



Department of Wildlife Protection J&K Government

**The Management Plan
of
Surinsar-Mansar Wildlife Sanctuary
Period
2020-21 to 2029-30**

**By:
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Kathua**



**Prepared by:
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**Government of Jammu & Kashmir
Office of the Chief Wildlife Warden**

Subject:- Approval of the Management Plan of "Surinsar-Mansar Wildlife Sanctuary"

Whereas, the draft Management Plan for Surinsar-Mansar Wildlife Sanctuary has been prepared by Wildlife Warden, Kathua.

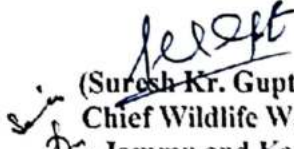
Whereas, the draft of said Management Plan has undergone various reviews at different levels and suggestions and observations made by the participants were incorporated.

Whereas, the Committee constituted vide this office order No. 13 of 2020 dated 28-01-2020 held its meeting on 21.08.2020, 28.11.2020, 13.02.2021 and 24.05.2021 and discussed the Draft Management Plan for Surinsar-Mansar Wildlife Sanctuary thoroughly.

Whereas, the Committee in its final meeting held on 24.05.2021, recommended for approval of Management plan of Surinsar-Mansar Wildlife Sanctuary for the period 2020-2030 subject to the incorporation of suggested points in the meeting.

Whereas, the Regional Wildlife Warden Jammu vide his No. RWLWJ/2021-22/1635-36 Dated 30-06-2021 has submitted that the points suggested in the final meeting of the Committee have been incorporated in Management plan of Surinsar-Mansar Wildlife Sanctuary and has recommended for its approval.

Therefore, under the authority vested under section 33 of Wildlife protection Act 1972, the undersigned accords approval to the Management Plan for "Surinsar-Mansar Wildlife Sanctuary" for the period 2020-2030.


(Suresh Kr. Gupta) IFS
Chief Wildlife Warden
Jammu and Kashmir

No:- WLP/Res/2021-22/194-97

Dated:- 30.06.2021

Copy to the :-

1. Commissioner Secretary to Govt, Forest, Environment and Ecology Department, Civil Secretariat, Jammu for kind information.
2. Regional Wildlife Warden, Jammu.
3. Wildlife Warden, Kathua Division.
4. Pvt. Secretary to Principal Chief Conservator Forests, J&K Govt. for kind information of PCCF/HoFF.



**Suresh Kr. Gupta, IFS
Chief Wildlife Warden
Jammu & Kashmir**



Foreword

The Surinsar-Mansar Wildlife Sanctuary was notified by the J&K Govt. vide SRO 138 dated 10th April, 1990. The Wildlife Sanctuary is being managed by the Wildlife Protection Department since its notification. In order to ensure the management of Surinsar-Mansar Wildlife Sanctuary on scientific basis, the present Management Plan is a serious effort with the application of latest concepts of management and technology. This Management Plan shall serve an authentic scientific baseline data for future management of wildlife in the area.

The Management Plan has been prepared keeping in view the guidelines laid down by Sh. W B Sawarkar. The comprehensive analysis of various issues in the management plan along with detailed prescriptions covering all the management aspects shall guide in preparation of Annual Plan of operations under various schemes. The implementation as per prescriptions shall further guide the department for future planning, conservation and management of the Sanctuary.

I complement Dr. Kumar M.K, IFS Regional Wildlife Warden, Jammu, Mr. Vijay Kumar, SFS Wildlife Warden, Kathua and his team for timely completing the exercise for preparation of this Management Plan.


Suresh Kr. Gupta, IFS

PREFACE

The Surinsar-Mansar Wildlife Sanctuary which came into existence vide SRO 138 Dated 10th April 1990 under section (17) of Jammu & Kashmir Wildlife (Protection) Act, 1978. Surinsar-Mansar Wildlife Sanctuary is spread over 97.82 sq.km and is roughly rectangular in shape, located between 32°41'.29" to 32°49'.28" North Latitude and 74° 59'.5" to 75°09'.12" East longitude. The tract is located on GT Sheet No. 43 P/2 (surveyed in 1967-68 2nd edition).

The present management plan (2020-21 to 2029-30) of Surinsar-Mansar Wildlife Sanctuary is the first ever plan for planning wildlife management. Non-availability of adequate authentic scientific baseline data and lack of documentation has been a major constraint in preparation of this management plan.

The exercise for compilation of this plan involved a lot of teamwork. I am highly indebted to Sh. Suresh K. Gupta, IFS, Principal Chief Conservator of Forests, Chief Wildlife Warden, J&K Govt. for providing all expedient guidance and directions during the preparation of this Management Plan.

I am gratified to the Addl. Principal Chief Conservators of Forests, Eco-tourism J&K Sh. J. Frankoi, IFS for his valuable support and guidance.

I admirably acknowledge the valuable technical guidance provided by Dr. Kumar M.K, IFS Regional Wildlife Warden, Jammu during the entire process of compilation and finalization of the present plan.

I take this opportunity to place on record my heartfelt gratitude towards Dr. Neeraj Sharma, Senior Assistant Professor Institute of Mountain Environment, University of Jammu, Baderwah Campus, J&K for sparing his valuable time and help in enlisting flora and fauna of the Sanctuary.

I express my sincere thanks to Sh. Guldev Raj Trustee of The Himalayan Avian-NGO for his valuable inputs during the preparation of Management Plan. I duly acknowledge the inputs from Dr. Abhijit Das, Dr. J. A. Johnson & Dr. K. A. Sivakumar Wildlife Institute of India, Dehradun from time to time.

My sincere thanks to Mr. Majid Farooq, Administrative Officer/Scientist Coordinator/PI (Climate Change Center/ ENVIS/ISRO Projects) Department of

Ecology, Environment and Remote Sensing, for his contribution in preparation of maps that are essential for the Management Plan. My Special thanks to Sh. Kuldeep Mehta (Survey Officer, PI Division) for his valuable inputs for preparation of maps.

I duly acknowledge the inputs from field, particularly by Sh. Sanjeev Kumar Range Forest Officer, Surinsar-Mansar Wildlife Sanctuary and also from other field staff including Foresters, Guards and other staff, which greatly helped in prioritizing the strategies in the management plan. I also thank my office staff for their help in preparing the management plan.

I express my sincere thanks to Mr. Sanjeev Kumar, Wildlife Guard and S. Paramjeet Singh, Wildlife Guard who helped in typing and compilation. My sincere thanks also due to all local people, members of PRI & S.C and officers of various departments whose ideas and suggestions in one form or another have helped in framing some of the strategies of this plan.

Dated: 5th August, 2021



Vijay Kumar, SFS
Wildlife Warden
Kathua

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EXECUTIVE SUMMARY OF THE MANAGEMENT PLAN

The Surinsar-Mansar Wildlife Sanctuary is spread over a total area of 97.82 Km². The Sanctuary spreads over three districts vis-à-vis Jammu, Udhampur and Samba. The major part of the sanctuary falls in the Jammu District. The Sanctuary is of considerable conservation significance at global, national and regional level. Surinsar-Mansar Wildlife Sanctuary is known for its natural bounty and mythological importance. It is surrounded by thickly wooded mountain ranges and it is a popular picnic spot. The sanctuary is home of many important species including Blue bull/ Nilgai, Jackal, Indian barking deer, Leopard, Wild boar, Fox.

The Surinsar–Mansar Wildlife Sanctuary is known for habitat of large number of herbivores and rich biodiversity of flora and fauna. The principal species are *Pinus roxburgii*, *Acacia catechu*, *Lannea grandis*, *Mallotus philippensis*, *Cassia fistula*, *Zizyphus jujuba*, *Dalbergia sissoo*, *Embllica officinalis*, *Ficus bengalensis*, *Ficus religiosa*, *Bauhinia variegata*. The under story includes *Adhatoda vassica*, *Dodonea viscosa*, *Carissa opaca* etc. The dominant climber in the forest is *Bauhinia vahlii* etc. The Surinsar-Mansar Wildlife Sanctuary has rich fauna and flora diversity. This Sanctuary has twin lakes namely Surinsar and Mansar. The Common carp as the dominant species in Mansar-Surinsar lakes. *Puntius chonchonius*, *Channa gachua*, *Rasbora rasbora*, *Labeo rohita* and *Trichogaster fasciatus* constitute the common ichthyofauna of lakes. Other noteworthy species include *Danio rerio*, *Mastacembelus armatus*, *Ophiocephalus punctatus*.

The major forest types found in the sanctuary are Forest type 5B/C2–Northern dry mixed deciduous forests, Himalayan Sub-tropical Scrub Forests, Type 9/C1–Himalayan subtropical Pine Forest, Sub type 9/C1a Lower Siwalik Chir Pine forest, Dodonea scrub forests.

The objectives of management can be briefly summarized below:

1. To conserve and protect habitat, restore physical integrity of the area in addition to restoring the degraded portion of the sanctuary so that endangered

and endemic flora and fauna inhabiting the area are adequately protected and propagated.

2. To mitigate Man-animal conflict and to create awareness among the people in general and the children in particular about nature and wildlife with particular emphasis on the ecological role of the sanctuary area.
3. To promote Eco-tourism for conservation, awareness, education and scientific exploration without affecting the sensitive ecosystem adversely.
4. To reduce the dependence of the people on forest-based resources in the zone of influence, with sensitivity to cultural and economic well-being of the communities, through eco-development activities
5. To improve capacity building of staff and local communities for efficient management of the sanctuary through better training and infrastructure.
6. To promote scientific and ecological studies that will help the sanctuary management in assessing the physical and biological resources, planning for conservation of these resources and monitoring the health of the habitat.

Major problems sanctuary management faces which adversely affect the achievement of these objectives include encroachments, inadequate staff, lack of basic infrastructural facilities and human settlement inside sanctuary. Despite the richness of the natural beauty, the facilities for eco-tourism are grossly inadequate. The efforts of education and awareness generation have been less than adequate.

The present management plan has been compiled following the manual for planning wildlife management in protected areas by Wildlife Institute of India.

It comprises of **three parts: Part One** dealing with four chapters: Chapter 1- Introduction to the area, Chapter 2- Background information & attributes, Chapter 3- History of management & present practices and Chapter 4- The Protected Area & the interface Land use situation. **Part Two** deals with the rest of the seven Chapters namely: Chapter 5- Vision, Objectives and problems in achieving the objectives, Chapter 6- The Strategies, Chapter 7- Man Animal Conflicts, Chapter 8- Eco-Tourism, interpretation and Conservation Education, Chapter 9- Eco-development, Chapter 10- Research, Monitoring & Training,

Chapter 11- Organization and Administration and Chapter 12- The Budget. **Part three** comprises of various Annexure and control forms pertaining to the management of the sanctuary.

In Chapter 6 (The Strategies), the sanctuary has been divided into three zones: namely, Core zone, Buffer zone and Eco-restoration zone and the strategies have also been identified for these zones. Theme plans have been developed for the sanctuary area for protection from poaching, fire protection, soil and moisture conservation and water management, animal health surveillance, man-animal coexistence and development of infrastructure and communication.

The Chapters 7, 8 & 9 that deal with Man-Animal Conflicts, Eco-Tourism Interpretation and Conservation Education, Eco-development respectively, have proposed various measures for conducting these activities. Chapter-10 deals with the Research, Monitoring & Training be required for effective management of the sanctuary. Chapter-11 deals with Organization and Administration that would be required both at central and state level for fulfilling these. Chapter-12 deals with The Budget.

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Part-I
The Protected area:
The existing Situation

CHAPTER-I

INTRODUCTION TO THE AREA

1.1 Name, location, constitution and extent:

The Management Plan pertains to the notified area of the Surinsar-Mansar Wildlife Sanctuary. The Sanctuary was notified by the Govt. of Jammu & Kashmir vide SRO 138 dated 10th April 1990 under section (17) of Jammu & Kashmir Wildlife (Protection) Act, 1978 (Annexure-II) named after the twin lakes i.e. Surinsar and Mansar situated almost at two corners of the sanctuary separated by 16 km distance from each other. The Surinsar-Mansar Wildlife Sanctuary is spread over 97.82 sq.km and is roughly rectangular in shape, located between 32°41'.29" to 32°49'.28" North Latitude and 74° 59'.5" to 75°.09'.12" East longitude. The tract is located on GT Sheet No. 43 P/2 (surveyed in 1967-68 2nd edition). It covers an altitudinal range of 547 to 834 mts above mean sea level.

The Sanctuary falls in the Jammu Province and is situated at a distance of 60 kms from Jammu via National Highway 44 Samba to the link Road Udampur-Mansar and, 42 Km from Jammu via Surinsar. The nearest town is Samba, district H.Q. The Sanctuary spreads over three districts vis-à-vis Jammu, Udampur and Samba. The major part of the sanctuary falls in the Jammu District. The area forms one of the important catchments of river Tawi.

The Surinsar-Mansar Wildlife Sanctuary spreads over 97.82 sq kms and is inhabited by 19 villages (Annexure-I) having 1302 households and 7763 souls (2011 census) resulting in heavy biotic pressure. The Biomass resources of the Sanctuary are shared by the native agro-pastoral communities. Long-term conservation of this eco-system would require a comprehensive plan based on the ecological principles, traditional and current land use practices and legal provisions in vogue. The Surinsar-Mansar Wildlife Sanctuary is managed under the jurisdiction of Wildlife Division Kathua, HQ Kathua with Range HQ at Mansar. The Surinsar-Mansar Wildlife Sanctuary comprised of two Blocks (Surinsar and Mansar Block) having 8

compartments namely 7/JDR, 9/JDR, 10/JDR, 11/JDR, 12/JDR, 13/JDR, 14/JDR and 15/JDR with details given in **Table 1.1**.

Table: 1.1 Administrative Units of Surinsar-Mansar Wildlife Sanctuary.

