 1A-C). It is one of the innermost valleys of the Great Himalayas. It is bounded by the interstate boundary of Jammu and Kashmir in Northern and Ladakh-Spiti district (Himachal Pradesh) on the North-eastern and South-eastern sides.

Due to inaccessibility and difficult geographic conditions, this area had not been included in the earlier floristic surveys of the Chamba district [1-4]. Therefore, as such, no literature or any kind of comprehensive published document about the floristic diversity of the sanctuary is available for reference and use by forest officials and various other government agencies. Hence, an attempt has been made to document the members of the family Fabaceae from the study area.

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4. Conclusions

This study reveals that Sechu Tuan Nalla Wildlife Sanctuary harbours a considerable number of taxa of the family Fabaceae, which is 2.98 percent of the total taxa of Fabaceae of the state^[9], whereas it is 24.39 percent of the total taxa of Fabaceae of the district Chamba^[11,6]. Two species namely *Hedysarum astragaloides* Benth. and *H. muhlenbergii* Baker are endemic to North-West Himalayas. Five taxa viz., *Astragalus coluteocarpus* subsp. *chiralewensis* Wozni., *A. melananthus* Benth. ex Bunge, *A. teretis-aureus* subsp. *orientalis* Podlech, *Hedysarum micracalyx* Baker, and *Oxytropis lophantha* (Wahl.) Gay are reported first time from Chamba district, Himachal Pradesh.

Acknowledgement

The authors express their gratitude to the Director, Botanical Survey of India, Kolkata and Former Scientist-in-charge (Dr. S.K. Srivastava and Dr. Kumar Anbrish).

Conflict of Interest

Authors declare no conflict of interest.

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Annexure-XXV

ASSESSMENT OF MEDICINAL AND AROMATIC PLANT SPECIES



संरक्षित वन्यजीव संस्थान
Wildlife Institute of India



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

Executive Summary

Nested in the Western Himalaya, the state of Himachal Pradesh (30° to 33°N and 75° to 79° E) is known for its rich biological diversity. It covers an area of 55,673 km² with >3,300 distinct plants species. Interestingly, the alpine areas of Lahaul and Spiti are one of the major hot spots of wild MAPs in the Western Himalaya. Unfortunately, the remote valleys such as Lahaul, Pangi, Spiti, Kinnaur including micro-watersheds lying in the cold-arid regions of Himachal Pradesh are relatively less studied in terms of available growing stock and population status of MAPs. Notably, there is a general lack of literature on medicinal plants at the catchment, watershed and valley levels. Further, the information on recent levels of trade of MAPs are available only from a few localities of the Western Himalaya. Like other areas, these areas have also been facing additional stress due to over-exploitation of forest resources, including the unscientific and premature harvesting of MAPs from the wild, which functions parallel to the illegal and hidden markets thus, putting tremendous pressure on the wild resource base resulting in the dwindling populations and precarious livelihoods of local communities. The rising demand of herbal products has caused excessive harvesting of many of the important MAPs from these regions, putting their wild population at the risk of extinction. Keeping aforementioned aspects in view, the current study was proposed which aims to study selected Medicinal and Aromatic Plant (MAP) species in Lahaul and Pangi landscape of Himachal Pradesh with focus to ensure sustainable harvesting and cultivation by (i) identifying usage patterns of MAPs, and (ii) studying existing value chains. In order to address the project objectives, the present study has been categorized into 12 key tasks.

The current study revealed that the major issues adversely impacting the MAP species in the Lahaul and Pangi landscape include illegal/ over/ premature/ unorganized harvesting of Medicinal and Aromatic Plants (MAPs), high demand and non-transparent operations in the markets of MAPs. Besides these issues, few gaps such as knowledge on available stock of MAPs, lack of information on cultivation and harvesting methods of key MAP species specific to Lahaul and Pangi landscape, lack of information on end users and middlemen and inadequate information on quantity of raw material traded have been reported.

In order to optimize the benefits to the local communities and adopt the concepts of sustainable harvesting and benefit sharing, it is important to assess the availability, market trends and methods for collection of MAPs including gathering information on population of selected MAPs. This will help in identifying High Conservation Value Areas (HCVAs) and delineating MPCAs for in-situ conservation in the landscape.



Additionally, identification of large traders and industries that acquire their raw materials from Lahaul and Pangri will strengthen the implementation of Access and Benefit Sharing model on pilot basis. Furthermore, identification of hidden markets viz. local, regional and national, price trends, value addition and strengthening BMCs will help in sustainable management of MAPs in the landscape. The first step towards conservation is identifying the existing population base, and information on the species distribution and abundance. Identification of the best cultivation practices, R&D to reduce long-gestation periods, cost effective technology, organic-farming, buy-back mechanisms, policy-revision in the interest of stakeholders, protocols for post-cultivation management, quality-control and awareness training are some measures in this direction. It can be concluded that in order to optimize the benefits to the local communities, and to adopt the concepts of sustainable harvesting and benefit-sharing, it is important to assess the availability, market trends and methods for collection of MAPs, including gathering information on population of selected MAPs. A major step towards species conservation can be spreading awareness on the dwindling populations amongst the stakeholders. It is also important to identify alternative sources of income for the locals to create in them confidence that wild harvest of MAPs was not the only source of cash income and, thus to dissuade them from ruthless wild harvest and to make them participate in conservation programs. Identifying and building the capacities of stakeholders including the forest officials, locals, school children, traditional healers and plant traders can help in community based natural resource management. These issues need to be addressed to ensure long-term conservation of the MAP resources of the landscape in a way that livelihood needs of the local communities depending on this resource are not compromised. The following key recommendations have emerged after this study:

- ❖ Documentation of the Conservation Status of Key MAPs
- ❖ Setting aside Conservation Areas around Viable Populations of Priority MAPs
- ❖ Strengthening of Biodiversity Management Committees (BMCs)
- ❖ Value addition by adopting best Post-Harvest Management Techniques
- ❖ Developing Farm-scale Agro-Techniques for Priority MAP Species
- ❖ Developing Germplasm Banks of the Priority MAP Species
- ❖ Study and Monitor Impacts of Climate Change

5. Conclusion

Even as work on the Himalayan flora started way back in the 1820s, the studies specifically focusing on documentation of MAPs gained attention only after 1950s. Studies on the population status, abundance of MAPs and habitat assessment of threatened MAP taxa are, however, still very scanty, and require detailed studies (Samant et al. 2007). Notably, there is a general lack of literature on medicinal plants at the catchment, watershed and valley levels (Singh et al. 2009). Sudden spurt in the market demand over the years and the associated unorganized, premature and relentless harvesting of MAPs has resulted in their tremendous population decline from the wild (Badola, 2001). Other factors responsible for the decline in the populations of these economically important plant species include rapid developmental pressures, urbanization, uncontrolled grazing, habitat degradation and over exploitation (Pandey and Singh, 2017). For instance, rampant collection of *Tritium govatanum* (Nagchatri) from most of the regions of Western Himalaya has happened relentlessly over the past few years. And, although the plant is being sold at about INR 1000 to 1500 kg⁻¹ dry weight, the plant collectors, middleman and locals are neither aware about the use of the plant nor its final destination and end users (Uniyal and Datta, 2012). Similarly, exploitation of roots of *Dactylorhiza hatagirea*, *Nardostachys grandiflora*, *Valeriana wallichii*, *Junnella macrocephala* and *Saussurea costus* (even as this species is widely cultivated in Himachal Pradesh to meet the commercial demand, some wild collection from its type locality in Jammu & Kashmir is suspected); bark of *Taxus wallichiana* and flowers of *Saussurea obvallata* may lead to their extinction from natural habitat. Wild collection of these species serves as a lucrative livelihood opportunity to the collectors. However, unrestrained extraction and livelihood dependency has led to decline in their wild population (Samant and Pant, 2003). Population assessment of the species, using standard ecological methods, in order to delineate MPCAs for in situ conservation of MAPs is crucial. Creating awareness, identifying and building capacities of stakeholders is the need of the hour (NMPB, 2015; Mathela et al. 2020).

In order to optimize the benefits to the local communities and adopt the concepts of sustainable harvesting and benefit sharing, it is important to assess the availability, market trends and methods for collection of MAPs including gathering information on population of selected MAPs. This will help in identifying High Conservation Value Areas (HCVAs) and delineating MPCAs for in situ conservation in the landscape. Additionally, identification of large traders and industries that acquire their raw materials from Lahaul and Pangri will strengthen the implementation of Access and Benefit Sharing model on pilot basis. Furthermore, identification of hidden markets viz., local, regional and national, price trends, value addition and strengthening BMCs will help in sustainable management of MAPs in the landscape. The first step towards conservation is identifying the existing population base, and information on the species



distribution and abundance. Keeping the increasing demand of raw drugs in view, it becomes important to conduct such studies on an urgent basis. Identification of the best cultivation practices, R&D to reduce long-gestation periods, cost effective technology, organic-farming, buy-back mechanisms, policy-revision in the interest of stakeholders, protocols for post-cultivation management, quality-control and awareness training are some measures in this direction. It can be concluded that in order to optimize the benefits to the local communities, and to adopt the concepts of sustainable harvesting and benefit-sharing, it is important to assess the availability, market trends and methods for collection of MAPs, including gathering information on population of selected MAPs. Some species like 'Kangra Tea' have been granted the Geographical Indication (GI) tag very recently by the government of Himachal Pradesh. Granting such GI tags to key MAP species would be an important step towards conserving these plants and plant-based products besides further improving their market potential, and boosting the region's economy by giving better returns at the grassroot levels. A major step towards species conservation can be spreading awareness on the dwindling populations amongst the stakeholders. It is also important to identify alternative sources of income for the locals to create in them confidence that wild harvest of MAPs was not the only source of cash income and, thus to dissuade them from ruthless wild harvest and to make them participate in conservation programs. Identifying and building the capacities of stakeholders including the forest officials, locals, school children, traditional healers and plant traders can help in community based natural resource management.

Further, it becomes imperative to compile traditional knowledge held by the local people regarding identification and utilization of MAPs to keep indigenous knowledge alive. For the important drug yielding plants, detailed scientific investigation is necessary for evolving better methods of cultivation and post-harvest processing. Large scale cultivation of MAPs should be encouraged so that their ruthless exploitation from the natural zone is checked. Capacity building and training for identification, collection, storage, handling and marketing should be arranged for the local people. Formation of co-operatives will play an important role in reducing dependency on the middlemen and in maximizing returns to the primary producers. Nurseries and demonstration plots should be created at suitable places and from there planting stock of medicinal plants should be given to the farmers at nominal rates so as to encourage them to undertake cultivation of these herbs on their holdings, where production of food crops is not economical.



Annexure-XXVI

PREVIOUS CENSUS REPORTS

Sechu Tuan Nalla Wildlife Sanctuary:-

Sechu Tuan Nalla Wildlife Sanctuary is located between $32^{\circ}11'40''$ and $32^{\circ}13'16''$ N Latitude and $76^{\circ}24'$ and $77^{\circ}03'33''$ E longitude in Pangti Sub Division of Chamba Distt. The sanctuary is about 35 KMS away from Killar (the headquarters of Pangti). Total area of the Sanctuary is 390.29 KM^2 . This sanctuary is named after the Sechu Tuan nalla, which is a tributary of Chandra Bhaga (Chenab) river flowing through the valley of Pangti.

This sanctuary was originally notified as game sanctuary in the year 1962 and was re-notified as Wildlife sanctuary under section 18 of Wildlife (Protection) Act, 1972. Final notification (after rationalization), was issued vide no. FFE-B-F(6)- 11/2005-II Dated 07.06.2013. The sanctuary is located in the east of Pangti valley away from habitation and in the remote area. There is a good interface of wooded areas and vast expanses of pastures that forms an ideal habitat for animals as well as birds.

Geology:-The geology of sanctuary varies with some local variation schist's which are very common and occur in different forms such as shales, slates, gneisses, argillaceous clay etc. Underlying rocks are granite and gneiss almost uniform in character. Sub soil in Chandra Bhaga is fairly hard, generally argillaceous shale.

Weather:-The sanctuary experiences greater proportion of precipitation in the form of snow during the winter season. The monsoon rain does occur but the quantum of rain is very less. The average annual snowfall for last five years works out to be 215.62 cms. Temperature goes down during winter. Sub zero conditions touching -10°C are not rare during winter season. During summer months, however, the weather normally remains clear with quite equable temperature which may go upto 25°C



Wild animal :-

Snow leopard (*Panthera uncia*) –Endangered:- Snow leopard is state animal of Himachal Pradesh. It is completely adapted to live in snow covered areas. It has black spot on limbs and face and its smoky grey coat, dark grey rosette (different for each individual) allows excellent camouflage. The tail is 75 -90% of head and body. It largely preys on Bharal and Ibex. It can live up to the temperature of minus 40 degrees Celsius. The Snow Leopard although was not sighted directly in the sanctuary, but was photographed by Camera Traps installed in Sidhani Dhar during the months of October, 2018 and May, 2019.

Himalayan brown bear (Critically endangered):- One of the largest omnivore of living in Himalayas and a flagship species of the sanctuary which is found in good number in Seichu Twan Nalla wildlife sanctuary.

Musk deer (Endangered):- Photographed for the first time in Seichu Twan Nalla sanctuary “kasturimrig” whose existence is threatened. The Great Himalayas Musk deer belongs to the family Moschidae and lives in Himalaya mountain ranges. Himalayan musk deer lives in hilly, forested environments, generally far from human habitation and eat mainly leaves, flowers, and grasses. The musk gland is found only in adult males to attract mates, for their scent glands.