Block	Compartments	Area calculated by GIS (in Ha)
Mansar	7/JDR	1139.35
	9/JDR	853.71
Surinsar	10/JDR (1/4th)	275.00
	11/JDR	541.48
	12/JDR	622.80
	13/JDR	1000.78
	14/JDR	924.89
	15/JDR	193.36
Total	8 Compartments	5551.38

Figure: 1.1 Land Use Pattern as per Revenue Record in Surinsar-Mansar Wildlife Sanctuary

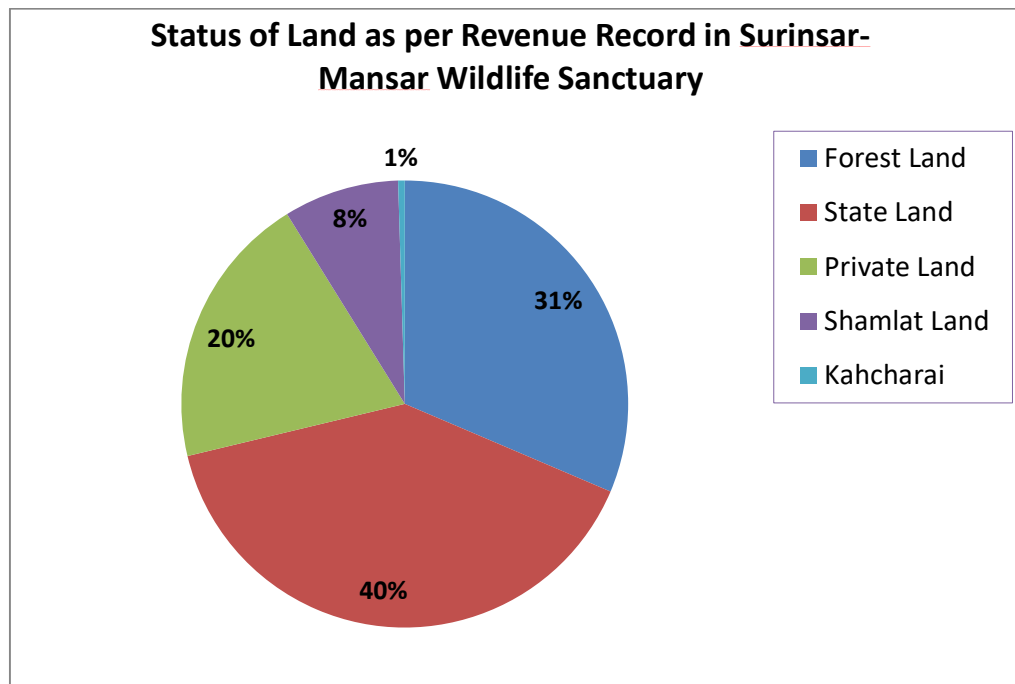


Table: 1.2 Status of Land as per Revenue Record in Surinsar-Mansar Wildlife Sanctuary

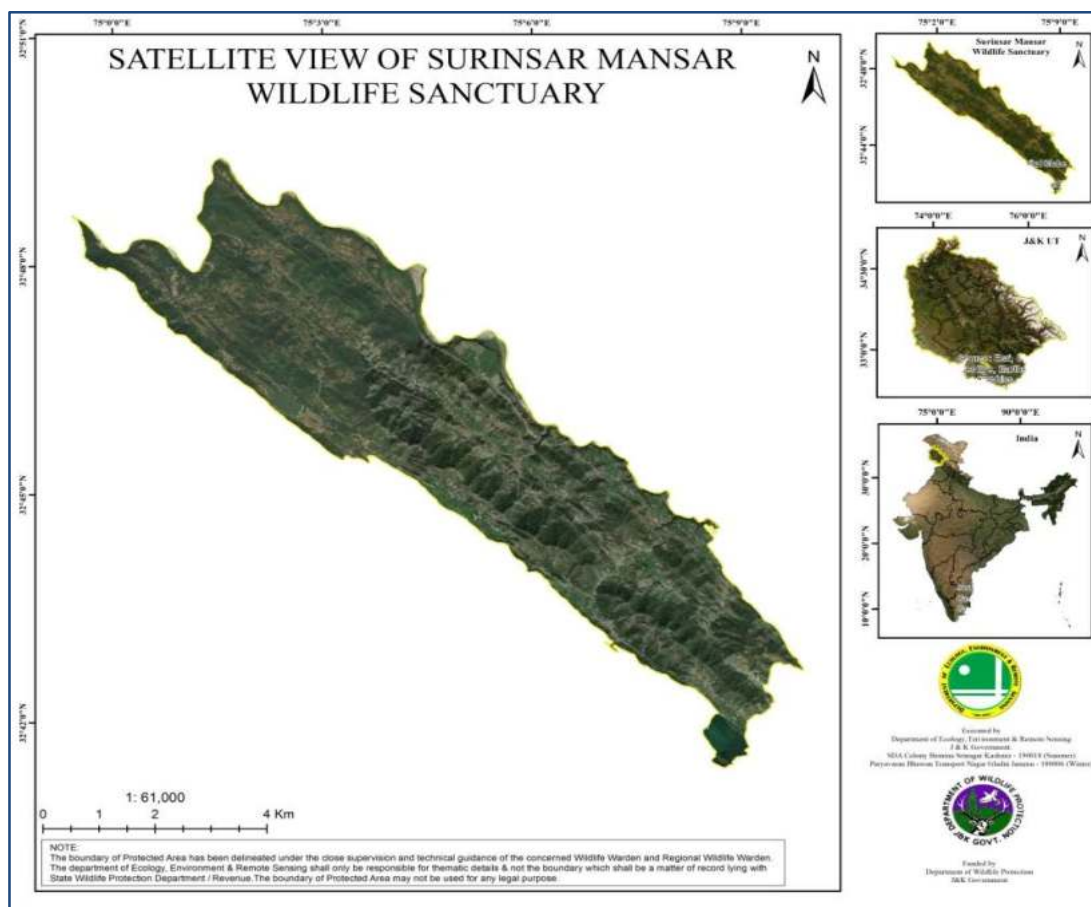
Land	Area in Ha.
Forest Land	2576.10
State Land	3268.24
Private Land	1632.50
Shamlat Land	684.45
Kahcharai	38.99
Total	8200.28

- Total Area of the Sanctuary as per Notification = 9782 Ha
- Total Area of the Sanctuary as Calculated by GIS = 6224 Ha.
- Forest Area under 8 Compartments as Calculated by GIS=5551.38 Ha.

The Sanctuary includes twin lakes Surinsar & Mansar which declared as Ramsar site by the International Convention of wetlands on 8th of November 2005 with Ramsar Site No. 1573. Owing to their mythological origin to Mahabharata period, these twin lakes are separated by an aerial distance of 16 km representing typical micro-climate of the area. Therefore, they are treated as two components of one composite wetland. Main source of water is ground water, welling up as copious spring along the fracture plains is well known as artesian conditions. The Mansar lake is a semi-oval in shape having an average width of 680m and a depth of 37.8 m. The Surinsar lake is also semi-oval shaped having max. depth of 24.04 m and a length of 888m and a width of 444m. Both lakes form an ideal habitat and breeding ground for many endangered and threatened (CITES and IUCN Red listed) avifauna and aqua fauna like *Trionyx gangeticus* (Indian Softshell Turtle), *Geoclemys hamiltonii* (Black Pond Turtle) and *Mansariella lacustris* (Mansar medusa). This composite lake is high in micronutrients which makes it is an attractive habitat, breeding and nursery ground for migratory waterfowls like *Fulica atra*, *Gallinula chloropus*, *Podiceps nigricollis*, *Aythya fuligula*, *Anas crecca* etc.

Table: 1.3 Overview of Surinsar-Mansar Wetlands.

Parameters	Mansar Lake	Surinsar Lake
Geo-coordinates	32° 41' 46" N 75°08' 38" E	32° 46' 11" N 75°02' 31" E
Area	62.16 ha (1229 kanals)	29.23 ha (578 kanals)
Elevation MSL	665 m	605 m
Shape	Semi-oval	Oval shaped with small island in the centre
Length and width	length 1020 m and average width of 680 m	888 m and a breadth of 444 m
Circumference	3.29 km	2.36 km
Depth	37.8 m	22.7 m in summer and 24.05 m during monsoon.
pH	6.4 and 7.6	6.4 and 7.6
Bottom type	Clayey type	Clay sandy
Lake type	Non drainage type	Non drainage type
Water source	Rain and sub surface water	Rain and sub surface water



1.2 Access and Approach.

By Air: The closest Airport is at Jammu which nearly is 65 kms from the Sanctuary. Almost all airlines operate regular flights to Jammu from major cities like Delhi, Srinagar, Chandigarh, Mumbai etc.

By Rail: Jammu Tawi is the main Railway Station situated at a distance of 62 Kms from the Sanctuary. Two other Railway Stations near to the Sanctuary are i) Samba Railway Station which is nearly 30 Kms from Sanctuary and ii) Manwal Railway Station which is nearly 13 Km from the Sanctuary.

By Road: Jammu is well connected with an extensive bus and taxi network. Private tourists play to and from between Jammu and other major cities like Delhi, Manali, Amritsar, Chandigarh etc. The National Highway NH-44 passes through a distance of 18 Km from the sanctuary i.e. Samba which is connected to Jammu-Lakhanpur-Pathankot. A network of village roads also exists within the area.

1.3 Statement of significance.

1.3.1 Socio-Religious Significance: The Surinsar-Mansar Wildlife Sanctuary is nestled in the midst of two lakes Surinsar and Mansar which are 16 km apart. Both these lakes has a mythological importance.

- i) **Mansar Lake:** Mansar Lake is situated 65 Kms from Jammu. Mansar is a lake fringed by forest covered hills, a semi-oval shaped water body having an average width of 680m and a depth of 37.8 m. Besides being a popular excursion destination in Jammu, it is also a holy site, sharing the legend and sanctity of Lake Manasarovar. On the eastern bank of the lake there is a shrine of Sheshnag (A snake with six heads). Two ancient temples of Umapati Mahadev & Narsimha, and a temple of Durga are situated in the vicinity of the Mansar Lake. People take a holy dip in lake on festive occasion. Newlyweds consider it auspicious to perform three circumambulations around the lake to seek the blessings of Sheshnag. Certain communities of hindus perform the Mundan Ceremony. According to Hindu mythology, the origin of

the lake is associated with Arjuna-the warrior of Mahabharata. It is believed that Arjuna shot an arrow on the ground and spring of water gushing from there. This water formed a lake which is now known as Mansar Lake.

Mansar lake is formed on a structural high called as an Anticline in geographical parlance. Anticline means an arch of rocks with its high turned upwards. Same is true for its sister lake called Surinsar, situated northwest of Mansar lake. The core of this anticline has a number of fractures, faults and cross-faults which have resulted into Spring activity in the lakes basins (Mansar and Surinsar) yielding perennial source of lake waters. Surinsar is also rain-fed without any discharge. Similarly, Mansar is also fed by surface runoff and partially by mineralized water through paddy fields with inflow increasing in rainy season.

- ii) Surinsar Lake:** The Surinsar lake is semi-oval shaped having max. depth of 24.04 m and a length of 888 m and a width of 444 m. According to Hindu mythology, the origin of the lake is associated with Arjuna-the warrior of Mahabharata. It is believed that Arjun shot an illustrious arrow on the ground of Mansar and a spring gushed from the arrow exit land which turned into Surinsar Lake. In ancient times, it was known as Surangsar and by the time it is known as Surinsar. The lake has also a small island in the centre which provides good habitat of Birds.

1.3.2 Biological Significance: Surinsar Mansar Wildlife Sanctuary, is famous for harboring the 15 species of mammals, 86 species of birds, 17 species of reptiles, 8 species of fishes (Kotwal. 2012). The sanctuary includes the twin Surinsar lake & Mansar lake included in Ramsar site list under the International Convention of Wetlands in 2005 and National Wetland Conservation Programme of Govt. of India. The two sacred lakes-Surinsar lake and Mansar lake attract a good number of water fowl populations during the winter months. The Mansar lake is an ideal and attractive habitat for migratory waterfowl, such as Eurasian Coot, Common Moorhen, Black-necked Grebe, Tufted Duck, Common Pochard, Great Crested Grebe, Garganey,

Gadwall, Mallard, Northern Shoveler, Northern Pintail, Eurasian Wigeon, at a critical stage of their life cycle & also provides refuge during adverse conditions. The lake supports two important species of turtles namely Indian Flapshell Turtle *Lissemys punctata* registered in the CITES (Appendix II) and Indian Soft-shell Turtle *Nilssonina gangeticus* listed in CITES Appendix I and vulnerable in IUCN Redlist 2016. Mansar and Surinsar Lakes are source of drinking water and irrigation to dozens of villages falling down stream to the protected area. Surinsar-Mansar Wildlife Sanctuary and its adjacent forest area is given priority for protection purpose due to its rich Wildlife. The area harbours population of the endangered faunal species like Indian White-rumped Vulture (CR), Common Leopard (VU), Indian Monitor Lizard (VU). The area represents “gene pool” for propagation, protection and perpetuation of these Wild flora and fauna species.

1.4 Value of the Sanctuary:

- Exceptional Diversity of birds. The Sanctuary is having an important Ramsar site (Surinsar and Mansar Lakes) which is Central Asian Flyway corridor and one of the halting point of migratory birds.
- Dominated by Common Carp & two important species of turtles namely Indian Flapshell Turtle *Lissemys punctata* registered in the CITES (Appendix II) and Indian Soft-shell Turtle *Nilssonina gangeticus* listed in CITES Appendix I and vulnerable in IUCN Redlist 2016.
- Significant population of insects especially butterflies.
- Potential corridor for animal movements.

CHAPTER-2

BACKGROUND INFORMATION AND ATTRIBUTES

2.1. External Boundaries of the Sanctuary

The boundary description as per the Govt. of Jammu & Kashmir notification vide SRO 138 dated 10th April 1990 is as follows:

North:- On the northern side, the boundary of the Surinsar-Mansar Wildlife Sanctuary touches the river Tawi

East:- On the eastern side we find Udampur -Samba Road & Gambhir Khad.

South-East: - Battal-Billawar Road & Mansar Lake

South-West:- Surinsar-Mansar Road

North-West:- River Tawi & Surinsar Lake

2.1.1 Boundary Description of the Surinsar-Mansar Wildlife Sanctuary Eco-Sensitive Zone (Proposed)

In the **Eastern side** the Eco-sensitive Zone passes through the villages Payem, Doon crosses the Dhar road and Kathel village. Villages and runs along the Gambhir Khad upto village Pardeh.

In the **Southeastern side**, the Eco-sensitive Zone enters the Co 6 Mansar Block Jindrah transverse it on Southern side of village Undahal enters into 5 Mansar Block Jindrah of Forest Division Jammu and then enters in Co. 43/Mahoregarh Range of Forest Division Samba and then Co. 42/Mahoregarh Range and crosses the Mansar Samba Road.

In the **Southern side**, the ESZ transverse through Co 39/Mahoregarh, Co 38/Mahoregarh North of village Babnergarh, then 36/Mahoregarh South of Mansar Forest, 33/Mahoregarh, 32/Mahoregarh, 30/Mahoregarh North of Village Kumn, 29/Mahoregarh, enters 23/Purmandal (Forest Division Samba) and 21/Purmandal and then along the boundary of 20/ Purmandal and 21/Purmandal and moves forward along the boundary of 20/Purmandal and 44/Bahu and 33/ Purmandal and 44/Bahu, boundary of 33/Purmandal and enters into 34/ Purmandal south of village Dager and joins with Samani Nallah north of village Panjowa.

In the **Southwestern side**, the ESZ move along boundary of 34/ Purmandal and 35/ Purmandal, move along the Samani Nallah and move along the boundary of Co 42/Bahu and 35/ Purmandal, Co 46/Bahu and 35/ Purmandal, Co 46/Bahu and 41/ Purmandal, Co 47/Bahu and 41/Purmandal, Co 48/Bahu and 41/Purmandal, along the boundary of 48/Bahu, 49/Bahu and 50/Bahu.

In the **western side**, the ESZ enters into the boundary of the 51/Bahu, 52/Bahu North of village Athem, crosses the Surinsar-Sidhra road, enters into Co 53/Bahu, then 56/Bahu, moves along the boundary of between 58/Bahu and 59 Bahu, then touches the river Tawi. The ESZ move along the Tawi along the boundary upto Co 15/Jindrah. The ESZ has been kept zero along the boundary of Surinsar-Mansar Wildlife Sanctuary with the Nandani Wildlife Sanctuary. The ESZ moves along the North of Village Doa, enters into Co 5 Tunnel Block Jindrah Range, then into 4 Tunnel Block Jindrah Range.

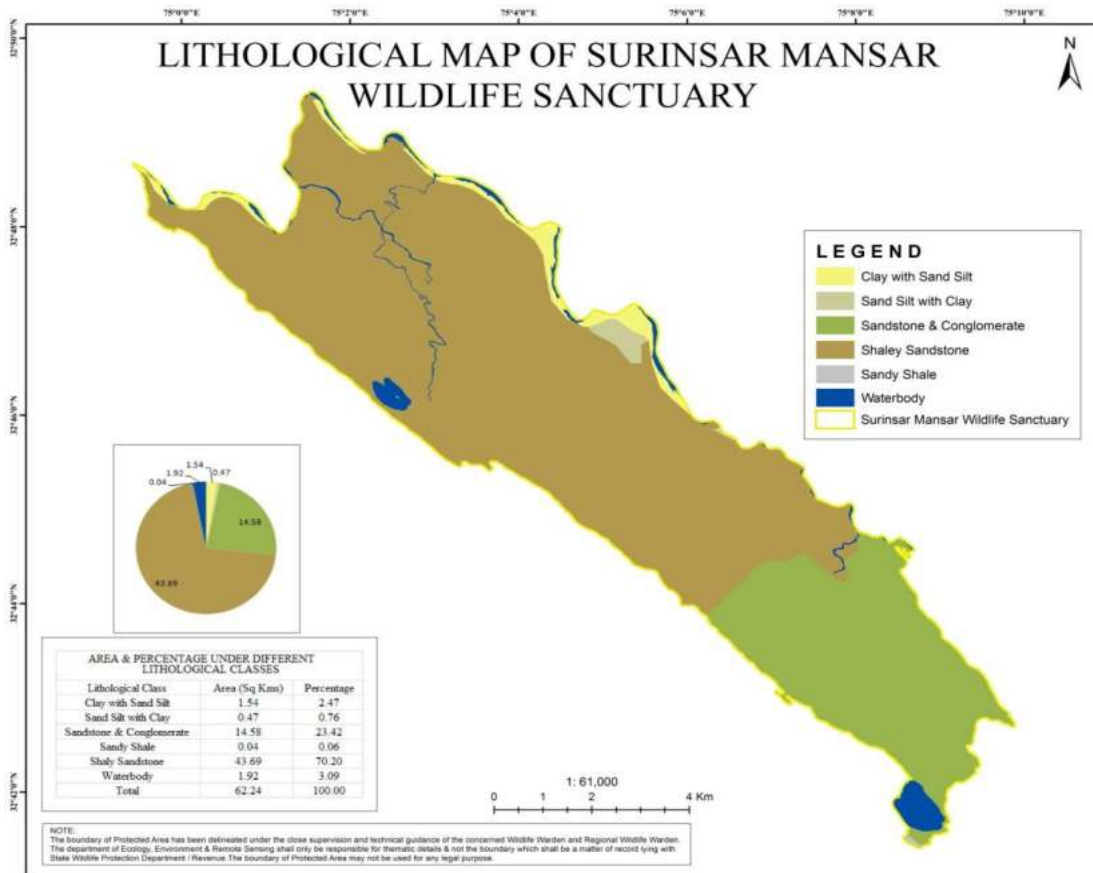
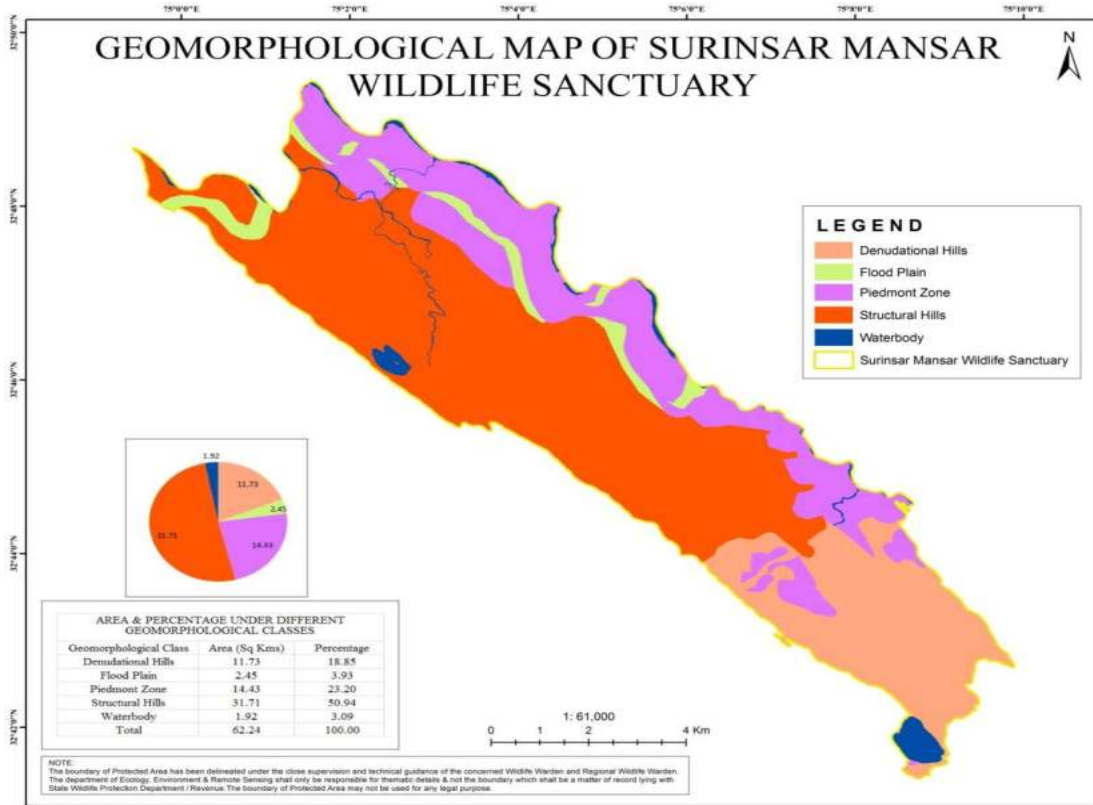
In the **Northwestern side**, the ESZ enters into Co 4/T, then South of village Tara, then along the South of village Kah.

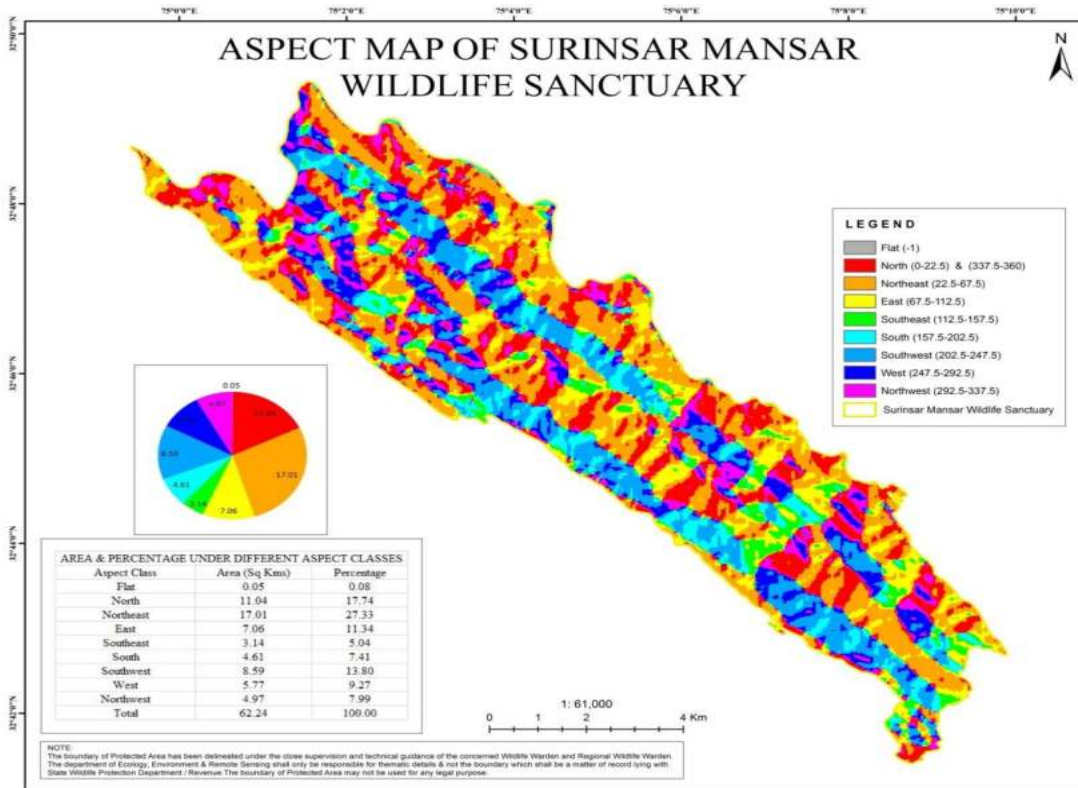
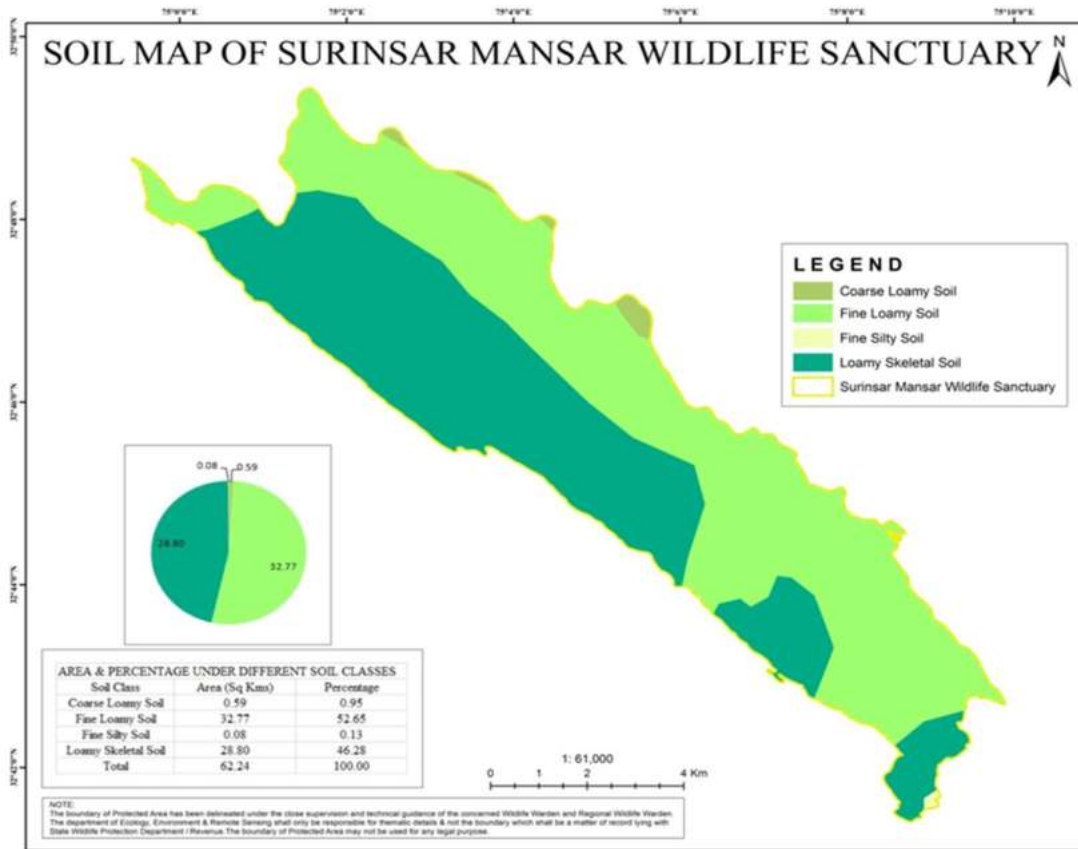
In the **Northern side**, the ESZ enters into the Rifle Range, upto North of Village Martin, then enters into the Nallah North of Village Nagola, move along the Nallah upto the North of village Upli Sari and Dhan. Then the ESZ move forward North of the villages Pera, Buthana.