Himalayan ibex (Least concern):- A subspecies of the Siberian Ibex found in the western Himalaya at elevations above 3300m. The horns have notches on the front, and grow each year. Their coat is thick and woolly in winter, and shed in early summer. Colour ranges from pale brown to dark brown, with a darker dorsal stripe. They are usually found in small herds. They normally feed on grass, moss and small shrubs. In winter, they come down to lower elevations in search of food as the mountains get covered in snow. In summer they move back upward as the snow melts.

Long-tailed marmot (Least concern):- The long-tailed marmot or golden marmot is a marmot species in the family Sciuridae. It occurs in mountainous regions at elevations from 3,200 to 4,850 m. Its typical habitat is rough grassland and alpine meadows, often among rocks where dwarf junipers grow. It is IUCN Red Listed as Least Concern. The long-tailed marmot is a large, sturdy rodent weighing up to 9 kg (20 lb). The eyes are close to the top of the rather-flattened head, the ears are small and the neck is short. The forelegs are longer than the hind legs and the tail is longer than in other species of marmot.



Himalayan red fox (Least concern):- *Vulpes vulpes* (Red fox) Foxes have a sub caudal gland on the upper parts of the tail that gives off a characteristics odour often referred to as foxy. It occurs in the Himalayas and trans Himalayas from Jammu & Kashmir to Sikkim.



Snow leopard
October, 2018



Snow leopard
May, 2019



Musk deer



Himalayan brown bear





Himalayan ibex



Himalayan ibex



Long tailed marmot



Himalayan stoat



Red fox



Royle's pika

Pheasants/birds:-

1. Himalayan Monal
2. Koklass Pheasant
3. Himalayan Snowcock
4. Eurasian Sparrowhawk
5. Booted Eagle
6. Himalayan Vulture
7. Common Kestrel
8. Oriental Turtle Dove
9. Speckled Wood Pigeon
10. Snow Pigeon
11. Rock Pigeon
12. Large-billed Crow
13. Alpine Chough
14. Red-billed Chough
15. Common Cuckoo
16. Scaly-bellied Woodpecker
17. Himalayan Woodpecker
18. Blue Whistling Thrush
19. Blue-capped Rock Thrush
20. Common Swift
21. Asian House Martin
22. Eurasian Crag Martin



23. Large-spotted Nutcracker
24. Long-tailed Minivet
25. Western Crowned Warbler
26. Blyth's Leaf Warbler
27. Tickell's Leaf Warbler
28. Lemon-rumped Warbler
29. Himalayan Rubythroat
30. Blue-fronted Redstart
31. Blue-capped Redstart
32. Black Redstart
33. White-bellied Redstart
34. White-capped Redstart
35. Himalayan Blue tail
36. Coal Tit
37. Rufous- naped Tit
38. Olive-backed Pipit
39. Rosy Pipit
40. Grey Wagtail
41. Citrine Wagtail
42. Plain Mountain Finch
43. Spectacled Finch
44. Yellow-breasted Greenfinch
45. European Goldfinch
46. Red-fronted Serin
47. Orange Bullfinch
48. Common Rosefinch
49. Pink-browed Rosefinch
50. Rock Bunting

Butterflies:-

Butterflies

The sanctuary is known for wide diversity of butterflies that inhabit the open areas of the sanctuary particularly in Blossom and Khariyoun beats where there is good presence of water and attracting plants.

1. Dark Clouded Yellow
2. Large Cabbage White
3. Indian Cabbage White
4. Common Yellow Swallowtail



5. Common Copper
6. Pea Blue
7. Painted Lady
8. Scarce Mountain Agrus
9. Hybrid Argus
10. Indian Tortoiseshell
11. Queen of Spain Fritillary
12. Fritillary sp.
13. Green Under wing sp.
14. Meadow Blue sp.

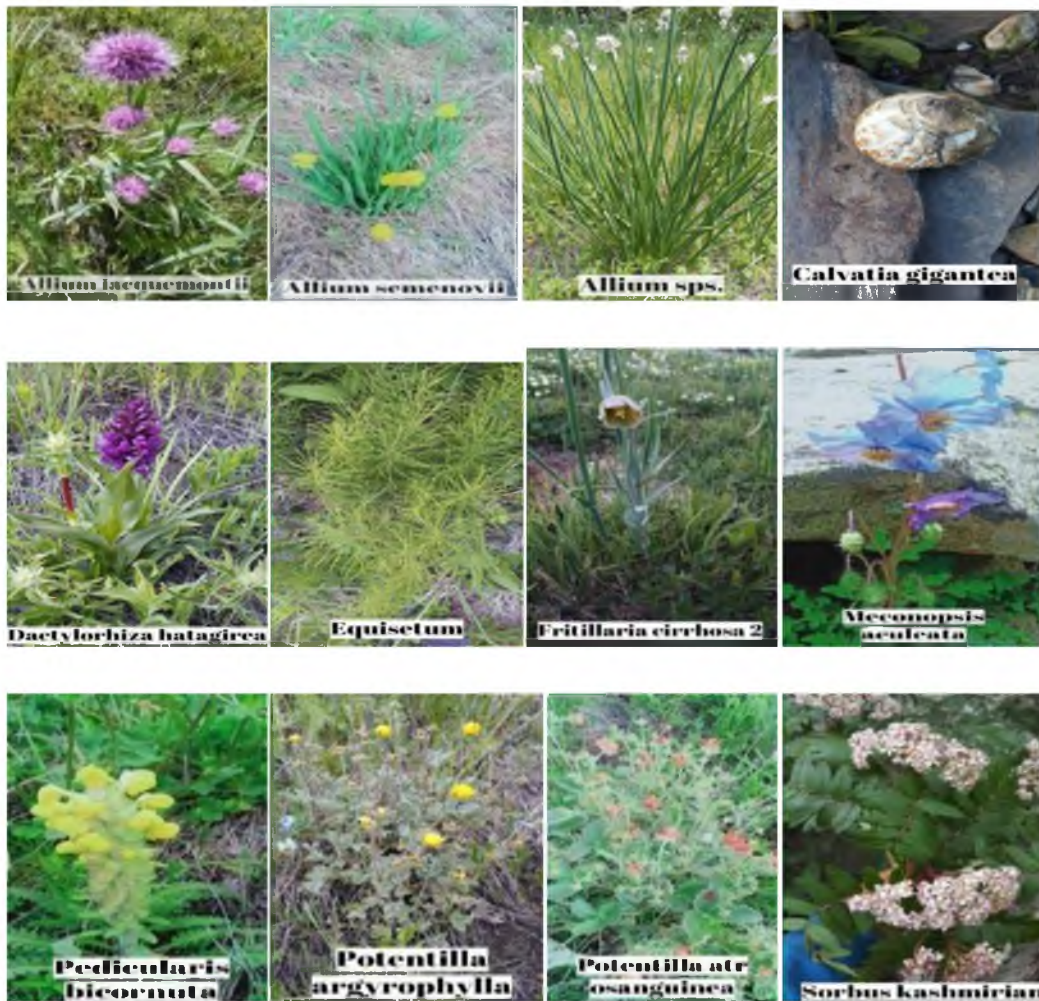
Flora:-Vegetation predominantly consists of Himalayan dry temperate forests, Moist Alpine scrub and Dry Alpine Scrub.

Main herbs and shrubs are:

1. *Allium jacquemontii*
2. *Allium semenovii*
3. *Allium* sps.
4. *Androsace*
5. *Anemone* sps.
6. *Anemonidium obtusilobum* subsp. *Obtusilobum*
7. *Anemonidium tetrasepalum*
8. *Calvatia gigantea*
9. *Clematis barbellata*
10. *Dactylorhiza hatagirea*
11. *Equisetum*
12. *Eriocapitella rupicola* subsp. *Rupicola*
13. *Fritillaria cirrhosa* 1
14. *Hackelia uncinata*
15. *Iris hookeriana*
16. *Iris* sps.
17. *Koenigia mollis*
18. *Meconopsis aculeata*
19. *Morina* sps.
20. *Myosotis sylvatica*
21. *Oxytropis* sps.
22. *Pedicularis bicornuta*
23. *Pedicularis* sps.
24. *Potentilla argyrophylla*
25. *Potentilla atrosanguinea*



26. *Rheum* sps.
27. *Rhodiola heterodonta*
28. *Rhododendron anthopogon*
29. *Ribes* sps.
30. *Rosea macrophylla*
31. *Rubus* sps.
32. *Rumex patientia*
33. *Sinopodophyllum hexandrum*
34. *Sorbus kashmiriana*
35. *Thermopsis barbata*



**Summer Wildlife Census Report
Sechu Tuan Nallah Wildlife Sanctuary
(Chamba Wild Life Division)
Fresh Survey for the year 2024-25**

Wildlife Census in summer of Sechu Tuan Nallah Wildlife Sanctuary was organized by Chamba Wildlife Division by one census group of RFO Wildlife Range Sechu and Forest Guards from 10th to 15th June 2024 in total Two Beats. But due to the harsh topography of the Wild Life Sanctuary and shortage of staff the census only have done in one beat i.e., Saichu Beat and the census for Tuan Beat will be conducted before winters this year. The direct sighting of most Carnivores has not been sighted due to their movement to more higher altitudes but the good no. of scat has been recorded and good no. of direct sighting of herbivores also has been recorded, which shows that Wild Life is thriving at a good rate in the Wild Life Sanctuary. Still it is a good census record for Chamba Wild Life Division. The recorded census data is as following:

Sr. No.	Animal, Pheasant Species	Total No.
1. (a)	Total Scats recorded of Brown Bear	13
(b)	Total Pugmark recorded of Brown Bear	02
2.	Total direct sighting recorded Himalayan Pit Viper (GloydiusHimalayanus)	01
3. (a)	Total direct sighting recorded of Monal	09
(b)	Total Calls recorded of Himalayan Monal	10
4.	Total Dropping recorded of Musk Deer	09
5.	Total Scats recorded of Snow Leopard	03
6.	Total direct sighting recorded of Red-Billed-Chough	43
7.	Total direct sighting recorded of Butterfly	01
8.	Total direct sighting recorded of Ibex	27
9.	Total direct sighting recorded of Marmot	15

Total List of the Census Team

1. Rajesh Chauhan RFO
2. Rajinder Kumar FGD
3. Akshay Kumar FGD
4. Chain Lal Mali
5. Shiv Chand Mali
6. Kaul Singh
7. Prehlad Bhakt
8. Him Lal







**Winter Wildlife Census Report
Sechu Tuan Nallah Wildlife Sanctuary
(Chamba Wildlife Division)**

Wildlife Census in winter of Sechu Tuan Nallah Wildlife Sanctuary was organized by Chamba Wildlife Division by one census group of RFO Wildlife Range Sechu and Forest Guards from 07th to 11th Nov 2024 in total Two Beats. But due to the harsh topography of the Wild Life Sanctuary and shortage of staff the census only have conducted in one beat i.e., Tuan Beat. The direct sighting of most Carnivores has not been sighted either due to their movement to nearby human settlement areas or hibernation but the good no. of scat has been recorded and good no. of direct sighting of herbivores also has been recorded, which shows that Wild Life is thriving at a good rate in the Wild Life Sanctuary. Still it is a good census record for Chamba Wild Life Division. The recorded census data is as following:

Sr. No.	Animal, Pheasant Species	Total No.
A)	Mammals	
1.	Total Scats recorded of Brown Bear	07
	Total Pugmark recorded of Brown Bear	11
2.	Total Dropping recorded of Musk Deer	04
3.	Total direct sighting recorded of Himalayan Ibex	10
4.	Total direct sighting recorded of Royale Pika	04
B)	Birds	
1.	Total direct sighting recorded of Red-billed Chough	15
2.	Total direct sighting recorded of Cinereous Tit	04
3.	Total direct sighting recorded of Coal Tit	05
4.	Total direct sighting recorded of Blue Whistling Thrush	03
5.	Total direct sighting recorded of Common Kestrel	03
6.	Total direct sighting recorded of Himalayan Monal	04
7.	Total direct sighting recorded of Himalayan Griffon	03
8.	Total direct sighting recorded of Eurasian Wren	04
9.	Total direct sighting recorded of White-capped Water Redstart	03
10.	Total direct sighting recorded of Streaked Laughing Thrush	07

Methodology

The survey team conducted a transect walk across the beat, recording signs of wildlife presence such as pug marks, scat, droppings, and direct sightings. The data was collected systematically and documented for further analysis.

Total List of the Census Team

1. **Rajesh Chauhan RFO**
2. **Rajinder Kumar FGD**
3. **Akshay Kumar FGD**
4. **Chain Lal Mali**



5. Shiv Chand Mali
6. Kaul Singh
7. Prehlad Bhakt
8. Him Lal



Annexure –XXVII

LIST OF EXISTING BUNKERS IN SECHU TUAN NALLA WILDLIFE SANCTUARY

Sr.no.	Place of Bunker	Geo- Ordinates	
		Latitude	Longitude
1	Shidhani Nalla	32 ⁰ 56' 37" N	76 ⁰ 33' 10" E
2	ChasakBhatori Dhar	32 ⁰ 55' 38" N	76 ⁰ 37' 41" E
3	Harvin Dhar	32 ⁰ 59' 01" N	76 ⁰ 37' 07" E
4	Jammu Nalla	33 ⁰ 01' 36" N	76 ⁰ 37' 07" E
5	Tarunda Nalla	33 ⁰ 02' 31" N	76 ⁰ 37' 08" E



Annexure –XXVIII

MOEFCC GUIDELINES FOR SUSTAINABLE ECO-TOURISM IN FOREST AND WILDLIFE AREAS-2021

File No. 1-57/2014WL(part-II)

P. No. 1-57/2014 WL (part-II)
Government of India
Ministry of Environment, Forest and Climate Change
Wildlife Division

First Floor, Agni Wing,
Indira Paryavaran Bhawan,
Jor Bagh Road, Anjanj,
New Delhi - 110003.

Dated: 29th October 2021

Principal Secretary (Forests),
All States/Union Territories.