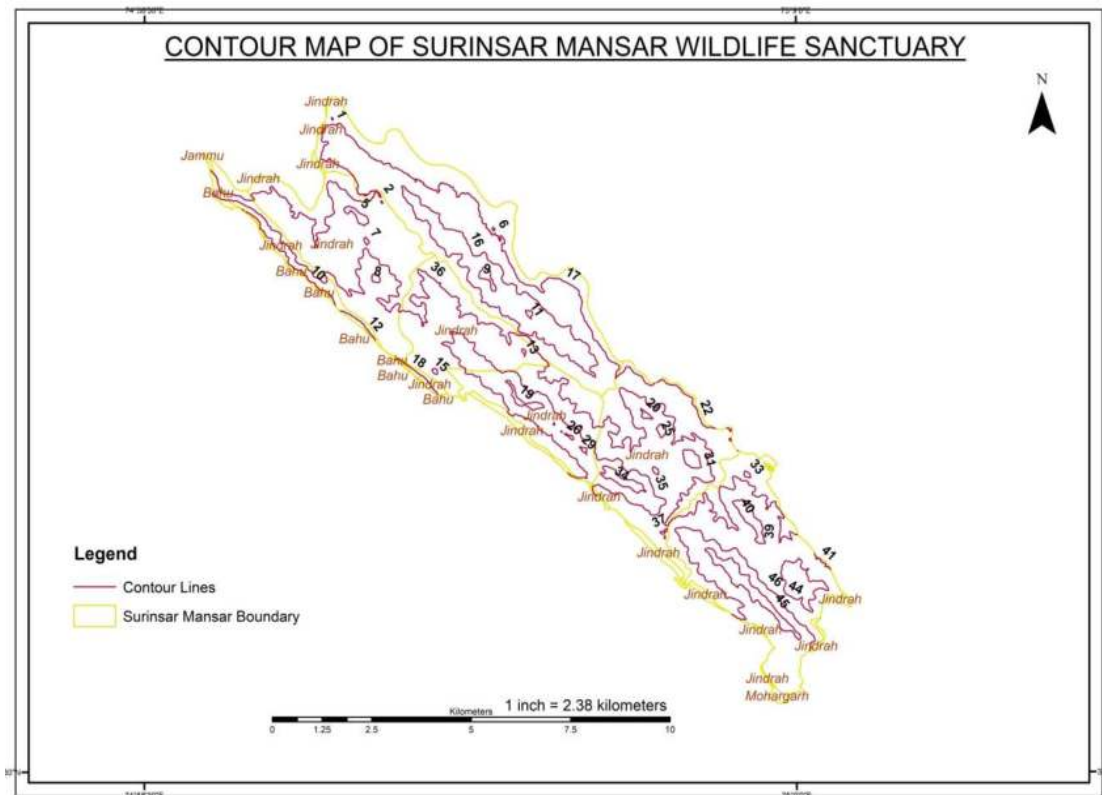
In the **North eastern side**, The ESZ crosses the River Tawi and moves along the North of villages Jambal, Jandli.

2.1.2 Internal Boundaries: The internal Boundaries are not demarcated as the settlement process remains incomplete.

2.2 Geology, Rock and soil: The main rock type in and around area is a mixture of boulders and pebbles of various sizes. The soil is primary in nature and comprises of shallow immature soils containing large preparation of undecomposed materials and minerals grains. The texture is sandy and loamy. The principal rock formations are sandstone, siltstone, clay and shale.







Soil predominantly, comprises of sandy conglomeric soil with boulders and pebbles. Mansar lake is formed on a structural high called as an Anticline in geographical parlance. Anticline means an arch of rocks with its high turned upwards. Same is true for its sister lake called as Surinsar, situated Northwest of Mansar lake. The core of this anticline has a number of fractures or faults including cross-faults. It is these features or fault which have resulted in Spring activity in the lakes basins (Mansar and Surinsar) yielding perennial source of lake waters. Most of the lake waters are coming from below, welling up as copious spring along the fracture plains in what is called as artesian conditions.

2.3 Terrain: -

The topography of the area is hilly with moderate to steep slopes interspersed with small drainage nallas. It has an elevation varying from 547 mtrs to 834 mtrs from the MSL.

2.4 Climate: -

The elevation of the tract varies from 547 m to 834 m above msl. Summer season ranges from March to middle of July mercury shooting up to 40°C to 43 °C in the month of June. Winter is quite cold. The spring season extends from mid-January till mid-March. The Frost and mists occur occasionally. The area gets bulk of its rains from South-west monsoon, which starts in the last week of June and extends up to middle of September. Winter rains are also received in the month of December and January whereas rest of the months are comparatively dry.

2.4.1 Temperature (a summary of year-round pattern):

Table: 2.1 Temperature recorded around the Surinsar-Mansar Sanctuary.

Month	2017		2018		2019		2020	
	Min °C	Max °C	Min °C	Max °C	Min °C	Max °C	Min °C	Max °C
January	9	18	9	20	10	19	9	17
February	11	23	11	23	11	20	12	23
March	13	26	15	28	14	25	14	25
April	20	34	19	32	23	35	20	32
May	25	38	24	37	26	39	25	39
June	27	38	28	39	31	43	30	42
July	28	36	27	35	29	39	31	41
August	26	35	26	34	27	35	26	34
September	22	35	22	32	25	34	23	33
October	18	32	20	33	21	32	19	20
November	14	26	17	27	17	26	16	25
December	12	22	13	22	11	20	12	21

(Source: SKAUST Jammu)

2.4.2 Rainfall pattern and distribution:

Table: 2.2 Rainfall in the Surinsar-Mansar Wildlife Sanctuary.

Month	2017		2018		2019		2020	
	Rainfall (mm)	Days	Rainfall (mm)	Days	Rainfall (mm)	Days	Rainfall (mm)	Days
January	146.13	13	0	0	123.4	13	151.3	16
February	73.1	7	69.6	3	387.8	16	12	4
March	62.5	9	32	8	126.2	14	218.2	16
April	147.5	8	74.81	9	72	12	25.4	12
May	22.8	8	51.1	10	55.4	16	40.8	15
June	98.7	19	194.8	13	29.4	10	52.6	15

July	172.4	24	246.8	22	359.1	26	64.2	20
August	97.3	13	185.5	22	336.7	23	276.2	25
September	15.6	5	170.76	13	134.2	17	15.1	4
October	0	0	11.48	3	7.3	2	0	0
November	11.2	4	87.8	6	110.5	11	13.2	6
December	101.1	4	15.1	2	144.7	6	55.8	7

(Sources: worldweatheronline.com)

2.4.3 Humidity: The humidity of the area reaches its maximum (85%-90%) in the month of July-August.

2.4.4 Wind Speed: Wind speed is high in higher elevation of the Sanctuary. However, no authenticated records are available.

2.5 Water Sources: Surinsar & Mansar Lakes are the main source of water. Besides, Tawi river, Gambir khad and small seasonal streams act as source of water in the Sanctuary.

2.6 Range of Wildlife, status, distribution and habitat: The Sanctuary offers a wide range of habitat types to the flora and fauna and is famous for harboring the 15 species of mammals, 86 species of birds, 17 species of reptiles, 8 species of fishes (Kotwal, 2012). Rainfall, terrain, type of habitat is the important factors that influence animal movements. Species like leopard, Wild Boar frequently moves with in the sanctuary and sometimes outside the Sanctuary as well. The sanctuary also includes two Lakes the twin Surinsar & Mansar Lake is already included in the list of Ramsar site under the International Convention of Wetlands in 2005 and also included in the National Wetland Conservation Programme of Govt. of India. The introduced fish common carp. is the dominant fish in the lakes.

2.6.1 Vegetation.

2.6.1.1 Forest Types: As per revised Champion and Seth (1968) classification of forest types, following forest types are found in the Sanctuary: -

- 1. 5B/C2 –Northern dry mixed deciduous forests:** These forests are found in small pockets and their general health is good. The general floristic are: *Acacia catechu*, *Acacia nilotica*, *Acacia modesta*, *Ficus racemosa*, *Ficus benghalensis*, *Ficus religiosa*, *Butea monosperma*, *Lannea coromandelica*,

Albizia lebbeck, Mallotus philippensis, Dodonaea viscosa, Adhatoda vasica, Carissa spinarum, Colebrookea oppositifolia, Nerium indicum etc.

2. 9/C1/DS1 Himalayan Sub-tropical Scrub Forests.

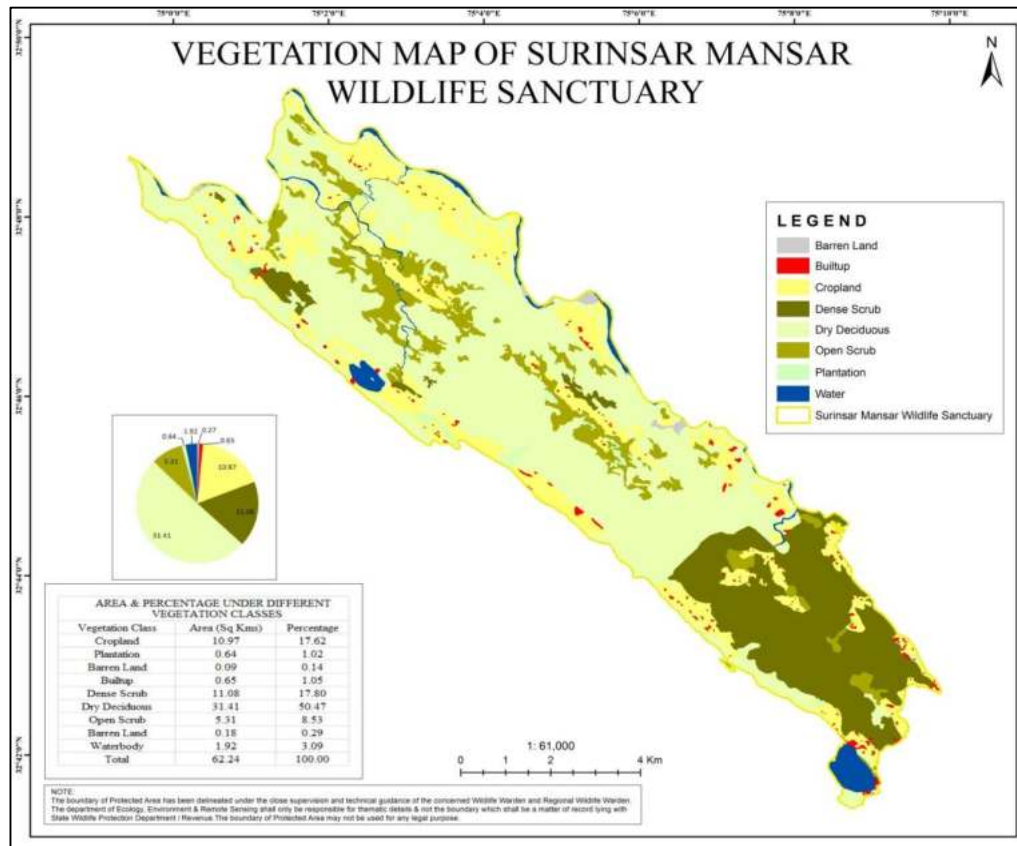
This sub-tropical scrub is found in the Siwalik chir pine zone. It forms an open formation. This area is dominated by dense/ sparse scrubs mixed with scattered broadleaved species. This subtype is found below the chir zone in low lying area. The general floristics are: *Dalbergia sissoo, Acacia catechu, Butea monosperma, Ficus spp, Acacia nilotica, Dodonea viscosa, Adhatoda vasica, Carissa spinarum, Punica granatum, Nerium indicum, Murraya koenigii, Lantana camara, Ipomoea fistula. Saccharum spontaneum, Cymbopogon spp.* etc.

3. Sub type 9 / C1a Lower Siwalik Chir Pine Forest.

These forests occur mostly on the lower ranges of Siwaliks, some of the peculiarities of this type are that natural regeneration of chir in this region is difficult. This may be attributed to the rugged conditions of topography, where water table is quite low and soil remains devoid of moisture for a pretty long time in the year with little rainfall in the summer months. It represents Chir bearing areas of the Division. The principal species is chir mixed with broadleaved species and shrubs towards lower altitudes. The general floristics are *Pinus roxburghii., Acacia catechu, Dalbergia sissoo, Butea monosperma, Mallotus philippensis, Zizyphus jujuba, Syzygium cumini, Emblica officinalis, Ficus spp., Dodonaea viscosa, Woodfordia fruticosa, Adhatoda vasica, Colebrookea oppositifolia, Punica granatum, Nerium indicum, Rumex hastatus, Cymbopogon spp.* etc.

4. 10/C1/c Dodonea Scrub Forests: These are found along the road side and are dominated by the *Dodonaea viscosa*. As a result of overgrazing *Dodonaea viscosa*, infact covers large areas. It is an indicator of over grazed and degraded forest. It has a tendency of colonizing certain areas as a special habitat.

2.6.2 Major Flora and fauna in the Sanctuary: The Surinsar–Mansar Wildlife Sanctuary is known for habitat of large number of herbivores and rich biodiversity of flora and fauna. The principle species are *Pinus roxburgii*, *Acacia catechu*, *Lannea grandi*, *Mallotus philipenesis*, *Cassia fistula*, *Zizyphus jujuba*, *Dalbergia sissoo*, *Emblica officinalis*, *Ficus benghalensis*, *Ficus religiosa*, *Bauhinia variegata*. The under story includes *Adhatoda vassica*, *Dodonea viscosa*, *Carissa opaca* etc. The dominant climber in the



forest is *Bauhinea vahilli* etc. The Surinsar-Mansar Wildlife Sanctuary has rich fauna and flora diversity. This Sanctuary has twin lake namely Surinsar and Mansar. The Common carp is the dominant species in Mansar-Surinsar lakes. *Puntius chonchonius*, *Channa gachua*, *Rasbora rasbora*, *Labeo rohita* and *Trichogaster fasciatus* constitute the common ichthyofauna of lakes. Other noteworthy species include *Danio rerio*, *Mastacembelus armatus*, *Ophiocephalus punctatus*.

2.6.3 Description of Major species reported from Surinsar-Mansar Wildlife Sanctuary.

1. *Aquila nipalensis*.

Class : Aves
Order : Accipitriformes
Family : Accipitridae
IUCN Status : Endangered



The steppe eagle (*Aquila nipalensis*) is a large bird of prey. Like all eagles, it belongs to the family Accipitridae. The steppe eagle's well-feathered legs illustrate it to be a member of the subfamily Aquilinae, also known as the "booted eagles". The steppe eagle is in many ways a peculiar species of eagle. It is a specialized predator of ground squirrels on the breeding ground, also taking other rather small mammals and other prey, doing so more often when ground squirrels are less consistently found. The steppe eagle is large and impressive raptor and quite a large eagle. However, as a member of the genus *Aquila*, it is fairly medium-sized. Females can range to 15% larger with greater dimorphism by weight, which is more pronouncedly dimorphic than by linear dimensions. Total length can range from 60 to 89 cm (24 to 35 in) in fully-grown steppe eagles. It is listed as Endangered on the IUCN Red List.