Sab: Guidelines for sustainable eco-tourism in forest and wildlife areas-2021

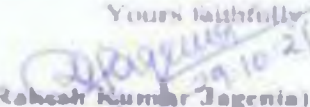
Sir,

Forests and wildlife are inseparable elements of environmental integrity and therefore, a participatory approach towards building the intricate interface between humans and forests is imperative.

The Ministry of Environment, Forest and Climate Change has prepared the 'Guidelines for sustainable Ecotourism in forest and wildlife areas-2021'. The undersigned is directed to enclosed a copy of the said guidelines for ready reference (Annexure).

The States/Union Territories may take further action, as appropriate, in this regard.

Yours faithfully,


(Rakesh Kumar Jagania)
Deputy Inspector General of Forests (WL)
Email: digwl-mofcc@gov.in

Encl: As above.

Copy to:

1. The Principal Chief Conservator of Forests & Head of Forest Force (Hoff), All States/Union Territories.
2. The Chief Wild Life Warden, All States/ Union Territories.
3. Inspector General of Forests, Forest Conservation Division, MoEFCC, New Delhi.
4. PSO to ADGF (WL) PPS to IGF (WL), MoEFCC, New Delhi.



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

**Government of India
Ministry of Environment, Forest and Climate Change**

Guidelines on Sustainable Eco-Tourism in Forest and Wildlife Areas 2021

1. BACKGROUND

Forests and wildlife are elements of nature and inseparable parts of the environment. Because of the intricate nature of interface between nature and human beings, nature conservation entails interactions with people as a central concept. Such interaction includes not only the forest fringe dwellers but also those who are living away from the forests for the purpose of creating experience for the visitors. Eco-tourism may be developed in and around designated sites in forest and wildlife rich areas and ex-situ conservation areas, and such designated sites may include sites of biological, geographical, geo-physical and eco-heritage importance such as mangroves, sacred groves, mudflats, beaches, streams, wetlands, waterfalls, rivers, hills, caves, etc.

Eco-tourism has the potential to create significant opportunities for building public awareness and mass movement towards conservation of nature and natural resources while expanding overall returns to the economy, improving skill base, creating new knowledge and green jobs, and improving the livelihoods of the local communities.^[1] On the other hand, eco-tourism if not practiced in a science-based manner may adversely affect nature on a permanent basis. The Guidelines on Sustainable Eco-Tourism in Forest and Wildlife Areas 2021 (hereinafter referred to as the Guidelines or the Eco-Tourism Guidelines), therefore, lays the framework for practising and promoting sustainable eco-tourism by maximising outputs that support nature and natural resources in their original forms while minimising any negative externalities arising out of interactions between people and nature.

The Guidelines recognise that besides the popular sites located in Protected Areas, which presently number over 900 across the country, many potential eco-tourism sites are located in public, community and private forests outside the Protected Areas as well. These Guidelines shall be applicable to ecotourism sites falling in all forest and wildlife areas irrespective of the ownership of the land.

2. GOAL

The overall goal of these Guidelines is promoting better understanding of nature and wildlife conservation while generating income and opportunities for the local communities in an ecologically, culturally and economically sustainable manner.



3. OBJECTIVES

The Guidelines seek to achieve the following objectives:

- i. Promote low impact nature tourism which ensures ecological integrity of the eco-tourism sites and its environment;
- ii. Promote biodiversity, traditional ecological knowledge and heritage values of India's wilderness;
- iii. Promote engagement of local communities in nature tourism in a manner that enriches local economy and encourages sustainable use of indigenous materials through financially viable value chains thereby helping such local communities become "Atma-Nirbhar";
- iv. Promote partnerships amongst stakeholders for mobilising resources and developing and promoting nature tourism, as well equitable sharing of benefits;
- v. Enhancing potential of India as a global eco-tourism destination.

4. GUIDING PRINCIPLES OF ECO-TOURISM

(i) **Eco-tourism planning:** Eco-tourism shall be promoted on the basis of science based planning. The plan shall form part of the duly approved Working Plan or Management Plan or Conservation Plan of the forest or wildlife area as the case may be, and shall include the carrying-capacity analysis based description of the eco-tourism site, time, duration, route, mode of travel and number of persons for visitation, and any support infrastructure needed. Wherever feasible, the eco-tourism plan will also be dovetailed with the *Gram Panchayat* Development Plan. The Protected Area (PA) manager along with a third party shall determine the carrying-capacity of eco-tourism site by taking into account the wide diversity of environmental, physical, social and economic criteria of development and management of eco-tourism sites as well as institutional capacities of their managers. The Eco-tourism plan needs to also factor in aspects of control of plastic pollution, waste management, noise pollution, sewage treatment and disposal, etc. The Eco-Tourism guidelines issued by the National Tiger Conservation Authority shall be applicable to Eco-tourism in Tiger Reserves in the country.

(ii) **Eco-tourism zonation:** The eco-tourism plan shall appropriately demarcate the eco-tourism zone upon assessment of management requirements of the target wildlife, the habitat or the geographical entity, and their behavioural and ecological characteristics. The eco-tourism zonation shall particularly ensure that the ecological integrity of the site, including breeding areas of wildlife and tribal habitations particularly PVTGs remains protected. The zonation shall also ensure that safeguards provided in the Forest Rights Act, 2006 are fully respected.



(iii) **Resource mobilisation and community participation:** The local community shall be the key stakeholder of eco-tourism. Central government will provide for participatory frameworks that encourage resource mobilisation by a group of stakeholders in development, operation and maintenance of eco-tourism zones. These frameworks shall ensure that equitable benefits flow from eco-tourism accrues, besides resource investors, to local communities, tribals and other traditional forest dwellers including by way of enhanced livelihood opportunities. Further, keeping in view that most eco-tourism sites are located in remote places and small-scale operators predominate, suitable programme may be taken up by the Central Government to facilitate eco-tourism operators to access incentives allowed to the tourism sector in a timely and adequate manner.

(iv) **Eco-tourism site development:** The Eco-tourism site shall be developed only in eco-tourism zone and in eco-friendly manner. While developing support infrastructure for eco-tourism it shall be ensured that the natural profile and ecological integrity of the ecotourism site including its biodiversity value is maintained. Any ecotourism facility or structure on forest lands shall be subject to the provisions of the Forest (Conservation) Act 1980. However, no permanent structure shall be made/constructed to create ecotourism facility/structure, but temporary structures/facility made predominantly of natural material of local origin may be allowed in Protected Area or on forest land. Such ecotourism facility/structure shall be part of the approved Working Plan/Management Plan/Working Scheme. Home stay managed by local communities on non-forest land shall be promoted. States may develop benchmarks/ standardized criteria based on site specificity, for adoption of best practices in eco-tourism including sustainable ecological management of the site, customer satisfaction, harmony with local culture and design, local construction material used, employment types, environmental education facilities. Further, safety measures, especially for managing fire, flood, landslide, needs to be inbuilt into the ecotourism site development plan and adequate system needs to be in place for efficiently managing such disasters.

(v) **Inter-sectoral synergy:** The central government will work towards prioritisation of action with regard to developing eco-tourism sites across the country and improving the way in which action on eco-tourism is coordinated with other sectors and synergies are exploited in the best possible manner. Regulations should be streamlined wherever possible and processes and procedures should be simplified while taking into consideration the objectives of relevant sectoral policies.

(vi) **Promoting eco-tourism entrepreneurship:** Concerted action will be taken for expanding entrepreneurship opportunities for stakeholders engaged in eco-tourism with due priority to the members of local communities and those whose livelihoods have been impacted because of actions such as closure of the Protected Area for forest product extraction. The focus will be on increasing productivity, boosting the skills and competencies of stakeholders at all levels, and the needed structural changes will be supported and strengthened. Start-ups will be supported through training, coaching, financial support and other benefits including through the incubators established under various government programmes.



5. IMPLEMENTATION STRATEGY

The following are the broad framework for implementation of the Eco-tourism Guidelines:

Strategy i: Identification of potential sites: Each State may identify sites for eco-tourism through a participatory process involving stakeholders, particularly the local communities, and make a priority list for development of such sites. Area managers will initiate eco-tourism planning based on carrying-capacity analysis, including identification of eco-tourism zones, identification of potential partners, categorisation of infrastructure support that may be allowed, funding sources, and training and capacity building needs of the partners through a multi-stakeholder dialogue process. Spatially cluster approach to eco-tourism infrastructure will be promoted to larger blocks of contiguous habitats so as to minimise adverse ecological impacts on a larger area. An indicative list of potential eco-tourism sites is at Annexure I. However, States/UTs may develop ecotourism sites which has high potential.

An Eco-tourism Plan shall be prepared for every eco-tourism site. The Plan shall be approved and prepared for sites under various controls as follows:

- i. For Sites within forest protected areas: The Eco-tourism Plan for the areas falling inside the notified forest protected areas shall form part of duly approved Working Plan/Management Plan/Working Scheme.
- ii. For Sites falling within Eco-sensitive Zones: All new Eco-tourism activities or expansion of existing tourism activities within the Eco-sensitive Zone (on non-forest land) shall be as per the Tourism Master Plan for the Eco-sensitive Zone. The Eco-tourism Master Plan shall be prepared by Department of Tourism in consultation with State Departments of Environment and Forests. The Tourism Master Plan shall form a component of the Zonal Master Plan and until the Zonal Master Plan is approved, development for tourism and expansion of existing tourism activities shall be permitted by the concerned regulatory authorities based on the actual site specific scrutiny and recommendation of the Monitoring Committee. Hotel/resort or commercial establishment construction shall be taken up inside the Eco-sensitive Zone as per the ESZ notification of the National Park/Sanctuary.

Strategy ii: Funding support: Compatible funding instruments that cater to the specific challenges of the eco-tourism sector, particularly the small and geographically fragmented nature of enterprises, is key to sustainable eco-tourism promotion. Financial institutions may be encouraged to develop targeted financial instruments for the eco-tourism entrepreneurs at the local level. Public funding for eco-tourism promotion, monitoring and innovation may be made available, including for non-repayable loans and guarantees, start-up grants and marketing of eco-tourism places.



Strategy iii: Usage of Information Technology: The role of digitalisation both as a driver and an enabler of eco-tourism shall be recognised. In particular, digitalisation will be used to facilitate new eco-tourism products, such as virtual tours, competitive exploration, etc., services, business processes and models. National and sub-national projects will be launched to undertake analysis of the needs of various partners and users (visitors) of eco-tourism projects, and develop scenarios for eco-tourism support for the future, and active steps will be taken for transfer of knowledge to partners including by making such knowledge public wherever feasible. In recognition of the fact that partners (e.g. service providers) in eco-tourism are mainly small entities, and their limited capabilities of using digital services combined with possible use of multitude of digital platforms and inability to create economies of scale, pose significant challenge. National and sub-national level data integration platforms to analyse visitors behaviour and preferences will be developed, and additional sources such as social media engagement, newsletter statistics, booking data, media and marketing reports, etc will be used.

Strategy iv: Capacity building: Despite wider and growing attraction to eco-tourism, the challenges emanating from the field such as geographically fragmented and small nature of sites, small business structure and high seasonality and the consequent visitor number fluctuation, are significant. On the other hand, it offers significant entrepreneurial and labour market opportunity for the local communities. With increased numbers of eco-tourism sites the eco-tourism sector may become a supplier of low return exchangeable standard products making private investment in eco-tourism less attractive. The capacity of field functionaries of different stakeholders, especially the eco-tourism site managers and the local communities, will be steadily built to innovate and meet the present and future challenges of the sector, and international best practices as suited to local conditions will be internalised. Industrial Training Institutes (ITIs) and other such institutes will be encouraged to develop specific programmes for local communities and small operators engaged in eco-tourism.

Strategy v: Benefit sharing: Community-based tourism will be promoted as a preferred form of eco-tourism. While eco-tourism will create new wage employment and private entrepreneurial income for the respective stakeholders, fair and equitable benefit sharing of common eco-tourism revenues with the local community is key to sustainability. Given the diversity of stakeholders, scale of operations and geographically fragmented nature of eco-tourism sites, appropriate mechanisms for sharing of benefits with the local eco-development committees / forest protection committees will be developed by the respective State Government for different types of eco-tourism sites falling on government lands. Such benefit sharing mechanisms shall recognise that the local community has the highest stake in eco-tourism and the revenue generated has to be also ploughed back for development and maintenance of the eco-tourism sites. Transparent mechanism for revenue collection from common eco-tourism activities user charges, entry fees, concessions, fines and penalties, etc, through a Foundation established at the appropriate local level, and sharing of revenue with stakeholders, particularly local communities, has served as best practise in many parts of the world and the same duly incorporated by the respective State governments. Considering that



eco-tourism is mostly a seasonal activity, the Eco-Tourism Plans should include measures to reduce financial overdependence of the local community on eco-tourism, and the same should be supported by the district level plan approval committees. Such measures may include capacity building of the communities with respect to processing and marketing of bio-cultural products to ensure that communities remain attached to preservation of local ecology. The Central government will support development of such mechanisms through sharing of international experiences and coordination with participating states and national entities in case the stated eco-tourism enterprise covers sites across States and or national entities are involved.

Strategy vi: Education and outreach: For effective use of the eco-tourism potential of the area, effective communication plan covering all eco-tourism sites of a State will be drawn by the State Governments with the help of expert organisations. The Plan, among other relevant information, will include information to the tourists on the eco-system services and intangible benefits provided by the area. The communication plan will include measures to promote partnerships between the eco-tourism project and socially responsible companies. Use of modern technologies such as electronic visual tools and well equipped modern interpretation centre at the eco-tourism site will be encouraged through this Plan to encourage self-learning by visitors. The Plan will also lay emphasis on appropriate signages for generating awareness among the visitors regarding the safety and risk factors in the eco-tourism zone and safety protocol and information material on the area for the visitors. The Central government will support the outreach of States' eco-tourism potential for international tourists in a programmatic manner.

Strategy vii: Monitoring: Each eco-tourism plan will invariably include a dynamic monitoring mechanism, covering multiple biological parameters to monitor stress on wildlife vis-a-vis number and patterns of tourist visitation and their level of satisfaction, involvement of local people, scope for improvement in flow of eco-system services, etc. The monitoring will also include mechanisms to ensure that rigorous practices are in place to prevent biological invasion, disease transmission, and air, water, noise or light pollution. The States Governments/UT Administrations shall endeavour to maintain service level quality standards through appropriate certification/rating protocols.

The States shall endeavour to initiate a ranking system for the respective ecotourism sites.

There shall be regular monitoring by the State Governments and Union Territories on the implementation of the guidelines spelt out in the Guidelines for Sustainable Ecotourism in forest and wildlife areas-2021.

District, State and National level monitoring committees comprising of representatives of relevant stakeholder departments, the local communities, civil societies, and the corporate organisations will be constituted to oversee the implementation of this Guidelines including mobilisation of the required technical, financial and human resource support for eco-tourism plans.



Strategy viii: Review: The National level eco-tourism monitoring committee will review the Eco-Tourism Guidelines every three years and make recommendation to the Central Government.

...

²¹ Wherever 'local community' has been used in this Guidelines, it will mean to include Schedule Tribe and other traditional forest dwellers as per Scheduled Tribe and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006, which is referred hereinafter as FRA 2006 in short.



Annexure –XXIX

H.P. ECO-TOURISM POLICY 2024

Government of Himachal Pradesh,
Department of Forests,

NOTIFICATION

No. FFE-B-C(15)-1/2024

Dated: Shimla-2 the 29.10.2024

The Governor, Himachal Pradesh is pleased to notify 'Amendments in Revised Eco-tourism Policy-2017' as 'ECO-TOURISM POLICY 2024' enclosed as Annexure-I (23-pages) approved by the State Cabinet vide Memorandum Item No.24 on dated 22.10.2024.

By order

(Kamlesh Kumar Pant)
Addl. Chief Secretary (Forests) to the
Government of Himachal

Endst. No. As above

Dated Shimla-2 the 29.10.2024

Copy forwarded to:

1. The Pr. Pvt. Secretary to the Hon'ble Chief Minister H.P.
2. The Sr. Pvt. Secretary to the Chief Secretary to the Govt. of H.P.
3. All the Administrative Secretaries Govt. of Himachal Pradesh.
- ✓ 4. The Pr. Chief Conservator of Forests(HOFF) PCCF(WL) H.P.
5. The Managing Director, HPSFDC, Shimla-9.
6. The Pr. Accountant General, H.P Shimla-4.
7. The Sr. Dy. Accountant General, H.P Shimla-4.
8. All the Dy. Commissioners, H.P.
9. All APCCF, CCF/CFs/DFOs (Territorial & Wildlife) in Himachal Pradesh.
10. The Joint Secretary (GAD) to the Govt. of H.P. w.r.t. the Cabinet item No. 24 dated 22.10.2024.
11. The Controller, Printing and Stationary Department, H.P, Shimla-171005 with the request to publish the Notification in Extra Ordinary Gazette.

DFO (E.T.)

APCCF (E.T.)
✓
PCCF (HOFF)
30/10/2024



(P.K.Task)

Joint Secretary (Forests) to the
Government of Himachal Pradesh



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)



ECO-TOURISM POLICY, 2024
OF
HIMACHAL PRADESH
HIMACHAL PRADESH FOREST DEPARTMENT

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Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

1. PREAMBLE

Himachal Pradesh, known for its rich natural heritage, is amongst the top tourist destinations in the country, both for national as well as international visitors. Recent estimates, place the number at about 160 lakh visitors –more than twice the State's population. However, much of the tourism related activity is concentrated in four major locations, Shimla, Manali, Dharamshala and Dalhousie. A majority of the visitors do not get an opportunity to experience the rich bio-cultural diversity contained in the many Forest areas, Sanctuaries and National Parks that comprise such a large part of Himachal Pradesh.

The Forest Department of Himachal Pradesh framed an Eco-tourism policy during 2005 to enable tourist to experience this national heritage. The policy needed revision mainly due to the procedural requirements of obtaining clearance of Eco-tourism sites under Forest Conservation Act, 1980 as per guidelines of the Ministry of Environment, Forest & Climate Change (MoEF&CC), Government of India. Some changes in the existing policy document have also been necessitated in the context of the evolving understanding of Eco-Tourism concepts and principles.

The Forest Department of Himachal Pradesh framed an Eco-tourism Policy in 2001 which was revised in 2005, 2016 and in 2017 to promote Eco-tourism in the State. Now, Eco-tourism Policy 2017 requires some amendments to promote Eco-tourism activities in the State and in consonance with procedural requirements as per the MoEF&CC (Van Sanrakshan Evam Samvardhan Adhiniyam), 2023 which is an amendment to the erstwhile Forest Conservation Act, 1980 as well as the Ministry's guidelines on Sustainable Eco-Tourism in Forest and Wildlife Areas issued in 2021.

The Revised Eco-Tourism Policy 2024 aims at bringing the wilderness and virgin ecosystems of Himachal Pradesh closer to visitors and at the same time ensure adequate safeguards and systems for the protection and conservation of these natural resources. By involving local communities, the policy would help in increased livelihood opportunities as well as their involvement in awareness building, protection and conservation. It also envisages generation of financial returns which can be ploughed back into proper up keep and maintenance of the



environment. It shall also promote greater understanding and appreciation for natural and cultural heritage.

CONCEPT

'Eco-tourism', in a very broad sense, means venturing into and enjoying nature in such a way as to assure that negative impacts on the cultural and natural environment are minimized and mitigated. It is, therefore, 'responsible' tourism, which, besides being ecologically and culturally sensitive, helps the local communities in realizing social and economic benefits.

This Policy is based on the understanding that involvement of local communities in eco-tourism would support their livelihood needs and consequently create a stake for them in the conservation of local culture, ecology, and environment.

2.1 DEFINITIONS AND KEY TERMS RELATED TO ECOTOURISM:

2.1.1 Ecotourism activities: Ecotourism activities are nature-based activities exclusively performed to sensitize people about the beauty, richness and fragility of the state's natural and cultural heritage, and shall not just focus on creating destinations in natural area or using natural environment for outdoor activities.

In line with the above-mentioned distinction, ecotourism activities in Himachal Pradesh will include one or more of the following:

- Activities like Trekking, nature walk, bird and wildlife watching, hiking, flora and fauna observation, photography, Boating MTB to view wildlife experience wilderness etc.
- Overnight Camping /Star Gazing in designated sites / forts / other monuments;
- Any travel focused on experiencing State's local culture including festivals, local folktales, history, historical monuments and heritage sites which promote eco-tourism and sustainability of local traditions;
- Lodging in campsites, eco-lodges and guesthouses that are located in an area of natural and/ or cultural beauty, and involves local specificities and
- Activities in specified areas of the forests such as guided nature trails, jungle safari in vehicles, etc.
- Stay away from the hustle-bustle of the cities in Forest Rest Houses to which Enjoy the calmness of nature.

2.1.2 Sustainable Ecotourism Development: Development of ecotourism in such a way that meets the needs and aspirations of the current generation without compromising the ability to meet the needs of future generations.



- 2.1.3 Eco-tourism Assets:** Natural and cultural features that attract visitors, such as landscapes, endemic or rare flora and fauna, glamping/tenting sites, Forest Rest Houses/Inspection Huts/ Tree houses, ecotourism destinations etc.
- 2.1.4 Eco-tourism Facilities:** accommodations, lodging facilities, and related amenities which blend with the natural and cultural environment of the area in terms of design, building materials, and energy, water and waste efficiency measures.
- 2.1.5. Eco-tour Operators:** Tour operators specializing to cater eco-tours collaborating with local people focused on local nature and culture-based tourism, covering eco- circuits.
- 1.1.6. Eco-tourism Product:** A combination of resources, facilities, activities and services which are sold and managed through qualified ecotourism operators including local communities or individuals.
- 2.1.7. Eco-tourism Services:** basic services for ecotourism activities including but not limited to transportation, food, guiding, and interpretation. These services should cause minimum damage to the natural and cultural environment and promote a better understanding of the natural and cultural aspects of an area.
- 2.1.8. Interpretation:** an educational activity to help visitors understand and appreciate the community resources. Interpretation includes facts, but also reveals the reason of the importance of those facts so that visitors are able to understand why the resources should matter to the individual visitors. Interpreter is a person who provides interpretation in natural and cultural areas, interpretation centre, parks etc.

3. VISION & OBJECTIVES

The vision is to preserve and protect the natural (both flora and fauna) and cultural heritage of Himachal Pradesh, provide opportunities to enhance livelihood of local people, generate resources for sustainable development and promote greater understanding and appreciation for this heritage through authentic Eco-Tourism initiatives.

The Eco-Tourism Policy would encourage a partnership between civil society (local communities, NGOs, Eco-Clubs, academic institutions) as well as private enterprises/businesses and the State Government Departments of Forest, Tourism, Fisheries, I&PH, Power & PWD.



4. MISSION STATEMENT

To make Himachal Pradesh a leading Eco-tourism destination, with Eco-Tourism attracting at least 10% of overall tourists visiting the State by the year 2030.

5. PRINCIPLES

Eco-Tourism can be one of the most viable options for conservation of natural resources and sustainable development in a mountain State like Himachal Pradesh. It has to be executed mindfully, with the minimum impact to inspire cultural awareness, tolerance, and commitment to natural resource conservation. The following Eco-Tourism principles will form the basis of this policy:

Design, construct and operate low-impact facilities.

- Design, develop and operate low-impact facilities.
- Focus on high ended tourists through High value, Low volume ecotourism.
- Provide a positive experience for both visitors and hosts.
- Build environmental and cultural awareness and respect.
- Minimize physical, social and behavioural impacts.
- Provide direct financial benefits for conservation and livelihood opportunities to local communities
- Deliver memorable interpretative experiences to visitors
- Recognize the rights and spiritual beliefs of the local People
- All ecotourism activities shall be in conformity with the applicable laws and regulations including but not limited to the provisions of the H.P. Eco-Tourism Policy; Ministry of Environment & Climate Change Guidelines on Eco-tourism in Forest and Wildlife Areas-2021, the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980 and the Van (Sanrakshan Evam Samvardhan) Rules, 2023 (as amended from time to time); the Guidelines and Clarifications, 2023 issued under Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980 and the Van (Sanrakshan Evam Samvardhan) Rules, 2023 (as amended from time to time) without any deviation, Environment Protection Act 1986, Wildlife (Protection) Act, 1972, Scheduled Tribes and other Traditional Forest Dwellers Recognition of Forest Rights Act, 2006, Tourism Policy of Himachal Pradesh.

6. STRATEGY

The principles outlined above will be pursued through an appropriate strategy that comprises the following components:

A. Institutional Arrangements:

- (i) Forest Department has created a *Special Purpose Vehicle* in the form of



'Himachal Pradesh Ecotourism Society' (HP ECOSOC), registered vide No.422 dated 30-06-2006 under the Registration rules of Societies Act 1860 to assist in delivering the mission and objectives of the Policy.

- (ii) HPECOSOC covers the entire State. It will work with eco-tourism Societies at Division/Circle level to facilitate PPP initiatives at identified locations and provide guidance in furtherance of the principles underlying this policy. The Division/Circle level societies shall be chaired by the concerned Conservator of Forests/Chief Conservator of Forests of the Forest Circle concerned. The Local Divisional Forest Officer (T)/DFO (Hqtr) will be the Member Secretary of the Division/Circle Level Society and a member of the Governing Body. The District Tourism Development Officer and representative of Deputy Commissioner as well as representatives from the Zilla Parishad, Panchayat Samiti, Nagar and Gram Panchayats will be members of the Governing Body. New Circle Level Societies shall be constituted where these do not exist already and existing Division level Societies shall be merged into respective Circle level Societies in due course of time. The Division/Circle Level Societies can meet on quarterly basis to review, monitor and evaluate the implementation of various activities of all Eco-tourism projects in a Circle. The constitution is suggested as under:

	CF/CCF concerned DFO(T)/DFO (HQ) of Circle
(i) Chairman	
(ii) Member Secretary	Member
(iii) Representative of Deputy Commissioner	Member
(iv) Representative of Zilla- Parishad	Member
(v) Representative of Gram Panchayats	Member
(vi) Representative of BDC	Member
(vii) Representative of Tourism Dept.	Member
(viii) All DFOs of the Circle	Member
(ix) DM Forest Corporation	
(x) NGO/ CBO working in the field within the Circle	Member(one person)

This Governing body will be responsible for submitting the annual plan of operation(APO) to the HPECOSOC. The society will have Supervision Committees headed by the concerned DFOs who will be responsible for all the day to day operations and preparing the budget and annual plan etc. for approval of the Governing Body. The constitution of the Supervision Committee shall be as under:

1. Divisional Forest Officer	Chief Executive Officer
2. Divisional Manager of HPSFDC Ltd.	Member
3. All R.Os of Concerned Division	Member
4. Pradhan of the Gram Panchayat	Member
5. SDO (I&PH)	Member

- | | |
|--|--------|
| 6. Representative of HIMURJA
(Solar Energy) | Member |
| 7. A.M. HPSFDC Ltd Concerned | Member |
| 8. NGO/CBO (One Member) | Member |

The Supervision Committees will look after projects and activities in the area of the Division.

- (iii) These Division/Circle level societies will send their proposals, duly approved in the respective Working plan of the concerned Division for fresh eco-tourism sites to HP ECOSOC for securing Government approval and further action for getting project proposals prepared and securing partners for their operation, by following the procedure laid down in this policy.