2. *Axis axis*.

Class : Mammalia
Order : Artiodactyla
Family : Cervidae
IUCN Status : Least Concerned



The chital (*Axis axis*), also known as spotted deer, chital deer, and axis deer, is a species of deer that is native

to the Indian subcontinent. It was first described by German naturalist Johann Christian Polycarp Erxleben in 1777. A moderate-sized deer, male chital reach nearly 90 cm (35 in) and females 70 cm (28 in) at the shoulder. While males weigh 30–75 kg (66–165 lb), the lighter females weigh 25–45 kg (55–99 lb). It is sexually dimorphic; males are larger than females, and antlers are present only on males. The upper parts are golden to rufous, completely covered in white spots. The abdomen, rump, throat, insides of legs, ears, and tail are all white. The antlers, three-pronged, are nearly 1 m (3.3 ft) long.

3. *Boselaphus tragocamelus*.

Class : Mammalia
Order : Artiodactyla
Family : Bovidae
IUCN Status : Least Concerned



The nilgai (*Boselaphus tragocamelus*) (/ˈnilgai/, literally meaning "blue cow") is the largest Asian antelope and is ubiquitous across the northern Indian subcontinent. It is the sole member of the genus *Boselaphus* and was described by Peter Simon Pallas in 1766. The nilgai stands 1–1.5 m (3.3–4.9 ft) at the shoulder; males weigh 109–288 kg (240–635 lb), and the lighter females 100–213 kg (220–470 lb). A sturdy thin-legged antelope, the nilgai is characterized by a sloping back, a deep neck with a white patch on the throat, a short crest of hair along the neck terminating in a tuft, and white facial spots. A column of pendant coarse hair hangs from the ridge below the white patch. Sexual dimorphism is prominent – while females and juveniles are orange to tawny, adult males have a bluish-grey coat. Only males possess horns, 15–24 cm (5.9–9.4 in) long.

4. *Canis aureus*.

Class : **Mammalia**
Order : **Carnivora**
Family : **Canidae**
IUCN Status : **Least Concerned**



The **Golden jackal** (*Canis aureus*) is a wolf-like canid that is native to Southeast Europe, Southwest

Asia, South Asia, and regions of Southeast Asia. The jackal is smaller and possess shorter legs, a shorter tail, a more elongated torso, a less-prominent forehead, and a narrower and more pointed muzzle. The golden jackal's coat can vary in color from a pale creamy yellow in summer to a dark tawny beige in winter. It is listed as 'least concern' on the IUCN Red List due to its widespread distribution and high density in areas with plenty of available food and optimum shelter.

5. *Hystrix indica*.

Class : **Mammalia**
Order : **Rodentia**
Family : **Hystricidae**
IUCN Status : **Least Concerned**



The Indian crested porcupine (*Hystrix indica*) is a hystricomorph rodent species native to southern

Asia and the Middle East. It is listed as Least Concern on the IUCN Red List. It belongs to the Old World porcupine family, Hystricidae. Indian crested porcupines have a very broad and mostly herbivorous diet. The Indian crested porcupine is a large rodent, weighing 11–18 kg (24–40 lb). Their body (from the nose to the base of the tail) measures between 70 and 90 cm (28 and 35 in) with the tail adding an additional 8–10 cm (3.1–3.9 in). The lifespan of wild Indian crested porcupines is unknown, but the oldest known captive individual was a female that lived to be 27.1 years old.

6. *Naja naja*.

Class : Reptilia
Order : Squamata
Suborder : Serpentes
Family : Elapidae
IUCN Status : Threatened Species



The Indian Cobra (*Naja naja*), also known as the spectacled cobra, Asian cobra, or binocellate cobra, is a species of the genus *Naja* found in India, Pakistan, Bangladesh, Sri Lanka, Nepal, and Bhutan, and a member of the "big four" species that inflict the most snakebites on humans in India. It is distinct from the king cobra which belongs to the monotypic genus *Ophiophagus*. The Indian cobra is revered in Indian mythology and culture, and is often seen with snake charmers. It is now protected in India under the Indian Wildlife Protection Act (1972).

7. *Lepus nigricollis ruficaudatus*.

Class : Mammalia
Order : Lagomorpha
Family : Leporidae
IUCN Status : Least Concerned



The Indian hare (*Lepus nigricollis*), also known as the black-naped hare, is a common species of hare native to the Indian subcontinent. *Lepus nigricollis* are generally found in areas where large tracts of bush and jungle alternate with farmland. *Lepus nigricollis* are also called black-naped hares due to the patch of black fur that runs along the nape of the neck. The top of the tail is also black and the back and face are brown with black hairs scattered throughout. The underparts are white. Total length ranges from 40 to 70 cm and weight ranges from 1.35 to 7 kg.

8. *Macaca Mulatta*.

Class : **Mammalia**
Order : **Primates**
Family : **Cercopithecidae**
IUCN Status : **Least Concerned**



The **Rhesus macaque** (*Macaca mulatta*), colloquially rhesus monkey, is a species of Old World monkey. It is listed as least concern in the IUCN Red

List of Threatened Species in view of its wide distribution, presumed large population, and its tolerance of a broad range of habitats. It is native to South, Central, and Southeast Asia and has the widest geographic range of all non-human primates, occupying a great diversity of altitudes and a great variety of habitats, from grasslands to arid and forested areas, but also close to human settlements.

9. *Manis crassicaudata*.

Class : **Mammalia**
Order : **Pholidota**
Family : **Manidae**
IUCN Status : **Endangered species**



The Indian pangolin (*Manis crassicaudata*), also called thick-tailed pangolin and scaly anteater is a pangolin native to the Indian

subcontinent. Like other pangolins, it has large, overlapping scales on its body which act as armour. It can also curl itself into a ball (volvation) as self-defence against predators such as the tiger. The colour of its scales varies depending on the colour of the earth in its surroundings. It is an insectivore, feeding on ants and termites, digging them out of mounds and logs using its long claws, which are as long as its fore limbs. It is nocturnal and rests in deep burrows during the day.

10. *Muntiacus muntjac*.

Class : **Mammalia**
Order : **Artiodactyla**
Family : **Cervidae**
IUCN Status : **Least Concerned**



The **Indian muntjac** (*Muntiacus muntjak*), also called the southern red muntjac and barking deer, is

a deer species native to South and Southeast Asia. This muntjac has soft, short, brownish or greyish hair, sometimes with creamy markings. It is among the smallest deer species. It is an omnivore and eats grass, fruit, shoots, seeds, bird eggs, and small animals, and occasionally scavenges on carrion. Its calls sound like barking, often when frightened by a predator, hence the common name "barking deer". These deer are highly alert creatures. When put into a stressful situation or if a predator is sensed, muntjacs begin making a bark-like sound. Barking was originally thought of as a means of communication between the deer during mating season, as well as an alert. It is listed as Least Concern on the IUCN Red List.

11. *Rusa unicolor*

Class : **Mammalia**
Order : **Artiodactyla**
Family : **Corvidae**
IUCN Status : **Vulnerable species**

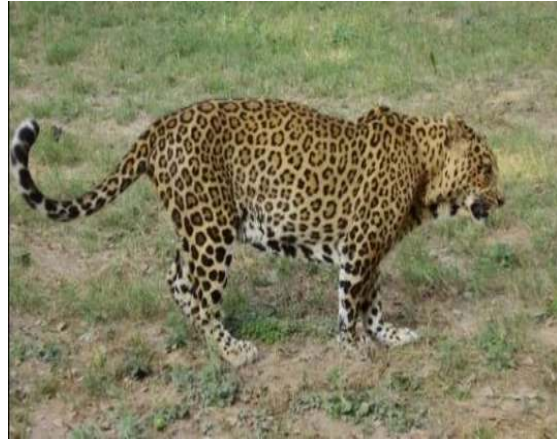


The sambar (*Rusa unicolor*) is a large deer native to the Indian subcontinent, South China, and Southeast

Asia that is listed as a vulnerable species on the IUCN Red List since 2008. Populations have declined substantially due to severe hunting, local insurgency, and industrial exploitation of habitat. The name "sambar" is also sometimes used to refer to the Philippine deer, called the "Philippine sambar" and Javan rusa, called the "Sunda sambar". It is listed as vulnerable species on the IUCN Red List.

12. *Panthera pardus*.

Class : **Mammalia**
Order : **Carnivora**
Family : **Felidae**
IUCN Status : **Vulnerable**



The **Indian leopard** (*Panthera pardus fusca*) is a leopard subspecies widely distributed on the Indian subcontinent.

The species *Panthera pardus* is listed as Vulnerable on the IUCN Red List because populations have declined following habitat loss and fragmentation, poaching for the illegal trade of skins and body parts, and persecution due to conflict situations. The largest skull of a leopard was recorded in India in 1920 and measured 28 cm (11.0 in) in basal length, 20 cm (7.9 in) in breadth, and weighed 1,000 g (2 lb 4 oz). The skull of a West African leopard measured 285.8 mm (11.25 in) in basal length, and 181.0 mm (7.125 in) in breadth, and weighed 790 g (1 lb 12 oz).

13. *Indian Python*.

Class : **Reptilia.**
Order : **Squamata.**
Family : **Pythonidae.**
IUCN Status : **Near threatened.**



Indian python (*Python molurus*) is a large, non-venomous python species native to tropical and subtropical regions of the Indian subcontinent and Southeast Asia. It is known by the common name as Indian python. The rock python's color pattern is whitish or yellowish with the blotched patterns varying from tan to dark brown shades. This varies with terrain and habitat. *Python molurus* occurs in India, southern Nepal, Pakistan, Sri Lanka, Bhutan, Bangladesh, and probably in the north of Myanmar. Like all snakes, Indian pythons are strict carnivores and feed on mammals, birds, and reptiles indiscriminately, but seem to prefer mammals. Oviparous, up to 100 eggs

are laid by a female, which she protects and incubates. The Indian python is classified as lower risk/near threatened on the IUCN Red List of Threatened Species.

14. *Viverricula indica.*

Class : **Mammalia**
Order : **Carnivora**
Suborder : **Feliformia**
Family : **Viverridae**
IUCN Status : **Least Concerned**



The small Indian civet (*Viverricula indica*) is a civet native to south and Southeast Asia. It is listed as Least

Concern on the IUCN Red List because of its widespread distribution, widespread habitat use and healthy populations living in agricultural and secondary landscapes of many range states. It has a coarse brownish grey to pale yellowish-brown fur, with several longitudinal black or brown bands on the back and longitudinal rows of spots on the sides. Usually, there are five or six distinct bands on the back and four or five rows of spots on each side. The ears are short and rounded with a dusky mark behind each ear, and one in front of each eye. The feet are brown or black. Its tail has alternating black and whitish rings, seven to nine of each color.

15. *Vulpes vulpes.*

Class : **Mammalia**
Order : **Carnivora**
Family : **Canidae**
IUCN Status : **Least Concerned**



Vulpes is a genus of the sub-family Caninae. The members of this genus are colloquially referred to as true foxes, meaning they form a proper clade. The word "fox" occurs in the common names of species. True foxes are distinguished from members of the genus Canis,

such as domesticated dogs, wolves, jackals and coyotes, by their smaller size (5–11 kg), longer, bushier tail, and flatter skull. They have black, triangular markings between their eyes and nose, and the tip of their tail is often a different color from the rest of their pelt. The typical lifespan for this genus is between two and four years, but can reach up to a decade.

16. *Leopard Cat.*

Class : Mammalia
Order : Carnivora
Suborder : Feliformia
Family : Felidae
IUCN Status : Least Concerned



A leopard cat is about the size of a domestic cat, but more slender, with longer legs and well-defined webs between its toes. Its small head is marked with two prominent dark stripes and a short and narrow white muzzle. There are two dark stripes running from the eyes to the ears and smaller white streaks running from the eyes to the nose. The backs of its moderately long and rounded ears are black with central white spots. Body and limbs are marked with black spots of varying size and colour, and along its back are two to four rows of elongated spots. The tail is about half the size of its head-body length and is spotted with a few indistinct rings near the black tip. The background colour of the spotted fur is tawny, with a white chest and belly.

17. *Rousettus leschenaultii.*

Class : Mammalia
Order : Chiroptera
Suborder : Haplorhini
Family : Pteropodidae
IUCN Status : Least Concerned



Leschenault's rousette (*Rousettus leschenaultii*) is a species of fruit bat.

They are sometimes referred to as dog-faced fruit bats, or flying foxes. The genus is a member of the suborder Megachiroptera. The genus consists of ten species that range over most of Africa to southeast Asia, and the islands of the south Pacific. They are among the few megabats capable of echolocation, and the only genus of megabats known to use vocal echolocation.

18. *Sus scrofa*.

Class : Mammalia
Order : Artiodactyla
Family : Suidae
Status : Least Concerned



The Indian boar (*Sus scrofa*), also known as the Andamanese

pig or Moupin pig is a subspecies of wild boar native to India, Nepal, Burma, western Thailand and Sri Lanka. The Wild Boar is an animal with an extremely wide distribution with the number of estimated Wild Boar subspecies ranging from 4 to 25. The Wild Boar is an extremely adaptable animal as it is found in a variety of different habitats, eats almost anything that will fit in its mouth and not only runs fast, but also swims well too. They are also commonly known as European Wild Pigs, Hogs or simply Boars.

19. *Varanus bengalensis*.

Class : Reptilla.
Order: Squamata.
Family: Varanidae.
Status: Least Concerned.



The **Bengal monitor** (*Varanus bengalensis*) or **common Indian**

monitor, is a monitor lizard found widely distributed over the Indian Subcontinent, as well as parts of Southeast Asia and West Asia. This large lizard is mainly terrestrial, and its length can range from about 61 to 175 cm from the tip of the snout to the end of the tail. Young monitors may be more arboreal, but adults mainly hunt on the ground, preying mainly on arthropods, but also taking small terrestrial vertebrates, ground birds, eggs and fish. Although large monitors have few predators apart from humans who hunt them for meat, younger individuals are hunted by many predators.