- (iv) **Centralized Coordination of Ecotourism Activities in Himachal Pradesh to Ensure Synergy and Uniformity:** A mechanism for coordinated planning and execution of ecotourism activities shall be introduced. Specifically, all Annual Plan of Operations (APOs) of the Forest Circles, related to ecotourism, shall be submitted to Member Secretary HPECOSOC for approval of Head of the Department, thus ensuring synergy, consistency, and alignment with the State's broader ecotourism goals.

B. Creating awareness and capacity building of the principal stakeholders:

Ecotourism awareness and education are the fundamental pillars for fostering a culture of responsible ecotourism practices, environmental stewardship and cultural appreciation.

Creating Awareness:

HPECOSOC shall endeavour to implement suitable programmes and targeted initiatives to undertake the following strategic actions for ecotourism awareness at potential ecotourism sites by:

- i. Promoting environmental consciousness among tourists, local communities and stakeholders about the importance of environmental conservation, biodiversity and the need for responsible tourism practices.
- ii. Educate the tourists and locals about the diverse cultural, traditional heritage of the State and Indigenous practices, fostering respect and preservation of cultural identities.
- iii. Encourage the tourists and stakeholders to adopt sustainable practices like waste reduction, water conservation and minimizing their ecological footprint. Promote the use of renewable and biodegradable resources and ecofriendly waste disposal methodologies.



- iv. Establish interactive tourist interpretation Centre within ecotourism zones offering information on flora and fauna, ecosystems, cultural heritage through exhibits, displays, AI techniques and multimedia presentations.
- v. Information dissemination through brochures, digital platforms at ecotourism sites to educate tourists about the ecological significance, biodiversity and conservation efforts within the region.
- vi. Organize guided tours, nature walks and interpretive trails led by trained guides to provide firsthand knowledge about nature and cultural aspects of Himachal Pradesh.

Capacity Building:

- (i) HP ECOSOC will concentrate on capacity building through experience sharing, workshops, training programmes and field visits etc., either in-house or through carefully selected organizations / entities.
- (ii) To inculcate the spirit of environmental awareness at an early age, the Division level Societies would engage students at various levels beginning at the primary level.
- (iii) HP ECOSOC will develop appropriate training modules (continuous, practical & participatory) and training material/case studies for the various stakeholders and ensure that emergence of appropriate technologies is to be advanced.
- (iv) Certified Training programmes for nature guides, appreciation of flora/ fauna shall be organized. It shall be the endeavour of the Division level Societies to train a pool of certified nature guides and provide them livelihood opportunities.
- (v) Division/Circle level Societies shall liaise with Community Based Organizations (CBOs) working in the field of Natural Resource Management for providing them training and other material relevant for eco-tourism.
- (vi) For their education and awareness activities, HP ECOSOC and Division level Societies shall leverage funds through the Externally Aided Projects, the CAT Plans, Capacity Building programmes of H.P. State Tourism Development Board and resources generated from projects developed under PPP mode.

C. Community Involvement

In general, Community Based Ecotourism (CBET) is tourism that is managed by the community for the tourist destinations. One of the main objectives of ecotourism is to involve local people in ecotourism development and provide them livelihood opportunities. As per MoEF&CC guidelines on Sustainable Eco-Tourism in Forest and



Wildlife Areas 2021, community-based tourism will be promoted as a preferred form of eco-tourism. The community should be made a stakeholder in all feasible options. The HPECOSOC is obliged to implement support to village development, taking into account their traditional rights and cultural systems.

- (i) The endeavour would be to extend maximum benefit to the local community either in the form of employment or resource generation. Local communities will be encouraged to come forward to take up various economic or promotional activities in their areas for furthering the vision and objectives of this policy.
- (ii) Such local communities could be involved through formation of Eco Development Committees (EDCs) at Division Level in the form of PRIs, CBOs, User Groups, Mahila Mandal, Yuvak Mandals, Forest Development Committees, watershed development committees, Eco-Clubs, Self-help groups etc.
- (iii) Encourage the establishment of community-owned enterprises, such as outsourcing the services in Ecotourism facilities, outsourcing the tenting sites to local bodies, handicrafts, and local guides, fostering economic empowerment. Support the creation of community-based tourism products, allowing local communities to actively participate in and benefit from ecotourism initiatives.
- (iv) Encourage the establishment of community owned enterprises, such as handicrafts, providing services in Forest Rest Houses, local guides, allowing local communities to actively participate in and benefit from ecotourism initiatives.
- (v) Members of the local community will be represented in the Division/Circle level societies as well as in the Executive Body.
- (vi) To introduce flexible models for the maximum benefits to the local communities and ensure that such models align with the overreaching goals of the ecotourism policy while addressing the unique contexts of different stake holders.

D. Coordination with partner Departments

- (i) Necessary linkages and synergies in the policies and programmes of all concerned departments/agencies will be aimed at by establishing effective coordination mechanisms at the State and the District levels.
- (ii) Linkages with other partner Departments shall be established in the HP ECOSOC (at the level of Governing Body and Executive Committee) and other societies.
- (iii) *Linkages with other policies/programs of the State Government/other States*

& Eco-Tourism Societies of India will be established.

- (iv) **Collaboration between Himachal Pradesh Forest Department (HPFD), and Himachal Pradesh Tourism Department (HPTD):**

Collaboration between Himachal Pradesh Forest Department (HPFD), and Himachal Pradesh Tourism Department (HPTD) to set up ecotourism projects in Himachal Pradesh (HP) can be structured through several strategic steps. Expertise of both the departments can be utilized to set up an exemplary initiative in the State. For joint ventures, there is a need of assessment of potential ecotourism sites, considering factors like biodiversity, cultural significance and infrastructure needs.

To initiate such activities in forest areas with the assistance of HP Tourism Department, signing of an MoU between the Forest Department (through HPECOSOC) and HP Tourism department is mandatory.

E. Marketing

Leverage marketing channels to promote ecotourism destinations, targeting eco-conscious travelers.

- a) **Branding of Ecotourism sites:** for promotion of Ecotourism destinations branding of potential ecotourism sites and Forest Rest Houses branding shall be created.
- b) **State and Destination Specific campaign:** The HPECOSOC shall plan its own campaign to popularize the State as ecotourism and adventure tourism destination. The Circle Level Societies shall have to plan specific campaigns to showcase the unique offerings of the ecotourism sites and to promote ecotourism destinations.
- c) **Innovations and Digital Initiatives:** The marketing of ecotourism destination requires dissemination strategies and the aid of digital technology and other conventional means. The prime task of marketing and promotion of sites shall be done by the HP ECOSOC.
 - (i) HP ECOSOC shall provide a platform for effective marketing through website and website linkages, which shall provide information for online booking of facilities
 - (ii) HPECOSOC will encourage adoption of online ticketing/booking platforms.
 - (iii) Develop online platform for ecotourism operators to apply for licenses and certification.
 - (iv) Tie ups shall be facilitated with organizations/ entities/tour operators/ travel agents/hotellers engaged in tourism promotion.
 - (v) Implement targeted digital campaigns to raise awareness about sustainable ecotourism practices and promote responsible tourism.
 - (vi) HP ECOSOC shall utilize the services of Publicity Wing of Forest Department for

- popularizing the eco-tourism destinations during fairs and festivals.
- (vii) The services of print and electronic media shall be utilized for dissemination of eco-tourism hot spots and potential sites so as to lure the 'discerning tourist'.
 - (viii) Forest Rest Houses included under eco-tourism, shall be used for marketing of eco-tourism products like camps/ nature walks/ trekking etc. by enhancing its infrastructure.
 - (ix) Foster collaboration with travel bloggers, influencers and digital content creators to amplify the reach and impact of ecotourism initiatives in the State.

F. Important Stakeholders and their functions:

- a) **Visitors:** Responsible travel to natural areas and making available financial contribution for conservation of natural heritage and empowerment of local people.
- b) **Local Communities:** Provide positive experiences for the visitors.
- c) **IIP ECOSOC (Special Purpose Vehicle):** Practice and promote ecotourism according to the principles of ecotourism; Capacity building of stakeholders; key interface for PPP partners.
- d) **Division/Circle level Societies:** Managing all operations for responsible eco-tourism at ground level.
- e) **Government Departments (Forests, Tourism, PWD, I&PH, Rural Development, Revenue):** Provide positive experiences for the visitors; Minimize impact; Build environmental, cultural awareness and respect. By implementing and educating others about ecotourism, contribute to the positive and more sustainable development of the tourism industry.
- f) **Concerned Panchayat, BDC and Zilla Parishad:** Provide positive experiences for the visitors.
- g) **Partners managing sites:** Practice and promote ecotourism according to the principles of ecotourism.

G. Development & Management of Eco-Tourism Assets

- (i) **Identification of Potential Ecotourism Sites:** The forest Department will identify areas for eco-tourism in the forest and the Protected Areas, in pristine areas rich in biodiversity or of aesthetic significance. Ecotourism sites will be identified by assessing the potential of sites based on criteria including the site's

unique significance, resource availability, vulnerability, logistics etc. This assessment shall be the essential prerequisite for development of sites in the ecotourism chapters incorporated in the Working Plans of concerned Forest Divisions for Ecotourism activities in Himachal Pradesh. The site developed will cater to different target groups and will include camps, hiking, trekking, wildlife sighting, bird watching wildlife sighting trails, wellness centres, boating, photography, visit to medicinal plants conservation area, craft making, agricultural products, local handicraft, promoting festivals, interpretation centre visit etc.

-) **Self -identified Sites by Stakeholders:** if stakeholders other than HP Forest Department identify a potential ecotourism site, the proposed site shall be assessed by the concerned DFO for undertaking the Ecotourism activity and shall be submitted to CEO HPECOSOC for further process.
-) The Eco-tourism site shall be developed only in identified ecotourism zone and in eco-friendly manner. While developing support infrastructure for ecotourism it shall be ensured that the natural profile and ecological integrity of the ecotourism site including its biodiversity value is maintained. However, no permanent structure shall be made /constructed to create ecotourism facility/structure, but temporary structures/facility made predominantly of natural material of local origin may be allowed in Protected Area or on forest land as per the approved Working Plan/Management Plan/Working Scheme. Home stay managed by local communities on non-forest land shall be promoted.
-) The State already boasts of a few Van Vihars and nature awareness centres. It shall be the endeavour to bring all the facets of such nature tourism related assets into a common fold under the aegis of HPECOSOC in this policy.
Development of nature parks/ van vihars, nature trails etc. that are important from eco-tourism point of view shall be carried out so that not only the tourists outside State have access to nature. State dwellers shall also have an opportunity for nature appreciation and recreation. *The Division/Circle level Societies shall propose an APO for utilization and management of these assets which shall require prior approval of the HPECOSOC. The funds shall be utilized in accordance with the approved APO.*
-) Eco-tourism circuits shall be created, which will allow the visitors to access the

- existing infrastructure of Forest Rest Houses/Eco-Tourism camping sites.
- (vii) HP ECOSOC shall facilitate selection of partners for Eco- Tourism sites in PPP mode after taking approval of Government of HP. The guidelines about the management of existing Eco-Tourism sites shall be in accordance with this policy document. Adherence to guidelines will be overseen by the Division/Circle level societies.
 - (viii) Trekking routes shall be popularized and arrangements shall be worked out to offer trekking packages to the discerning tourist, who may like to visit rural and interior areas of the State. The HPECOSOC shall prepare a comprehensive list of all the trekking routes, identified for ET activities, and work out modalities for Design, Development And Maintenance (DDM) of the same in consultation with Tourism, Police and other line departments.
 - (ix) Eco-Tourism societies at division level shall endeavor to tie up with school groups and colleges for organizing camps in selected Forest Rest Houses /Eco-Tourism Camping sites operating under its aegis.
 - (x) Eco Circuits shall be created by these societies to link the potential sites.
 - (xi) Considering that the local livelihood improvement is one of the expected outcomes of eco-tourism homestay based hospitality enterprises will be encouraged.
 - (xii) **Assessment of Carrying Capacity:** Carrying capacities of visitors and vehicles, those may be allowed to enter inside the identified area, will be assessed and ceiling on number of visitors/vehicles of those may be allowed to enter the area at any given time, will be fixed. Carrying capacity assessment will cover:
 - Number of Persons visiting the PA at different points of time
 - Number of Vehicles/boats, etc. entering the PA
 - Infrastructure
 - Duration of the visits
 - Duration of exposure of the PA to [eco-tourism activities]

H. Development and Management of New Eco-Tourism Sites through Departmental Mode and Public Private Partnership (PPP) /Operators

A constructive and mutually beneficial partnership between the public and the private sector would be worked out for development of New Eco-Tourism Projects by selection of Operators for potential ecotourism sites in Himachal Pradesh and projects will be developed as per MoEF&CC Guidelines for sustainable Ecotourism In Forest and




wildlife areas- 2021 as well as *Van Sanrakshan Evam Samvardhan Adhiniyam* Amended Rules 2023. Some sites shall be developed by the H.P. Tourism Development Corporation (HPTDC) and the HP State Forest Development Corporation Ltd (HPSFDC) which are agencies of the State Government. HPTDC will be given preference over HPSFDC if they ask for the same site. They will, however, be given only those sites which they want to run on their own. Few sites shall be developed in departmental mode. PPP projects will only be given directly by the HPECOSOC under the aegis of HP Forest Department. Circle Level Societies may therefore take action accordingly

(i) Type of Structures allowed:

No permanent structures will be allowed. Only following types of structures will be allowed:

- a. Tents of various types;
- b. Wooden structures; and
- c. Pre-fabricated structures which can be removed.
- d. Or other eco-friendly structures

In all these cases, flooring of cement or tiles or stone may be put up without building deep foundation.