The checklist of mammals, birds, reptiles, amphibians and fishes is given below: -

Checklist of mammals:

S.No.	Scientific Name	Common Name	Family	IUCN status
1.	<i>Boselaphus tragocamelus</i>	Blue bull/ Nilgai	Bovidae	LC
2.	<i>Canis aureus</i>	Jackal, Indian	Canidae	LC
3.	<i>Felis chaus</i>	Cat, Jungle	Felidae	LC
4.	<i>Funambulus pennanti</i>	Squirrel, Five-striped	Sciuridae	LC
5.	<i>Herpestes edwardsi</i>	Indian Grey mongoose	Herpestidae	LC
6.	<i>Hystrix indica</i>	Porcupine, Indian	Hystricidae	LC
7.	<i>Lepus nigricollis ruficaudatus</i>	Rufous-Tailed Hare	Leporidae	LC
8.	<i>Macaca mulatta</i>	Macaque, Rhesus	Cercopithecidae	LC
9.	<i>Manis crassicaudata</i>	Indian Pangolin	Manidae	EN
10.	<i>Muntiacus muntjak</i>	Barking deer	Cervidae	LC
11.	<i>Panthera pardus</i>	Leopard	Felidae	VU
12.	<i>Paradoxurus hermaphroditus</i>	Asian palm Civet	Viverridae	LC
13.	<i>Prionailurus bengalensis</i>	Leopard Cat	Felidae	LC
14.	<i>Rousettus leschenaulti</i>	Bat, Fulvous Fruit	Pteropodidae	LC
15.	<i>Rusa unicolor</i>	Sambar Deer	Cervidae	VU
16.	<i>Sus scrofa</i>	Wild boar	Suidae	LC
17.	<i>Viverricula indica</i>	Civet, Small Indian	Viverridae	LC

Checklist of Woody plants.

S.No.	Scientific Name	Life form	Family
1.	<i>Abutilon indicum</i>	Nanophanerophyte	Malvaceae
2.	<i>Acacia catechu</i>	Macrophanerophyte	Mimosaceae
3.	<i>Acacia modesta</i>	Macrophanerophyte	Mimosaceae
4.	<i>Acacia nilotica ssp. Indica</i>	Macrophanerophyte	Mimosaceae
5.	<i>Aegle marmelos</i>	Macrophanerophyte	Rutaceae
6.	<i>Agave sisalana</i>	Nanophanerophyte	Agavaceae
7.	<i>Albizia lebbeck</i>	Macrophanerophyte	Mimosaceae
8.	<i>Bauhinia variegata</i>	Macrophanerophyte	Caesalpiniaceae
9.	<i>Bombax cieba</i>	Macrophanerophyte	Bombacaceae
10.	<i>Buddleja asiatica</i>	Nanophanerophyte	Lagoniaceae
11.	<i>Butea monosperma</i>	Macrophanerophyte	Fabaceae
12.	<i>Calotropis procera</i>	Nanophanerophyte	Asclepiadaceae
13.	<i>Capparis sepiaria</i>	Nanophanerophyte	Capparidaceae
14.	<i>Carissa opaca</i>	Nanophanerophyte	Apocynaceae
15.	<i>Casearia tomentosa</i>	Macrophanerophyte	Flacourtiaceae
16.	<i>Cassia fistula</i>	Macrophanerophyte	Caesalpiniaceae
17.	<i>Colebrookea oppositifolia</i>	Nanophanerophyte	Lamiaceae
18.	<i>Dalbergia sissoo</i>	Macrophanerophyte	Fabaceae
19.	<i>Deeringia amaranthoides</i>	Nanophanerophyte	Amaranthaceae
20.	<i>Diospyros cordifolia</i>	Macrophanerophyte	Ebenaceae
21.	<i>Dodonaea viscosa</i>	Nanophanerophyte	Sapindaceae
22.	<i>Eucalyptus lanceolatus</i>	Macrophanerophyte	Myrtaceae
23.	<i>Euphorbia royleana</i>	Nanophanerophyte	Euphorbiaceae
24.	<i>Ficus auriculata</i>	Macrophanerophyte	Moraceae
25.	<i>Ficus benghalensis</i>	Macrophanerophyte	Moraceae
26.	<i>Ficus hispida</i>	Macrophanerophyte	Moraceae
27.	<i>Ficus palmata</i>	Macrophanerophyte	Moraceae
28.	<i>Ficus racemose</i>	Macrophanerophyte	Moraceae
29.	<i>Ficus religiosa</i>	Macrophanerophyte	Moraceae
30.	<i>Flacourtia indica</i>	Nanophanerophyte	Flacourtiaceae
31.	<i>Grewia optiva</i>	Macrophanerophyte	Tiliaceae
32.	<i>Indigofera cassioides</i>	Nanophanerophyte	Fabaceae
33.	<i>Justicia adhatoda</i>	Nanophanerophyte	Acanthaceae
34.	<i>Kydia calycina</i>	Macrophanerophyte	Malvaceae
35.	<i>Lannea coromandelica</i>	Macrophanerophyte	Anacardiaceae
36.	<i>Lantana camara var. aculeata</i>	Nanophanerophyte	Verbenaceae
37.	<i>Leucaena leucocephala</i>	Macrophanerophyte	Mimosaceae

38.	<i>Mallotus philippensis</i>	Macrophanerophyte	Euphorbiaceae
39.	<i>Mangifera indica</i>	Macrophanerophyte	Anacardiaceae
40.	<i>Melia azedarach</i>	Macrophanerophyte	Meliaceae
41.	<i>Mimosa rubicaulis</i>	Nanophanerophyte	Mimosaceae
42.	<i>Moringa oleifera</i>	Macrophanerophyte	Moringaceae
43.	<i>Morus alba</i>	Macrophanerophyte	Moraceae
44.	<i>Murraya koenigii</i>	Nanophanerophyte	Rutaceae
45.	<i>Nyctanthes arbortristis</i>	Nanophanerophyte	Verbenaceae
46.	<i>Oroxylum indicum</i>	Macrophanerophyte	Bignoniaceae
47.	<i>Phanera vahlii</i>	Liana	Caesalpiniaceae
48.	<i>Phoenix sylvestris</i>	Macrophanerophyte	Arecaceae
49.	<i>Phyllanthus emblica</i>	Macrophanerophyte	Euphorbiaceae
50.	<i>Pinus roxburghii</i>	Macrophanerophyte	Pinaceae
51.	<i>Pistidia integrifolia</i>	Macrophanerophyte	Anacardiaceae
52.	<i>Punica granatum</i>	Nanophanerophyte	Punicaceae
53.	<i>Pyrus pashia</i>	Macrophanerophyte	Rosaceae
54.	<i>Ricinus communis</i>	Nanophanerophyte	Euphorbiaceae
55.	<i>Rubus ellipticus</i>	Nanophanerophyte	Rosaceae
56.	<i>Syzygium cumini</i>	Macrophanerophyte	Myrtaceae
57.	<i>Terminalia bellirica</i>	Macrophanerophyte	Combretaceae
58.	<i>Terminalia chebula</i>	Macrophanerophyte	Combretaceae
59.	<i>Toona ciliat Roem.</i>	Macrophanerophyte	Meliaceae
60.	<i>Vitex negundo</i>	Nanophanerophyte	Verbenaceae
61.	<i>Wendlandia heynei</i>	Macrophanerophyte	Rubiaceae
62.	<i>Woodfordia fruticosa</i>	Nanophanerophyte	Lythraceae

Checklist of Birds:

S.No.	Common name	Binomial name	IUCN Status
1.	Black Kite	<i>Milvus migrans</i> (Boddaert,1783)	LC
2.	Black-winged Kite	<i>Elanus caeruleus</i> (Desfontaines,1789)	LC
3.	Egyptian Vulture	<i>Neophron percnopterus</i> (Linnaeus, 1758)	EN
4.	Cinereous Vulture	<i>Aegyptius monachus</i> (Linnaeus, 1766)	NT
5.	Himalayan Vulture	<i>Gyps himalayensis</i> (Hume,1869)	NT
6.	Shikra	<i>Accipiter badius</i> (Gmelin, 1788)	LC
7.	Crested Serpent Eagle	<i>Spilornis cheela</i> (Latham, 1790)	LC
8.	Steppe Eagle	<i>Aquila nipalensis</i> (Hodgson, 1833)	EN
9.	Oriental Honey Buzzard	<i>Pernis ptilorhynchus</i> (Temminck, 1821)	LC

10.	White-eyed Buzzard	<i>Butastur teesa</i> (Franklin,1831)	LC
11.	Besra	<i>Accipiter virgatus</i> (Temminck, 1822)	LC
12.	Common Teal	<i>Anas crecca</i> (Linnaeus, 1758)	LC
13.	Common Pochard	<i>Aythya farina</i> (Linnaeus, 1758)	VN
14.	Tufted Duck	<i>Aythya fuligula</i> (Linnaeus, 1758)	LC
15.	Indian Grey Hornbill	<i>Ocyrceros birostris</i> (Scopoli,1786)	LC
16.	Common Hoopoe	<i>Upupa epops</i> (Linnaeus, 1758)	LC
17.	Red-wattled Lapwing	<i>Vanellus indicus</i> (Boddaert, 1783)	LC
18.	Black-winged Stilt	<i>Himantopus himantopus</i> (Linnaeus, 1758)	LC
19.	Green sandpiper	<i>Tringa ochropus</i> (Linnaeus, 1758)	LC
20.	Common sandpiper	<i>Actitis hypoleucos</i> (Linnaeus, 1758)	LC
21.	Eurasian Collared Dove	<i>Streptopelia decaocto</i> (Fridvaldszky, 1838)	LC
22.	Laughing Dove	<i>Streptopelia senegalensis</i> (Linnaeus,1766)	LC
23.	Rock Pigeon	<i>Columba livia</i> (Gmelin, 1789)	LC
24.	Spotted Dove	<i>Streptopelia chinensis</i> (Scopoli, 1786)	LC
25.	Common Kingfisher	<i>Alcedo atthis</i> (Linnaeus, 1758)	LC
26.	Crested Kingfisher	<i>Megaceryle lugubris</i> (Temminck,1834)	LC
27.	White-throated Kingfisher	<i>Halcyon smyrnensis</i> (Linnaeus, 1758)	LC
28.	Indian Roller	<i>Coracias benghalensis</i> (Linnaeus, 1758)	LC
29.	Green Bee-eater	<i>Merops orientalis</i> (Latham,1801)	LC
30.	Asian Koel	<i>Eudynamys scolopaceus</i> (Linnaeus, 1758)	LC
31.	Common Kestrel	<i>Falco tinnunculus</i> (Linnaeus, 1758)	LC
32.	Black Francolin	<i>Francolinus francolinus</i> (Linnaeus,1766)	LC
33.	Grey Francolin	<i>Francolinus pondicerianus</i> (J.F. Gmelin, 1789)	LC
34.	Indian Peafowl	<i>Pavo cristatus</i> (Linnaeus,1758)	LC
35.	Red Junglefowl	<i>Gallus gallus</i> (Linnaeus,1758)	LC
36.	Kalij Pheasant	<i>Lophura leucomelanos</i> (Latham, 1790)	LC
37.	Common Coot	<i>Fulica atra</i> (Linnaeus, 1758)	LC
38.	Common Moorhen	<i>Gallinula chloropus</i> (Linnaeus, 1758)	LC
39.	Purple Swamphen	<i>Porphyrio porphyrio</i> (Linnaeus, 1758)	LC
40.	White-breasted Waterhen	<i>Amaurornis Phoenicurus</i> (Pennant,1769)	LC

41.	Booted Warbler	<i>Iduna caligata</i> (Lichtenstein,1823)	LC
42.	Long-tailed Minivet	<i>Pericrocotus ethologus</i> (Bangs & Phillips, 1914)	LC
43.	Bar-tailed Treecreeper	<i>Certhia himalayana</i> (Vigors, 1832)	LC
44.	Ashy Prinia	<i>Prinia socialis</i> (Sykes,1832)	LC
45.	Common Tailorbird	<i>Orthotomus sutorius</i> (Pennant,1769)	LC
46.	Yellow-bellied Prinia	<i>Prinia flaviventris</i> (Delessert, 1840)	LC
47.	Grey-breasted Prinia	<i>Prinia hodgsonii</i> (Blyth, 1844)	LC
48.	House Crow	<i>Corvus splendens</i> (Vieillot, 1817)	LC
49.	Large-billed Crow	<i>Corvus macrorhynchos</i> (Wagler, 1827)	LC
50.	Rufous Treepie	<i>Dendrocitta vagabunda</i> (Latham,1790)	LC
51.	Ashy Drongo	<i>Dicrurus leucophaeus</i> (Vieillot, 1817)	LC
52.	Black Drongo	<i>Dicrurus macrocercus</i> (Vieillot, 1817)	LC
53.	Crested Bunting	<i>Emberiza lathami</i> (Gray, 1831)	LC
54.	Rock Bunting	<i>Emberiza cia</i> (Linnaeus, 1766)	LC
55.	White-capped Bunting	<i>Emberiza stewarti</i> (Blyth, 1854)	LC
56.	Scaly-breasted Munia	<i>Lonchura punctulata</i> (Linnaeus, 1758)	LC
57.	Barn Swallow	<i>Hirundo rustica</i> (Linnaeus, 1758)	LC
58.	Red-rumped Swallow	<i>Cecropis daurica</i> (Laxmann, 1769)	LC
59.	Long -tailed Shrike	<i>Lanius schach</i> (Linnaeus, 1758)	LC
60.	Jungle Babbler	<i>Turdoides striata</i> (Dumont,1823)	LC
61.	Common Babbler	<i>Argya caudat</i> (Dumont, 1823)	LC
62.	Indian Paradise Flycatcher	<i>Terpsiphone paradisi</i> (Linnaeus, 1758)	LC
63.	Grey Wagtail	<i>Motacilla cinerea</i> (Tunstall, 1771)	LC
64.	White Wagtail	<i>Motacilla alba</i> (Linnaeus, 1758)	LC
65.	White-browed Wagtail	<i>Motacilla maderaspatensis</i> (Gmelin,1789)	LC
66.	Black Redstart	<i>Phoenicurus ochruros</i> (Gmelin, 1774)	LC
67.	Blue Whistling Thrush	<i>Myophonus caeruleus</i> (Scopoli, 1786)	LC
68.	Chestnut-bellied Rock Thrush	<i>Monticola rufiventris</i> (Jardine & Selby, 1833)	LC
69.	Grey Bushchat	<i>Saxicola ferreus</i> (JE Gray & GR Gray, 1847)	LC
70.	Indian Robin	<i>Saxicoloides fulicatus</i> (Linnaeus, 1766)	LC
71.	Oriental Magpie Robin	<i>Copsychus saularis</i> (Linnaeus, 1758)	LC

72.	Pied Bushchat	<i>Saxicola caprata</i> (Linnaeus, 1766)	LC
73.	Plumbeous Water Redstart	<i>Phoenicurus fuliginosus</i> (Vigors, 1831)	LC
74.	Rufous-bellied Niltava	<i>Niltava sundara</i> (Hodgson, 1837)	LC
75.	White-capped Water Redstart	<i>Phoenicurus leucocephalus</i> (Vigors, 1831)	LC
76.	Crimson Sunbird	<i>Aethopyga siparaja</i> (Raffles, 1822)	LC
77.	Purple Sunbird	<i>Cinnyris asiaticus</i> (Latham, 1790)	LC
78.	Indian Golden Oriole	<i>Oriolus kundoo</i> (Sykes, 1832)	LC
79.	Cinereous Tit	<i>Parus cinereus</i> (Vieillot, 1818)	LC
80.	House Sparrow	<i>Passer domesticus</i> (Linnaeus, 1758)	LC
81.	Yellow-throated Sparrow	<i>Gymnoris xanthocollis</i> (Burton, 1838)	LC
82.	Russet Sparrow	<i>Passer cinnamomeus</i> (Gould, 1836)	LC
83.	Grey-hooded Warble	<i>Seicercus xanthoschistos</i> (J.E.Gray & G.R.Gray, 1847)	LC
84.	Lemon-rumped warbler	<i>Abrornis chloronotus</i> (J.E. Gray and G.R. Gray, 1847)	LC
85.	Whistler's warbler	<i>Seicercus whistleri</i> (Ticehurst, 1925)	LC
Family: Prunellidae			
86.	Black-throated Accentor	<i>Prunella atrogularis</i> (Brandt, 1843)	LC
Family: Pycnonotidae			
87.	Black Bulbul	<i>Hypsipetes leucocephalus</i> (Gmelin, 1789)	LC
88.	Himalayan Bulbul	<i>Pycnonotus leucogenis</i> (Gray, 1835)	LC
89.	Red-vented Bulbul	<i>Pycnonotus cafer</i> (Linnaeus, 1766)	LC
Family: Rhipiduridae			
90.	White-throated Fantail	<i>Rhipidura albicollis</i> (Vieillot, 1818)	LC
Family: Stenostiridae			
91.	Grey-headed canary flycatcher	<i>Culicicapa ceylonensis</i> (Swainson, 1820)	LC
92.	Yellow-bellied Fairy-Fantail	<i>Chelidorhynch hypoxanthus</i> (Blyth, 1843)	LC
Family: Sturnidae			
93.	Common Myna	<i>Acridotheres tristis</i> (Linnaeus, 1766)	LC
94.	Common Starling	<i>Sturnus vulgaris</i> (Linnaeus, 1758)	LC
Family: Sylviidae			
95.	Lesser Whitethroat	<i>Sylvia curruca</i> (Linnaeus, 1758)	LC
Family: Timaliidae			
96.	Black-chinned Babbler	<i>Cyanoderma pyrrhops</i> (Blyth, 1844)	LC
97.	Rusty-cheeked Scimitar- Babbler	<i>Erythrogonys erythrogonys</i> (Vigors, 1831)	LC
98.	Grey-winged	<i>Turdus boulboul</i> (Latham, 1790)	LC

	Blackbird		
Family: Vangidae			
99.	Common Woodshrike	<i>Tephrodornis pondicerianus</i> (Gmelin,1789)	LC
Family: Zosteropidae			
100.	Oriental White-eye	<i>Zosterops palpebrosus</i> (Temminck, 1824)	LC
101.	Cattle Egret	<i>Bubulcus ibis</i> (Linnaeus, 1758)	LC
102.	Grey Heron	<i>Ardea cinerea</i> (Linnaeus, 1758)	LC
103.	Indian Pond Heron	<i>Ardeola grayii</i> (Sykes,1832)	LC
104.	Intermediate Egret	<i>Ardea intermedia</i> (Wagler,1829)	LC
105.	Little Egret	<i>Egretta garzetta</i> (Linnaeus,1766)	LC
106.	Great Cormorant	<i>Phalacrocorax carbo</i> (Linnaeus, 1758)	LC
107.	Little Cormorant	<i>Microcarbo niger</i> (Vieillot,1817)	LC
108.	Blue-throated Barbet	<i>Psilopogon asiaticus</i> (Latham,1790)	LC
109.	Brown-headed Barbet	<i>Psilopogon zeylanicus</i> (Gmelin,1788)	LC
110.	Coppersmith Barbet	<i>Psilopogon haemacephalus</i> (Muller,1776)	LC
111.	Great Barbet	<i>Psilopogon virens</i> (Boddaert, 1783)	LC
112.	Brown-fronted Woodpecker	<i>Dendrocopos auriceps</i> (Vigors, 1831)	LC
113.	Gray-capped Woodpecker	<i>Yungipicus canicapillus</i> (Blyth, 1845)	LC
114.	Streak-throated Woodpecker	<i>Picus xanthopygaeus</i> (J.E. & G.R. Gray, 1846)	LC
115.	Scaly-bellied Woodpecker	<i>Picus squamatus</i> (Vigors, 1831)	LC
116.	Lesser Goldenbacked Woodpecker	<i>Dinopium benghalense</i> (Linnaeus, 1758)	LC
117.	Alexandrine Parakeet	<i>Psittacula eupatria</i> (Linnaeus,1766)	NT
118.	Plum-headed Parakeet	<i>Psittacula cyanocephala</i> (Linnaeus, 1766)	LC
119.	Rose-ringed Parakeet	<i>Psittacula krameri</i> (Scopoli, 1769)	LC
120.	Oriental Scops Owl	<i>Otus sunia</i> (Hodgson, 1836)	LC
121.	Asian Barred Owlet	<i>Glaucidium cuculoides</i> (Vigors, 1831)	LC
122.	Spotted Owlet	<i>Athene brama</i> (Temminck,1821)	LC

Checklist of Butterfly:

S.No.	Scientific Name	Common Name	Family
1.	<i>Ariadne merione</i>	Common castor	Nymphalidae
2.	<i>Belenois aurota</i>	Pioneer	Pieridae

3.	<i>Catopsilia Pomona</i>	Common emigrant	Pieridae
4.	<i>Celaenorrhinus leucocera</i>	Common spotted Flat	Hesperiidae
5.	<i>Cepora nerissa</i>	Common Gull	Pieridae
6.	<i>Colias erate</i>	Pale clouded yellow	Pieridae
7.	<i>Curetis bulis</i>	Bright sunbeam	Lycaenidae
8.	<i>Erionota torus</i>	Rounded palm Redeye	Hesperiidae
9.	<i>Euchrysops cnejus</i>	Gram blue	Lycaenidae
10.	<i>Euploea core</i>	Common crow	Nymphalidae
11.	<i>Eurema andersonii</i>	One spot grass yellow	Pieridae
12.	<i>Graphium doson</i>	Common Jay	Papilionidae
13.	<i>Ixias pyrene</i>	Yellow orange tip	Pieridae
14.	<i>Junonia almana</i>	Peacock pansy	Nymphalidae
15.	<i>Junonia hierta</i>	Yellow pansy	Nymphalidae
16.	<i>Junonia lemonias</i>	Lemon pansy	Nymphalidae
17.	<i>Junonia orithya</i>	Blue pansy	Nymphalidae
18.	<i>Lampides boeticus</i>	Pea Blue	Lycaenidae
19.	<i>Libythea lepita</i>	Common beak	Nymphalidae
20.	<i>Luthrodes pandava</i>	Plains cupid	Lycaenidae
21.	<i>Neptis hylas</i>	Common sailor	Nymphalidae
22.	<i>Papilio demoleus</i>	Lime Swallowtail	Papilionidae
23.	<i>Papilio polytes</i>	Common Mormon	Papilionidae
24.	<i>Parantica aglea</i>	Glassy tiger	Nymphalidae
25.	<i>Pelopidas mathias</i>	Small branded swift	Hesperiidae
26.	<i>Prosotas nora</i>	Common line blue	Lycaenidae
27.	<i>Tarucus hazara</i>	Dark violet pierrot	Lycaenidae
28.	<i>Tirumala limniace</i>	Blue tiger	Nymphalidae

Details of Rare, Endangered and Threatened species as per IUCN Red List found in Surinsar-Mansar Wildlife Sanctuary.

S.No.	Scientific Name	Common Name	Family	IUCN status
1.	<i>Aegyptius monachus</i>	Cinereous Vulture	Accipitridae	NT
2.	<i>Aquila nipalensis</i>	Steppe eagle	Accipitridae	EN
3.	<i>Aythya farina</i>	Common Pochard	Anatidae	VN
4.	<i>Gyps bengalensis</i>	White-rumped Vulture	Accipitridae	CE
5.	<i>Gyps himalayensis</i>	Himalayan Vulture	Accipitridae	NT
6.	<i>Manis crassicaudata</i>	Indian Pangolin	Manidae	EN
7.	<i>Neophron percnopterus</i>	Egyptian Vulture	Accipitridae	EN
8.	<i>Panthera pardus</i>	Leopard	Felidae	VU
9.	<i>Psittacula eupatria</i>	Alexandrine Parakeet	Psittaculidae	NT
10.	<i>Rusa unicolor</i>	Sambar Deer	Cervidae	VU

**Pictures of Rare, Endangered and Threatened species as per IUCN Red List
found in Surinsar-Mansar Wildlife Sanctuary.**



1. Steppe eagle. *(Photo Credit: Dr. Neeraj Sharma)*



2. White-rumped Vulture. *(Photo Credit: Dr. Neeraj Sharma)*

Plate-1



3. Himalayan Vulture. *(Photo Credit: Dr. Neeraj Sharma)*

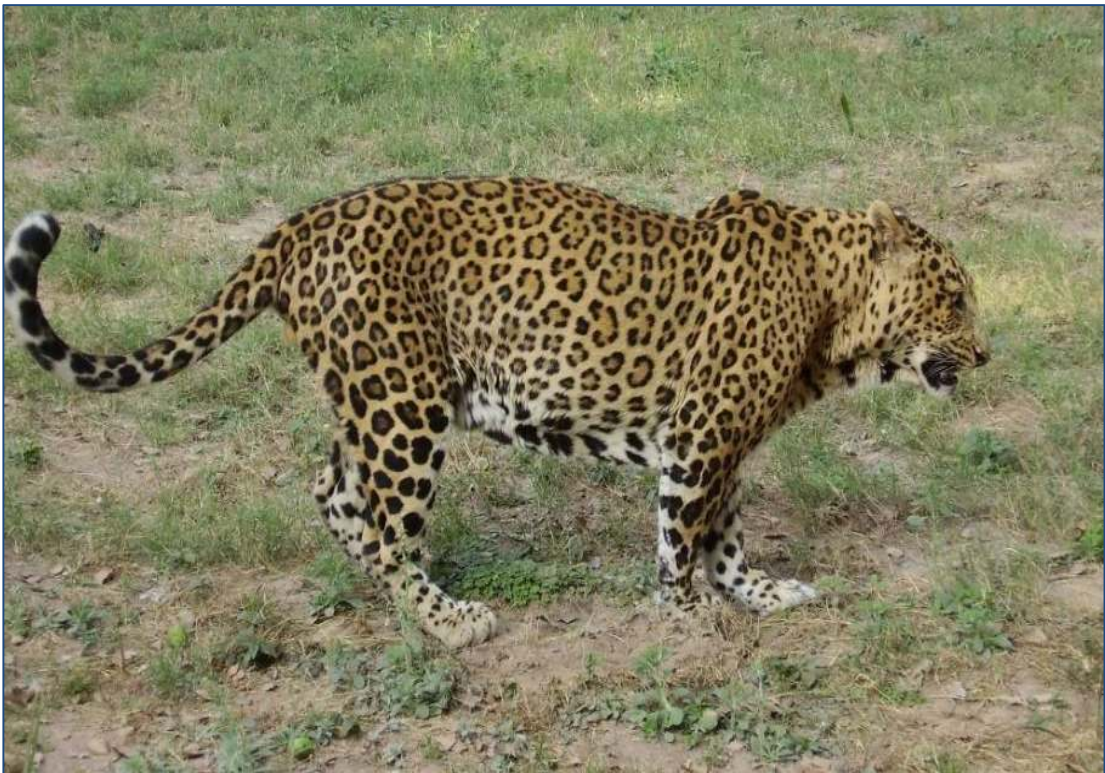


4. Indian Pangolin. *(Photo Credit: Wildlife Division Kathua)*

Plate-2



5. Egyptian Vulture. *(Photo Credit: Dr. Neeraj Sharma)*



6. Leopard *(Photo Credit: Wildlife Division Kathua)*

Plate-3



7. Alexandrine Parakeet . (Photo Credit: Dr. Neeraj Sharma)



8. Sambar Deer. (Photo Credit: Dr. Neeraj Sharma)

Plate-4

CHAPTER-3

HISTORY OF MANagements AND PRESENT PRACTICES

3.1 General

The Sanctuary was notified by the Govt. of Jammu & Kashmir vide SRO 138 dated 10th April 1990 named after the Two lakes i.e. Surinsar and Mansar situated almost at two corners of the sanctuary at 16 kms distance from each other. The Surinsar-Mansar Wildlife Sanctuary is spread over 97.82 sq. km and is roughly rectangular in shape, located between 32°41'.29" to 32°49'.28" North Latitude and 74° 59'.5" to 75°.09'.12" East longitude. The tract is located on GT Sheet No. 43 P/2 (surveyed in 1967-68 2nd edition). It covers an altitudinal range of 547 to 834 mts above mean sea level. The sanctuary also includes two Lakes. Surinsar & Mansar Lake and is included in the Ramsar site list under the International Convention of Wetlands in 2005 and National Wetland Conservation Programme of Govt. of India.