(ii) Modes of Operation:

The sites may be operated in the following modes:

- a. By the societies directly on departmental mode;
- b. By the H.P. Tourism Development Corporation/H.P. Forest Development Corporation and;
- c. Through a private party/outsourcing agency/PPP mode. These will be given directly by the HPECOSOC.
- d. By the Local Communities

Even in departmental mode some services may be outsourced or given in PPP mode. Detailed terms and conditions and model agreement will be developed for the sites.

(iii) Investment/Building of infrastructure:

Infrastructure i.e. paths, roads, sewerage, water supply and all buildings/structures may be developed in the following alternatives:-

- a) All infrastructures to be build by Societies/Tourism Corporation/ Forest Corporation;
- b) Partial infrastructure by Societies & partially out-sourced/private agencies;

- c) All infrastructures by out-sourcing to private agency/PPP mode/ through Operators.

Whoever builds the infrastructure, the ownership will lie with the Forest Department i.e. Government. The private party or Corporations, if allowed to build infrastructure, will be on behalf of Forest Department and assets created will therefore be owned by Forest Department only.

The private party will build infrastructure only in land allotted. In case any work pertaining to water supply or sewerage has to be done outside the allotted area, Forest Department may be asked to do the work on payment basis or society may do it. If any infrastructure belonging to Forest Department of Government falls in the area it may be allowed to be used if included in the project by the Forest Department.

(iv) **Nature/Forest Awareness Centres**

Those sites where all infrastructure belongs to Forest Department and is primarily used for creating of awareness about nature/forests, training regarding environmental protection/nature/forestry and spreading message to the community, generating interest in nature are considered as Forest sites and will also serve as Nature/Forest Awareness Centres. These centres will have experts on the subject and literature/audio visual aids and material etc. to create awareness about Nature/Forests and sensitize the visitors about Environmental Conservation.

(v) **Time period of allocation to private parties:**

- i. When all investment is made by Society(ies) of Forest Department: 3 years extendable by 2 years
- ii. Where major investment is made by the private party-out sourced agency: 10 years extendable by 5 years. The time period of allocation for Tourism/Forest Corporation will also be 10 years extendable by 5 years.

(vi) **Common facilities:**

In all the modes of operation, it shall be ensured that following common facilities are available to the visitors:-

- a. Booking arrangement ;
- b. Website ; and
- c. Publicity.

(vii) **Exemption of FCA clearance for Eco-Tourism Projects under Section 2 of amended Forest (Conservation) Act, 1980:**

Recent amendments in Forest (Conservation) Act, 2023 vide amendments to Section 2 of the earlier Act provide that :-

***Explanation:-** For the purpose of this section "non forest purpose" means the breaking up or clearing of any forest land or portion

thereof for -

(a) the cultivation of tea, coffee, spices, rubber, palms, oil-breaking plants, horticultural crops or medicinal plants.

(b) any purpose other than reafforestation.

but does not include any work relating to or ancillary to conservation, development and management of forests and wildlife, such as—

- (i) silvicultural operations including regeneration operations;
- (ii) establishment of check-posts and infrastructure for the front line forest staff;
- (iii) establishment and maintenance of fire lines;
- (iv) wireless communications;
- (v) construction of fencing, boundary marks or pillars, bridges and culverts, check dams, waterholes, trenches and pipelines;
- (vi) establishment of zoo and safaris referred to in the Wild Life (Protection) Act, 1972, owned by the Government or any authority, in forest areas other than protected areas;
- (vii) eco-tourism facilities included in the Forest Working Plan or Wildlife Management Plan or Tiger Conservation Plan or Working Scheme of that area; and
- (viii) any other like purposes, which the Central Government may, by order, specify.”;

The exemption is subject to certain conditions and limitations imposed under Eco-Tourism guidelines issued by the MoEF&CC in 2021 which includes among other things that “no permanent structure shall be made/ constructed to create ecotourism facility/structure, but temporary structure/facility made predominantly of natural material of local origin may be allowed in Protected Area or on forest land”.

(viii) Allotment of Projects

Such projects shall be allotted to the private sector through a transparent and competitive process. The Guidelines issued by the Ministry of Finance, Government of India for Formulation, Appraisal and Approval of Public Private Partnership Projects shall be broadly followed for greater transparency. The following stepwise procedure shall be followed.

a) Step-I: Project Identification-Selection of new sites

The concerned Divisional Forest Officer will initiate ecotourism planning by including Ecotourism Chapter in the approved Working Plan of the Division based on identification of eco-tourism sites, including carrying-capacity analysis, propose ecotourism activity, categorisation of infrastructure support that may be allowed, and training and capacity building needs of the partners.

- I. **Eco-tourism Plan or DPR:** An Eco-tourism Plan or DPR shall be prepared for every eco-tourism site by the Operators. The prepared Plan shall be approved by HPECOSOC for sites under various controls as follows:
- II. **For Sites within Forest/Protected Areas:** The Eco-tourism Plan for the areas falling inside the notified forest/protected areas shall form part of duly approved Working Plan/Management Plan/ Working Scheme.
- III. New Eco-Tourism Projects proposed to be taken up through PPPs may be identified through various channels of Forest Department and forwarded to the HP ECOSOC by Circle level societies. The forest land to be leased out for each project shall be maximum upto one (1) hectare and no felling of trees should be involved. HP ECOSOC will assess prima facie feasibility keeping in view relevant parameters of access, infrastructure, attractions, etc. and secure government approval to proceed further in the matter. This will involve engaging of consultants for project formulation, preparation of bidding documents and assisting in this process. The Himachal Pradesh Infrastructure Development Board (HPIDB) shall be asked to assist in this process as envisaged in the HP IDB Act and as per the instructions of the Finance Department issued from time to time.
- IV. **Allotment of more Than 1 Hectare of Forest Land for Ecotourism Activities in certain cases :**

This policy also aims to promote sustainable tourism by limiting the use of land for such activities to minimize environmental impact. However, certain ecotourism projects with significant environmental, economic, and social benefits may require more than 1 hectare to operate effectively. These include projects such as eco-huts, large-scale conservation tourism, and wildlife safaris, which may need additional space to maintain their ecological balance while providing a unique visitor experience.

In order to accommodate such projects, allotment of more than 1 hectare for ecotourism activities is permitted, on case to case basis.

Certain projects that require more land may include:

- **Eco-Huts and Retreats:** Some eco-huts with a focus on sustainability and conservation need larger areas for eco-friendly infrastructure, organic farming, or forest preservation.
- **Biodiversity Parks and Nature Parks:** Nature-based recreational areas may require more land to maintain low visitor density and ensure minimal disturbance to the natural environment.



- **Wildlife Conservation Projects:** Projects focused on wildlife conservation or safaris may need larger areas to ensure the protection of species and ecosystems, while allowing tourism activities in a responsible manner.

Each of these cases must be backed by a comprehensive justification, ensuring that the allotment aligns with the State policies and that any additional land use remains sustainable.

In such cases, the project proponents (both public and private) may apply for Forest land more than 1 hectare. The justification for the need for additional space must be submitted to the government, detailing the following:

- Carrying Capacity of the project as per MoEF& CC guild lines.
- The economic and social benefits to the local community.
- How the project supports conservation efforts and sustainable tourism practices.

The government, through the Himachal Pradesh Ecotourism Society (HPECDSOC) and other relevant authorities, will review the proposal, ensuring that any additional land is used responsibly and that the project contributes to the State's ecotourism objectives.

The allotment of Forest land above 1 ha. for the furtherance of Eco-tourism initiatives shall require the approval of the Cabinet on case to case basis.

b) Step II: Approval of HPIDB to Final Project Proposal

A model RFP has already been prepared in consultation with one of the agencies empaneled with the HPIDB. This model RFP may be used for design, development and maintenance of eco-tourism sites. However, in case, the department proposes to deviate from the model RFP, the department will approach HPIDB again.

Step III: Approval and Allotment of Ecotourism Sites for Further Outsourcing and Maintenance by Operators

In order to promote sustainable ecotourism, a comprehensive assessment of potential ecotourism sites has been conducted in the State and these potential sites are incorporated in the Master Plan as well as the ecotourism chapters in the respective approved Working Plans, Management Plans etc. The reserve price for these sites need to be assessed by a committee constituted by the Head of the Department. This Committee shall propose the ecotourism sites deemed suitable for outsourcing design, development and maintenance, along with recommendations for reserve prices that are reflective of the Unique Selling Propositions (USPs) and the ecotourism potential of each site. Once the approval



as such has been granted by the administration department, the outsourcing of design, development and maintenance process shall be initiated by the HPECOSOC. It is proposed that the remaining process of tendering, approval of tender and entering into agreement etc., of the ecotourism sites, shall be completed by the Executive Committee (EC) of HPECOSOC. It is pertinent to mention here that the Executive Committee (EC) is headed by the Secretary (Forest) with CCF (Eco Tourism) as the Member Secretary. The EC shall ensure a transparent and competitive process, in compliance with State regulations, and will finalize the allotment based on the highest annual concession fee proposal received from the operator, while also considering the letters capacity to sustainably develop the site.

Eligibility conditions for DDM operators will be as specified in the RFP as per criteria enclosed at Annexure-A.

c) Step- V: Eco-restoration

(i) Sites that shall be offered for Eco-Tourism projects shall be returned back by the entrepreneur after the project period as envisaged in the Concession Agreement is over. The entrepreneur shall pay eco-restoration charges as specified in the Concession agreements and any subsequent agreements mutually arrived at thereafter.

(ii) Eco-restoration refers to the scientific practice of ecological restoration, which is the practice of renewing and restoring degraded, damaged, or destroyed ecosystems and habitats in environment by active human intervention and action.

(iii) The idea is to bring back the site to its original condition (or as near to original as possible), through interventions designed to (a) mitigate the impacts caused by humans on forest lands and (b) allow/ supplement process of natural rejuvenation. The structures put up will be transferred to Forest Department as such and will not be removed.

d) Step- VI: Distribution of Revenues generated through Eco Tourism:

(i) HP ECOSOC and Division/Circle Level Eco-Tourism Societies shall act as the repository of all possible sources of funding, like grants from State Tourism Department, Tourism Department of Govt, HP State CAMPA and other such sources.

(ii) HP ECOSOC and Division/Circle Level Eco-Tourism Societies shall generate

resources from (a) levy of user charges/concession fee on eco tourism sites in PPP mode, (b) fees from van vihars, camps, treks, trails, film shooting, rest houses etc.

(iii) Distribution of Revenue generated through Eco-tourism sites, Van Vihars, Van Chetna Kendra and Nature Awareness Centres and use of government assets such as rest houses shall be as under:

- a) **State Government Share:** 20% of the total revenue realized shall be deposited in the Government treasury.
- b) **HP ECOSOC Share:** 20% of the total revenue realized shall go to the HP ECOSOC
- c) **Division/Circle Level Eco-Tourism Society Share:** Remaining 60% revenue shall remain with the Division/Circle Level Eco-Tourism Society to implement the action plans and also for further sharing with the local Gram Panchayats/communities for which appropriate guidelines shall be framed.
- d) **HPSFDC Ltd/ HPTDC Share:** The HPSFDC Ltd. / HPTDC shall make use of 60% share for the Promotion of Eco-Tourism as well as a proportion out of this amount shall go as revenue to the Corporation. Appropriate guidelines will be framed for this purpose.

e) **Impact assessment studies, research and 'do not disturb' practices:**

- (i) Impact assessment studies would be carried out at periodic intervals so as to ascertain impacts of eco-tourism on environment and remedial measures taken.
- (ii) Impact assessment studies would also be carried out to gauge the efforts being made for education and awareness about nature and ecology through eco-tourism.
- (iii) The number of tourists permissible shall be kept within limits. The carrying capacity concept will be the cornerstone of the State's Eco-Tourism Policy. Carrying capacity shall be determined for various eco-tourism products i.e. sites, trekking sites/trekking circuits.
- (iv) Eco-tourism would aim to have low impact on environment and minimal infrastructure requirements.
- (v) Regulatory measures to ensure social, cultural and environmental sustainability as well as safety and security of tourists shall be enforced through appropriate instruments.
- (vi) There would be conscious effect towards poverty alleviation, employment generation and environmental regeneration.
- (vii) A set of 'do not disturb' guidelines would be issued for educating tourists, private

enterprises so as to inculcate the right eco-tourism spirit, to minimize the use of resources for recreation and for general protection of nature.

(viii) Research shall be undertaken in various facets of eco-tourism, with a view to encourage eco-tourism, minimize negative impacts, eco-restoration techniques and technologies and to offer better eco-tourism products including their marketing.

J) Future Policy for Existing Sites - Impact Assessment Studies:

Impact assessment studies to evaluate the on-going projects shall be carried out immediately. Based on that, fresh project formulation is proposed by following the same process as already specified for new sites. The only difference will be in selection of PPP partner. Swiss Challenge method will be used for allotment on the culmination of the term of the project. This will allow the existing partners (subject to their meeting eligibility conditions) to match a higher financial bid by any other person, subject to any minimum conditions of original bid amount specified in the RFP. The existing sites given for the term less than specified in this policy i.e. ten years extendable by five years may be brought under the amended policy through mutual agreement.

K) Eco Club:

An Eco Club has been created at the State level for promotion of Environment conservation related activities. Any individual interested in Environmental conservation and Nature may become member of the Club. The Club promotes Environment & Nature conservation in Himachal Pradesh. All the persons staying in any of the Eco-tourism sites will be encouraged to become members of the Club in order to continue their long term association with the Eco-tourism sites. It is hoped that the membership will increase gradually and will go in lakhs. There will be tremendous support for such environmental friendly activities in H.P. Eco Clubs will be registered as separate society with Chief Secretary as Chairman and the Hon'ble Chief Minister as Chief Patron.

♦♦♦♦

(Signature)



Annexure 'A'**Minimum Eligibility Criteria**

To be eligible for pre-qualification and short-listing, a DDM Operator shall fulfil the following conditions of eligibility:

Sr. No.	Minimum Eligibility Criteria	Supporting Documents
1	A DDM operator may be a natural person, sole proprietorship, partnership firm, limited liability partnership under the Limited Liability Partnership Act, 2008 or a company (whether public or private) incorporated under the Companies Act 1956/2013 or any other legal entity duly registered and existing as per its applicable governing law(s).	i. Certificate of Incorporation/ registration with the relevant Govt. authority; ii. Copies of Memorandum of Association and Article of Association in case of a company; or iii. Copy of the partnership deed in case of a partnership firm; or iv. Copy of LLP Agreement in case of a LLP; or v. Copy of the Trust Deed in case of a Trust; or vi. Copy of Byelaws in case of a Society. vii. Copy of the Board Resolution/ Partners Resolution/ Society Resolution/ Authority Letter for participation in the bidding process for the Project.
2	Financial Capacity: The DDM Operator shall have a minimum positive Net Worth of Rs. 3,00,00,000/- (Rupees Three Crores Only) at the close of the financial year preceding the Bid Due Date i.e. on March 31, 2024. However, in case the DDM Operator is a certified Bonafide Himachali, the minimum positive Net Worth requirement shall be Rs. 1,00,00,000/- (Rupees One Crore Only) at the close of the financial year preceding the Bid Due Date i.e. on March 31, 2024.	i. Certificate(s) as per the format at Annexure 4, complete with supporting documents, from its statutory auditors/ chartered accountant specifying the Net Worth of the DDM Operator at the close of the financial year on March 31, 2024, and also specifying that the methodology adopted for calculating such Net Worth is in accordance with the methodology provided in Clause 3.2.2 below. ii. Copy of the Balance Sheet, Profit & Loss Account/ Income Tax Return for the FY 2023-2024. iii. Where the DDM operator has considered the value of any immovable property as a part of the Assets owned by him/ her for the purpose of calculating Net Worth, then the DDM Operator shall be essentially required to provide copy/ies of registered sale deed and/ or valuation report(s) in support of the same. For further clarity, where the value of the property is shown at registry value then copy of the registered Sale Deed shall be enclosed and where the market value of the property has been shown then copy of the valuation

		report of a registered valuer depicting such value or proof of applicable circle rate (being equal to the value being claimed) be provided in support of value of the property being claimed.
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3.2.1 *For the purposes of the RFP, methodology for calculating Net Worth shall be under:*

- (a) in case of an individual: Assets (including cash) LESS All Liabilities.
- (b) in case of a Sole Proprietor: aggregate value of assets and deducting liabilities (Net Worth = Total Assets – Total Liabilities)
- (c) in case of a Partnership firm/ LLP: [Fixed Assets + Trade Receivables + Current Assets] – [Firms Loan + Current Liabilities]
- (d) in case of a Company: the aggregate value of the paid-up share capital and all reserves created out of the profits and securities premium account, after deducting the aggregate value of the accumulated losses, deferred expenditure and miscellaneous expenditure not written off, as per the audited balance sheet, but does not include reserves created out of revaluation of assets, write-back of depreciation and amalgamation.
- (e) in case of a Trust or Society: Capital/Corpus + Free Reserves.

[Signature]

CONTROL FORMS



FORM WM-1
CREATION OF NEW ARTIFICIAL WATERHOLES

Sr.No.	Category	Year	Location	Cost	Performance
1	2	3	4	5	6

Note:

Category: Masonry anicut, earthen bund, lined depression, borewell and pump, reservoir, spring fed, tanker fed, guzzler, aquifer; permanent or temporary

Location : By compartment or by a named feature and name given if any

Performance : Successful, partially successful, failure (given reasons for the latter two)



FORM WM-1.1

MAINTENANCE OF WATERHOLES: NATURAL

Sr.No.	Category	Perennial/Seasonal	Location	Year	Nature of work	Cost	Performance
1	2	3	4	5	6	7	8

Note: Category : Spring, seep, natural depression, a flowing stretch, reservoir
 Location : By compartment or by a named feature and name given if any
 Nature of work : Desilting, provision of apron, any other category
 Performance : Successful, partially successful, failure (reasons for the last two)



FORM WM- 1.2**MAINTENANCE OF WATERHOLES: ARTIFICIAL**

Sr.No.	Category	Perennial/Seasonal	Location	Year	Nature of work	Cost	Performance
1	2	3	4	5	6	7	8

Note:

Category : Masonry anicut, earthen bund, lined depression, borewell and pump, spring fed, tanker fed, guzzler, aquifer

Location : By compartment or by a named feature and name given if any

Year : Year of maintenance, with year of establishment in parenthesis

Nature of work : Desilting, grouting, repairing leaks, repair to mechanical parts, closing anicut openings, any other work

Performance : Successful, partially successful, failure (reasons for the latter two)



Sr.No.	Location/name of site	Year	Extent of area (ha)	Species controlled	Operation	Total Cost	Cost/ha	Remarks
1	2	3	4	5	6	7	8	9

Location	:	By compartment, site name, etc.
Species controlled	:	List the species
Operation	:	Uprooting, cutting, burning etc. manual or mechanised methods.
Remarks	:	The measures of success, suitability of methods,



FORM WM- 2.1

RESTORATION OF HABITAT: SOIL CONSERVATION MEASURES- INITIAL OPERATIONS AND SUBSEQUENT MAINTENANCE

[illegible]

Note: Location	: By compartment, name of site or landmarks .
Extent of area	: Total area identified for such treatment, In case of streams or gullies, the length involved.
Area treated	: If linear features then quote length; otherwise area.
Operation	: Structures involved such as gully plugs, trench-cum-mound, spurs and bunds etc. quote quantity nos. and cmt of earthwork.
Remarks	: Mention if initial work or maintenance.



FORM WM- 2.2

RESTORATION OF HABITAT: PLANTING, SOWING-INITIAL OPERATION

Sr.No.	Location	Year	Extent of area (ha)	Species	Planting stock	Spacing	Operations	Total cost	Cost /ha	Remarks
1	2	3	4	5	6	7	8	9	10	11

Note:

Location : By compartment, or landmarks.

Casualty replacement : Mention planting stock by species, number and kind (polythene bag, root shoot, rhizome etc).

Operations : Planting, sowing technique, protection measures.

Remarks : Operational problems. Protection problems, any other useful information.

Assess & mention survival percentage & growth before taking up casualty replacement



FORM WM- 3

ANIMALS: MEASURES TRENDS IN POPULATION (YEAR)

Sr.No.	Species	Population estimation methodology	Adult		Sub-adults		Operations	Total Cost	Cost/ha	Remarks
			Male	Female	Male	Female				
1	2	3	4	5	6	7	8	9	10	11

Note:

Population: e.g. pugmark, line transact, scan, roadside counts etc., area covered, sampling intensity

Estimation : data treatment, extrapolation where involved. In case of indices of density or dung, counts mention those figures under the remarks' column; protection problems, any other useful information.

Remarks : Operational problems, protection problems, any other useful information

Indices of density or dung count details to be recorded here.



FORM WM- 3.1

ANIMALS: NEW RECORDS

Sr.No.	Species	Location	Year	How discovered	Details of number, age, sex	Habitat description	Remarks
1	2	3	4	5	6	7	8

Note:

Animals will include vertebrates and invertebrates

How discovered : Sighting, dead specimen, reliability of sighting, captured specimen, inconvertible other evidence

Number, age, sex etc : As applicable to vertebrates

Habitat description : Broad habitat description such as vegetation, and elements such as water, large old trees, snags, down log material.

Use microhabitat descriptors only if relevant

Remarks : Any other useful information.



FORM WM- 3.2

ANIMALS: MORTALITY OTHER THAN THAT ATTRIBUTABLE TO AN OFFENCE

[illegible]

Note:

Location : By compartment, landmark etc.

Sex and age : As per parameters for age class. Sex, if possible, to identify

Discovered in what condition : carcass, complete or partial. Skull or any other recognisable remains collected where only some remains of an animal are found.

Cause of mortality : If known e.g. territorial fight, accident, possible disease (following post-mortem results) , old age, cause difficult to determine, predation etc.

Remarks : Any other useful information.



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Sr.No.	Species	Location	Cause of mortality				Remarks
			Number	Sex	age	Class	
1	2	3	4				5

Location	:	By compartment, landmarks.
Cause of mortality	:	Whether the animal was intact or remains found, article or trophy to be recorded. Cause if known e.g., animal snared, shot or poisoned etc.
Remarks	:	Any other useful information, especially matters of illegal trade



FORM WM-4**PLANTS: NEW RECORDS**

Sr.No.	Family	Species	Year	Location	Habitat	Status	Remarks
1	2	3	4	5	6	7	8

Note:

Habitat : Description by vegetation associates at various levels, % canopy closure if relevant, soil/site, microhabitat elements such as higher level of moisture, woody debris or humus etc.

Status : A broad idea on its frequency, national status e.g. endangered, rare, endemic etc.

Remarks : Any specific information.



FORM WM-4.1

PLANTS: DISEASE AND MORTALITY

Sr.No.	Species	Location	Year	Particulars of disease morbidity and mortality	Area affected	Remarks
1	2	3	4	5	6	

Note:

Location : By compartment or landmarks.

Particulars of disease : In case of trees, the mortality by diameter classes and number, symptoms, insect pest activity or any other external indicators if visible, none if not seen. No mortality but infestation detected, mention that as morbidity.

Area affected : In hectares.

Remarks : Any specific environmental condition, or site factors you may suspect as being related to the problem or any other useful information.



FORM WM-5

GRAZING OF DOMESTIC LIVESTOCK

Sr.No.	Grazing unit no..	List of villages in the unit	Village-wise listed population of cattle	Capacity of the unit (cattle units) and number of cattle grazed	Total cattle units grazed		Remarks
					Legal	Illegal	
1	2	3	4	5	6	7	8

Note:

Remarks: (1) Mention number of cattle immunised against FMD, RP, anthrax as the case might be and the number of cattle without the prophylactic cover.

(2) If grass is allowed to be cut for cattle being stall-fed, mention the village and number of such cattle.



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FORM WM-6**INTER -AGENCY PROGRAMMES: AGENCIES AND SCHEMES (GOVERNMENT)****YEAR**

Sr.No.	Name of agency	Central or State	Number and name of scheme operated	Physical and financial targets		Area and location	Remarks
				Given	Achieved		
1	2	3	4	5	6	7	8

Note:

- Name of scheme : To include all activities in the Govt. sector, i.e. construction, use of resources, development processes etc. mention names of schemes, projects or normal operations. This will address all departments in the management area and those activities outside but capable of influencing the management area
- Remarks : Success, adverse impacts, incompatibility with PA management objectives or failures should be mentioned. Detailed notes to go in the PA book



FORM WM-6.1
PROGRAMMES OF NGOS YEAR

Sr.No.	Name of agency	HQ location	Nature of scheme operated	Physical and financial targets		Area and location	Remarks
				Given	Achieved		
1	2	3	4	5	6	7	8

Note:

Remarks : Success or adverse impacts, incompatibility with PA management objectives or failures should be mentioned. Detailed notes to go in the PA book. These programmes and activities could



YEAR

Sr.No.	Category	Range	Surface	Name or number	Length covered(km)	Cross drainage works, bridges or culverts with types	Total cost and status
1	2	3	4	5	6	7	8

Note:

Category of road :National highway, State highway, district road etc. Public road, forest road or open only to managers should be stated.

Surface type :Black topped, metal, earth etc. Applies to roads.

Name or number :As the case may be.

Cross drainage type :e.g. for culverts-box, Hume pipe culverts etc.

Bridge type : Wooden trestle, suspension, metal multi span, masonry arch etc,

Status : Work completed or ongoing. State also the agency responsibility; state whether operational or non-operational

: Strike out which is not applicable. Use separate forms as required; for construction & for maintenance details



FORM WM-7.1**CONSTRUCTION */MAINTENANCE* OF INFRASTRUCTURE: BUILDING
(*EXISTING/NEW)****YEAR**

Sr.No.	Range	Nature of the building	Location	Type of construction	Numbers	Total cost	Remarks
1	2	3	4	5	6	7	8

Note:

- Nature of building : e.g. residential, office, store, chauki, watch tower, tourist facility, hide, barrier, patrolling camp (temporary or permanent) etc.
- Location : By compartment or village or landmark as appropriate.
- Type of construction : Masonry (brick/stone), log or wooden, metal, local material etc.
- Status : Completed or ongoing.
: Strike out which is not applicable. Use separate forms as required; for construction and for maintenance details.



FORM WM-7.2

DEVELOPMENT*/ MAINTENANCE* OF INFRASTRUCTURE: COMMUNICATION
(EXISTING/ NEW)

YEAR

Sr.No.	Range	Type of facility	Location	Numbers	Cost	Advantage gained	Remarks
1	2	3	4	5	6	7	8

Note:

Type of facility : e.g. telephone, wireless
 Location : Staff Hq location, village, landmark etc.
 Advantage gained : Area served, staff locations connected etc.
 Remarks : Record status- complete. Ongoing, functional,

non-functional

: Strike out that is not applicable. Use separate forms as required; for new facility and maintenance.



FORM WM-7.3**DEVELOPMENT*/ MAINTENANCE* OF INFRASTRUCTURE: VEHICLES
(*EXISTING/ NEW)****YEAR**

Sr.No.	Kind of vehicle	Number	HQ if any	Intended use	Cost	Remarks
1	2	3	4	5	6	7

Note:

- Kind of vehicle : Jeep, trailer .tractor, truck, minibus, tanker, motorcycle, bicycle, boat (paddle or motor), launch, car, riding elephant, ponies, etc.
- Intended use : Management support, patrolling/antipoaching, tourism etc.
- Remarks : Any other useful information. Mention written off vehicles, retired or dead animals.
- : Strike out the inapplicable. Use separate forms as required to indicate acquisition, maintenance.



FORM WM-7.4

**DEVELOPMENT OF INFRASTRUCTURE: MANPOWER RECRUITMENT*/
EXISTING MANPOWEWR
YEAR**

Sr.No.	Category of post	Number	Status		Scale of pay	Intended Deployment/deployed as	Remarks
			Recruited	Vacant			
1	2	3	4	5	6	7	8

Note:

Status : Permanent, temporary, contractual

Intended deployment : State purpose e.g. conservation education, research, antipoaching, etc as applicable.

Remarks : Any other useful information. New recruits within the year should be mentioned. This will also include officers and staff obtained on transfer/deputation. Likewise changes due to personnel going out on transfer, deputation, retirement, removal, resignation, death should be reflected in this column.

: Strike off that which is not applicable.

Accordingly, use additional forms. One for recruitment and one for the existing manpower.



FORM WM-7.5**DEVELOPING INFRASTRUCTURE: CONSTRUCTION BOUNDARIES, FENCES,
CPTS, EPTS, ENCLOSURES, ENCLOSURES (*EXISTING/NEW)****YEAR**

Sr.No.	Category of construction	Range	Location	Length (meters)	Numbers	Specifications	Remarks
1	2	3	4	5	6	7	8

Note:

Category : Kind of boundary e.g. compartment, block, zone etc. In case of fences: power fence, others

Location : By compartment or suitable landmark.

Numbers : In case of enclosures, enclosures, number of pillars etc. as applicable.

Specifications : As applicable to the construction: dry rubble, chain link, local material, height, area, depth, width etc.

Remarks : Any other relevant information.
: Strike out that is applicable. Use a form each for maintenance of existing features and for new features



FORM WM-7.6**DEVELOPING INFRASTRUCTURE: FIRELINES (*EXISTING/NEW)****YEAR**

Sr.No.	Range	Fireline category and width	Name of points connected	Length (meters)	Cost	Remarks
1	2	3	4	5	6	7

Note: Category : Main or subsidiary etc.
 : Strike out that which is inapplicable. Use one from each for maintenance of existing Fireline and creation of new.



Total revenue earned:

[illegible]

Note: :Coulm 2 to 5 will be written in three successive lines for the month pertinent, one below the other. First line information pertains to foreign tourists. Put a tick () in col.6. Second and third line details rural and urban tourists respectively. Put a tick () in col. 7, column 8 as applicable.



FORM WM-8.1
ECO-TOURISM-PARTNERS
YEAR

Sr.No.	Identity of eco-tourism entrepreneur	Infrastructure	Programmes	Investment	Kind and extent of benefits to local people	Benefits to PA & resources
1	2	3	4	5	6	7



FORM WM-8.2 (A) & (B)
ECO-TOURISM-VISITORS ASPIRATIONS
YEAR

Visitors category	Number	Interested in									
		Plants	Bird watching	Animal sighting	Photography	Sketching	Scenic place	Cultural/historical sites	Pilgrimage	Trekking	Other
1	2	3	4	5	6	7	8	9	10	11	12

Note :8.4 (A) is for urban population
8.4 (B) is for rural population
Create separate forms 8.4 (A) & 8.4 (B) that are otherwise identical



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FORM WM-9
OUTBREAK OF FIRES
YEAR

Sr.No.	Range	Location	Extent (ha)	Dates		Reasons	Estimated loss	Remarks
				Detected	Controlled			
1	2	3	4	5		6	7	8

Note:

Location : By compartments

Reasons : Established or suspected.

Estimated loss : e.g. number of trees damaged, stacked firewood/timber/bamboo destroyed/damaged by volume and cost, wild animals dead, particulars of sensitive sites affected, other property or life destroyed

Remarks : State particularly problems encountered in detection and suppression and any other useful information. State also whether the extent of fires has been mapped.



FORM WM-10
OFFENCE CASES DETECTED
YEAR

Sr.No.	Range	Category	Numbers	Number of cases detected		Number of cases under process	Number of cases compounded	Remarks
				Successful	Failure			
1	2	3	4	5	6	7	8	9

Note:

Category : e.g. illegal cutting of trees, illegal firewood, illegal NWP, Poaching, encroachment, illegal cattle grazing etc. category should be codified by letters of alphabet

Remarks : Any other useful information. This should also include the number of cases pending decision with the department.

: The cases under column 8 pertain to area of non-PA status under management which do not involve an endangered species (schedule-1).



FORM WM-11
INCENTIVES AND REWARDS/AWARDS YEAR

Sr.No.	Range	Number of recipients: incentives/reward for detecting offences	No. of recipients award for outstanding service	Kind of reward	Number of recipients	Remarks
1	2	3	4	5	6	7

Note:

Kind of reward

: e.g. a medal like the Shaurya Chakra, any other such awards
instituted by the State or Central Government

Remarks

: Any other useful information. If an award carries cash, mention
the amount.

FORM WM-12
RESEARCH PROJECTS UNDER IMPLEMENTATION THROUGH PA MANPOWER
WITH OR WITHOUT

COLLABORATION WITH OTHER AGENCIES YEAR

Sr.No.	Title	Completed	Ongoing	New	Status	Financial outlay (Rs)	Expenditure	Remarks
1	2	3	4	5	6	7	8	9

Note:

Completed : State date of completion and the status of the project report.

Ongoing : State since when the project is under operation and expected period of completion.

New : State the date of commencement and duration.

Status : State the progress towards achievement of objectives; or project which has been dropped or held in abeyance etc.

Remarks : Any other relevant information. If the project is in collaboration with any other agency or is a contractual arrangement, state the situation and the name of the collaborating agency. If animal/plant specimen are being collected, state authority and where the collection is being housed.



FORM WM-12.1
RESEARCH PROJECTS UNDER IMPLEMENTATION BY OTHER AGENCIES YEAR

Sr.No.	Title	Completed	Ongoing	New	Status	Financial outlay (Rs)	Expenditure	Remarks
1	2	3	4	5	6	7	8	9

Note:

- Completed : State date of completion and the status of the project report.
- Ongoing : State since when the project is under operation and expected period of completion.
- New : State the date of commencement and duration.
- Status : State the progress towards achievement of objectives; or project which has been dropped or held in abeyance etc.
- Remarks : Any other relevant information. State the name of the agency. If animal/plant species are being collected, state authority and where the collections are being housed



FORM WM-13
SURVEY AND INVENTORIES YEAR

Sr.No.	Title of survey, inventory activity	Completed	Ongoing	New	By PA	By other agency	Remarks
1	2	3	4	5	6	7	8

Note:

Completed : State date of completion and the status of the project report.
 Ongoing : State since when the project is under operation and expected to be completed.
 New : State the date of commencement and duration
 By PA personnel : Will include collaboration or contractual arrangement. State the case as relevant.
 Other agency : State the name of the agency
 Remarks : If specimen of plants/animals is being collected, state where the collection is being housed and authority. Any other useful information.



FORM WM-14
THE MONITORING PROGRAMME YEAR

Sr.No.	Title of the programme	Date of initiation	Responsible agency	Technique	Status of collaboration and analysis of data	Remarks
1	2	3	4	5	6	7

Note:

Technique : e.g. PCQ, belt transact, line transact and plots, pugmarks etc. by the title of the technique

Status of collaboration : write only if applicable.



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

FORM WM-15
ECODEVELOPMENT PROGRAMME: TARGETS AND IMPLEMENTATION
YEAR

Sr.No.	Nature of the programme	Sector (Central/state) or NGO sponsored	Targets set		Achievements		Village (buffer/enclaved)	Remarks
			Physical	Financial	Physical	Financial		
1	2	3	4	5	6	7	8	9

Note:

Nature of the programme: e.g. pasture development, fodder plantations, establishing biogas units, livestock improvement, establishment and development of sericulture, revival of local skills such as handicrafts, water harvesting systems, adults education etc

Village : Site where programmes is being implemented-whether buffer or inside PA

Remarks : Site problems, state failures and reasons thereof, reasons for not attaining targets, for non-implementation or deviation etc. Stat whether it is on the right tracks in context of achievement of objectives. State the date of commencement and duration.



FORM WM-16
PROGRESS OF ALL STRATEGIES UNDER THE ZONE AND THEME PLANS
YEAR

Sr.No.	Zone/Theme	Nature of strategy	Targets as per the schedule of operations/APO*		Achievements		Location	Remarks
			Physical	Financial	Physical	Financial		
1	2	3	4	5	6	7	8	9

Note:

Zone/Theme plan : Mention title.

Village : e.g. demarcation of boundary, creation of artificial water source, salt lick, maintenance of water sources (desilting), cutting and burning of Fireline, prescribed burning, weed control, immunization of cattle, maintenance of nature trails, setting up wayside exhibits, recruitment of staff, number of villages translocated, settled on new sites etc.

Location : Where pertinent, mention location e.g. weed control in comp. 105, 111.117. right tracks in context of achievement of objectives. State the date of commencement and duration.

Remarks : State problems, failures and reasons thereof, shortfall and reason, deviations if any and reasons, non-implementation with reasons etc.

*APO : (Annual Plan of operations.) Under Col.4 &5, each column will have two figures. First the figure as per the schedule of operations in the plan and next to it in the same column the figure as per APO. If they differ it amounts to a deviation



FORM WM-17**PROGRESS OF LEGAL SETTLEMENTS UNDER THE WILDLIFE (PROTECTION) ACT
1972 IN CONTEXT OF ATTAINMENT OF THE STATUS OF A WLS/NP****YEAR**

Sr.No.	Nature of settlement/enquiry & section under the Act	Progress achieved till the commencement of the year under report	Progress achieved during the year	Remarks
1	2	3	4	5

Note:

Remarks

: State the problems encountered and any other useful information such as reasons for inadequate/lack of progress.



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

FORM WM-18
A SUMMARY OF ALLOTMENT OF FUNDS, REVENUE AND EXPENDITURE
YEAR

Sr.No.	Plan/non-plan/any other grant	Sector Central/State/Other	Allotment received		Expenditure Incurred		Revenue realised	Remarks
			Non-recurrent	Recurrent	Non-recurrent	Recurrent		
1	2	3	4	5	6	7	8	9

Note: Explain under expenditure, over expenditure, savings and surrenders. State the extent of demand for the year as per the schedule of operations/APO in the remark's column.



FORM LS-1
EXISTING CORRIDORS-CONSERVATION INPUTS REQUIRED

Sr.No.	Identity of the corridor	Length/Section	Nature of inputs/treatment	Target	Agency/cies identified	Constraints	Anticipated investment
1	2	3	4	5	6	7	8

Note:

Col.2 : by name ,number, etc.

Col 3 : Total length, if only a particular section is relevant, mention the section



FORM LS-2
EXISTING CORRIDORS-CONSERVATION INPUTS ACCOMPLISHED

Sr.No.	Identity of the corridor	Length/Section Addressed	Nature of inputs/ treatment	Agency	Target set	Achievement	Constraints	Investment	Remarks
1	2	3	4	5	6	7	8	9	10

Note:

Col. 10 State success and quality of achievement. Anything else that is significant.



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FORM LS-3
EXISTING CORRIDORS-MONITORING HABITAT RECOVERY

Sr.No.	Identity of the corridor	Length/Section monitored	Inputs/ treatment that had been provided	Monitoring technique/process	Indicators of recovery	Nature of progress	Constraints	Remarks
1	2	3	4	5	6	7	8	9

Note:

Col 9: Indicate the quality and measure of success



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

FORM LS-4
POTENTIAL CORRIDORS-CONSERVATION INPUTS REQUIRED

Sr.No.	Identity of the corridor	Length/Section	Nature of inputs/treatment	Target	Agency/cies identified	Constraints	Anticipated investment
1	2	3	4	5	6	7	8

Note: See from LS-1



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

FORM LS-5**POTENTIAL CORRIDORS-CONSERVATION INPUTS ACCOMPLISHED: YEAR**

Sr.No.	Identity of the corridor	Length/section addressed	Nature of inputs/treatment	Agency	Target set	Achievements	Constraints	Investment	Remarks
1	2	3	4	5	6	7	8	9	10

Note: see form LS-2



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

FORM LS-6
POTENTIAL CORRIDORS-MONITORING HABITAT RECOVERY
YEAR

Sr.No.	Identity of the corridor	Length/section monitored	Inputs/treatment that had been provided	Monitoring technique/process	Indicators of recovery	Nature of progress	Constraints	Remarks
1	2	3	4	5	6	7	8	9

Note: See form LS-3



Sechu Tuan Nalla Wildlife Sanctuary, Chamba (H.P.)

FORM LS-7
CONNECTING MULTI-AGENCY PROGRAMS IN LANDSCAPE BASED PLANNING
PARTNERS DURING YEAR:

Sr.No.	District	Sector Central/state/Other (specify)	Agency &work area/speciality	Program coverage	Agreed input and mechanism	Financial implications/investment &source
1	2	3	4	5	6	7

Note:

- Co. 1 4 : Main agency agenda e.g. livestock production, health, education, irrigation
 Col. 5 : Indicate by either administrative unit e.g. tehsil, or number of village i.e. target
 Col.6 : What has the agency agreed on to deliver? Through agency plan/scheme?



FORM LS-8
MONITORING EXTENT AND MULTI-AGENCY PROGRAMS
YEAR

Sr.No.	District	Sector/central/State/Other (Specify)	Agency	Objectives & targets	Achievement & standard	Constraints	Extent of investment	Remarks
1	2	3	4	5	6	7	8	9

Note:

Co.1 6 The standard of achievement to be based on (1) verification of targets (2)
 perception of satisfaction of people and their own assessment
 Col. 7 (1) as reported by agency (2) as perceived by people concerned.



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