The Sanctuary falls in the Jammu Province and is situated at a distance of 60 Kms from Jammu via National Highway 44 Samba to then link Road Udampur-Mansar. And, 42 Km from Jammu via Surinsar. The nearest town is Samba a district H.Q. The area forms one of the important catchments of river Tawi. The Surinsar-Mansar Wildlife Sanctuary is situated between river Tawi in the North, Udampur-Samba road and Gombir Khad in the East, Battal-Billawar road and Mansar lake in the Southeast, Surinsar-Mansar Road in the Southwest and River Tawi and Surinsar Lake in the Northwest as per the notification. The Sanctuary spreads over three districts vis-à-vis Jammu, Udampur and Samba. The major part of the sanctuary falls in the Jammu District. The Sanctuary is of considerable conservation significance at global, national as well as regional levels. Surinsar-Wildlife Sanctuary is known for its natural bounty and some mythological importance. Surrounded by thickly wooded mountain ranges and it is a popular picnic spot. The beauty and natural splendor of both the lakes can be compared with the magnificence of Dal Lake and Nagin Lake of Srinagar. The Surinsar–Mansar Wildlife

Sanctuary is nestled in the midst of both the lakes and supports mammalian species and avifauna including Crane. This Wildlife Sanctuary with its abundant natural beauty is an ideal gateway for someone looking for tranquility and peace of mind. The quietness of forests around adds to serenity of the lake. Best visiting time for the animal lovers is from September to March and the bird watching season can be enjoyed in its full bloom from the month of March to the month of May.

3.2 Review of Past Management:

Till now there is no Approved Management Plan for Surinsar-Mansar Wildlife Sanctuary. However, a Management Plan for 2011-12 to 2015-16 was drafted by Wildlife Division Kathua with the following objectives:

- I. To conserve and protect the lower Shiwalik biodiversity including threatened and endangered species of flora and fauna along with their habitats.
- II. To protect the catchment areas of all the streams and rivers originating within sanctuary.
- III. To minimize conflict between the local people and wildlife and maintain a harmony between man and nature.
- IV. To reduce local peoples' dependency on the natural resources and enhance enterprise based livelihood opportunities without changing the traditional and cultural values.
- V. To evolve a system of people participatory sanctuary management and promote long term research and monitoring of endangered species and their habitat.

3.3 NTFP (Non-Timber forest produce): The population residing around the Sanctuary mainly depends on agriculture for their livelihood. The forest dependency is mainly for firewood.

3.4 Leases: In Wildlife sanctuary tree felling is not permitted, therefore, no area has been leased.

3.5 Major management activities.

3.5.1. Construction of natural trails and foot paths.

Table No. 3.1 Detail of fresh path/patrolling

S.No.	Fresh Path /Patrolling	Location
1	Co.5/JDR	2 Km
2	Co.7/JDR	2Km
3	Co.7/JDR	2Km
4	Co.9/JDR	2 Km
5	Co.10/JDR	2 Km
6	Co.10/JDR	2 Km
7	Co.15/JDR	2 Km
8	Co.15/JDR	2 Km

3.5.2 Development of Water holes: Water holes are constructed with in the Sanctuary area for providing water facility to the wild animals kept within the Sanctuary area.

Table No. 3.2 Construction of Water holes in Surinsar-Mansar Wildlife Sanctuary.

Year	Scheme	Comptt. No.	No of water holes
2017-18	CAMPA	Co. 14/JDR	1 No.
2018-19	CAMPA	Co. 12/JDR	1 No.
		Co. 13/JDR	1 No.
		Co. 05/JDR	1 No.
		Co. 7/JDR	1 No.
		Co. 7/JDR	1 No.
2019-20	CAMPA	Co. 7/JDR	1 No.
		Co. 9/JDR	1 No.
		Co. 9/JDR	1 No.

3.5.3 Construction of observation posts/watch towers: Watch tower shall be constructed to observe the animals in the natural habitat. The watch towers shall be of great help while conducting census and survey of animals in their natural surroundings.

3.5.4 Construction of Guard huts: Guard hut are made in the Sanctuary for anti-poaching staff.

3.5.5 Soil Moisture Conservation measures: The soil conservation work will be carried throughout the Sanctuary in erosion prone areas. The Sanctuary falls under lower Shivalik zone and is characterized with recent zoological formalities. In order to check soil erosion following works will be carried out.

- I. Construction of check dams.
- II. Nallas training works.
- III. Land slide control.

Table No. 3.3 Soil Moisture Conservation/Water Harvesting Structure in Surinsar-Mansar Wildlife Sanctuary.

Year	Scheme	Comptt No.	DRSM (in Cum)	Ponds (in No.)	Crate Work (in cum)
2015-16	CSS	Co. 10/JDR	40 cum	-	120 cum
		Co. 7/JDR	40 Cum	-	-
2017-18		Co. 12/JDR	200 cum	-	-
		Co. 10/JDR	185 cum	-	-
		Co. 9/JDR	90 cum	-	-
		Co. 7/JDR	90 cum	-	-
2018-19		Co. 13/JDR	-	1 No.	-
		Co. 7/JDR	90 cum	-	-
		Co.19/JDR	90 cum	-	-
2019-20		Co.10/JDR	90 cum	-	-
		Co.9/JDR	87 cum	-	-
		Co.12/JDR	86 cum	-	-
		Co.12/JDR	-	1 No.	-
		Co.7/JDR	-	1 No.	-
		Co.9/JDR	-	1 No.	-

3.5.6 Plantation: In the buffer zone the area under scrub which is degraded and deforested shall be rehabilitated by habitat manipulation or by planting suitable species of local plants.

Table No. 3.4 Plantation activities In Surinsar-Mansar Wildlife Sanctuary (2015-16 to 2019-20)

Year	Scheme	Compartment No.	Saplings (in No.)
2015-16	CAMPA	Co. 10/JDR	6000 No.
		Co. 13/JDR.	6000 No.
		Co. 12 & 13/ JDR	5000 No.

	CSS	Planting in WLS	8960 No.
		Planting in WLS	7560 No.
2016-17	CAMPA	Co. 10/JDR	10000 No.
		Co. 13/JDR.	10000 No.
		Co. 14/ JDR	1000 No.
2017-18	CAMPA	Co. 10/JDR	1600 No.
		Co. 13/JDR.	1600 No.
		Plantation in WLS	8000 No.
		Co. 10/JDR	4000 No.
		Plantation in WLS	4000 No.
2018-19	CAMPA	Co. 10/ JDR	1000 No.
		Co. 15/JDR	1000 No.
2019-20	CSS	Co. 15/JDR.	3000 No.
	CAMPA	Co. 14/ JDR	700 No.
		Co. 15/JDR	4500 No.
		Co. 15/JDR.	4500 No.
		Ornamental Plants	500 No.
		Co. 9/JDR	3000 No.
		Co. 9/JDR.	2900 No.
		Co. 7/ JDR	4000 No.
		Ornamental Plants	2000 No.
	Plantation in WLS	3000 No.	

3.5.7 Antipoaching activities: Wild animals are under constant threat of poaching.

Poached for protection of their crops, live-stock, or lust and to advent the trade of wild animal derivatives or their body parts. The department is fighting vehemently against these poachers. Poachers are needed to be kept under constant vigilance. Watch towers are needed to be constructed inside protected area near water holes or at vital places. Establishment of anti-poaching posts adjacent to protected area with deployment of Informers inside and adjacent to protected area will help to nab the culprits. Sometimes poacher take advantage of feeble legal process against them; cases against them are to be fought properly by engaging legal counsels through department. Most important factor to strengthen the anti-poaching operations against poachers is the mobility inside and outside protected area and a close liaison with police, courts and with anti poaching squad, informers for surprise raids and timely results.

3.5.8 Habitat Improvement: The Wild habitat are always subjected to degradation through biotic and abiotic interferences. The natural calamities like floods, forest fires, thunders, lightening, and drought are some natural miseries but man's greed in the form of poaching, tree felling, encroachment, diversion of Wildlife area for agricultural practices, annihilates the Wildlife and its habitat. These detrimental activities are to be arrested by initiating some management interventions. The protected area requires soil conservation activities like dry stone rubble masonry works (D.R.S.M), gully plugging works soil run-off. The degraded habitats are to be upgraded by way of plantation of fruit bearing trees with barbed wire closures.

Wildlife habitats should be protected against devastated forest fires which sometimes engulf chunk of wildlife areas and occasionally destroys precious wild animals. The clearance of old fire lines, besides making of new fire lines is a must in the protected area. The skilled labours are to be engaged in the fire protection squads. The fire-control equipment's like jig-saw, shovels, helmets, fire extinguisher, and rakes are to be purchased to extinguish the forest fires at time. Participation of the local people should be given top priority. In many cases local tribal's turned fruitful in dousing forest fires, before Government agencies operate in time. Weed infestation has posed major challenge in habitat Management which is being addressed by the department by engaging local labours.

3.5.9 Weed Remove:

Table No. 3.5 Removal of Lantana in Surinsar-Mansar Wildlife Sanctuary (2015-16 to 2019-20).

Year	Scheme	Comptt. No.	Area treated (in Ha)
2015-16	CAMPA	Co. 13,14,15/JDR	10 Ha
2018-19	CAMPA	Co.7/JDR	2 Ha
		Co.9/JDR	4 Ha
		Co.10/JDR	2 Ha
		Co.7/JDR	4 Ha
		Co.13/JDR	3 Ha
		Co.15/JDR	2.50 Ha

		Co.15/JDR	3.50 Ha
2019-20	CAMPA	Co.5/JDR	4 Ha
		Co.7/JDR	3 Ha
		Co.10/JDR	3 Ha
		Co.14/JDR	3 Ha
		Co.15/JDR	3 Ha
		Co.9/JDR	4 Ha

3.5.10 Fire line:- Various fire lines/inspection paths are made in the Surinsar-Mansar Wildlife Sanctuary.

Table No. 3.6 List of Fire lines since 2015-16

S.No.	Name of fire line	Comptt. No.	Length in KM
1.	2017-18	Co.5/JDR	2 Km
		Co.7/JDR	2Km
		Co.9/JDR	2 Km
		Co.10/JDR	2 Km
		Co.15/JDR	2 Km
2.	2018-19	Co.5/JDR	2 Km
		Co.7/JDR	2Km
		Co.9/JDR	2 Km
		Co.10/JDR	2 Km
		Co.15/JDR	2 Km
3.	2019-20	Co.5/JDR	2 Km
		Co.7/JDR	2Km
		Co.9/JDR	2 Km
		Co.10/JDR	2 Km
		Co.15/JDR	2 Km
4.	2020-21	Co.5/JDR	2 Km
		Co.7/JDR	2Km
		Co.9/JDR	2 Km
		Co.10/JDR	2 Km
		Co.15/JDR	2 Km

3.6 Forest Protection: Sanctuary is occupied by human settlement in scattered manner. It is very difficult to demarcate the whole Surinsar–Mansar wildlife Sanctuary as its area is 97.82 sq.kms which is too large and hence possibility of encroachment is high.

3.6.1 Legal status: The Surinsar-Mansar Wildlife was notified as wildlife sanctuary vide SRO 138 dated 10th April 1990 and the administration of the Sanctuary is vested with the department of Wildlife Protection, J&K Govt.

3.6.2 Poaching: - As per records no poaching has been reported in the Sanctuary since past 2 decades.

Table No. 3.7 Detail of Poaching cases since 2015-16 in SurinsarMansar Wildlife Sanctuary.

S.No.	Year	No. of Cases	Name of Species.	Remarks
1	2015-16	Nil	-	No Poaching case Reported inside Sanctuary.
2	2016-17	Nil	-	
3	2017-18	Nil	-	One case of hunting reported outside sanctuary in respect of hunting of Kalmoocha (Rufus turtle Dove) at Nud area for which FIR has been lodged in Samba Polce Station on 20.05.2020 under Wildlife Protection Act (1972) Sec 9 and 51.
4	2018-19	Nil	-	
5	2019-20	Nil	-	

3.7 Dependency on area.

3.7.1 Domestic livestock grazing: The available stretches of grass lands in the Sanctuary are still being used by villagers for cattle grazing. Unregulated grazing may cause spread of many communicable diseases to the wildlife in Sanctuary.

3.7.2 Fire wood collection: The villagers collect fire wood from the adjoining forest area.

3.8 Current Land use Practices and Problems:

3.8.1 Agro-pastoralism: The Surinsar–Mansar wildlife Sanctuary is surrounded by number of villages. The residents are mainly farmers and their agricultural lands extend right up to the boundaries of the Sanctuary. Constant vigil by field staff prevents any intrusion but in the absence of a reliable fencing and inadequate staff the threat of encroachment looms large.

The area experiences enormous grazing pressure during winter season from the domestic cattle and sheep owned by the nomadic gujars. Owing to the ever-increasing livestock population the grazing pressure on the sanctuary is immense. The extent of grazing is far beyond carrying capacity of pasture land and is adversely affecting the natural regeneration of the forests. The over grazing results in degradation of the habitat, destruction of germinating trees, shrubs and grasses.

3.8.2 Forest Fires: Forests fire is a global phenomenon and causes extensive loss to biodiversity. Forests fire are seasonal and are at their peak in the dry season. The dried-up grass and trees are prone to natural fires and manmade fires which cause damage to forests and Wildlife.

Table No. 3.8 Fire incidents since 2015-16 in Surinsar-Mansar wildlife Sanctuary

S.No.	Year	Date of Offence	Location/ Comptt	Area Burnt	Remarks
1	2015-16	01.06.2015 02.06.2015 13.06.2015 18.06.2015	Co.10/JDR Co.9/JDR 7/JDR 10/JDR Jaithly	2 Kanal 4.5 Kanal 2.5 Kanal 4 Kanal	No damage assessed.
2	2016-17	06.05.2016 09.06.2016	Co.15/JDR, Chilla Co.10/JDR, Jaithly	6.5 Ha. 1.2 ha.	Ground fire. No damage assessed.
3	2017-18	-	Nil	-	-
4	2018-19	-	Nil	-	-
5	2019-20	05.06.2019	Co.10/JDR	5 Ha.	No Major Damage/ ground fire. Suppressed by control room team with the help of fire watcher engaged for same purpose.
6	2020-21	17.06.2020	Co.14/JDR	2 Ha.	No Major Damage/ ground fire. Suppressed by control room team with the help of fire watcher engaged for same purpose.

3.8.3 Tourism and Visitor management: The J&K Tourism Department and JKTDC have a cluster of building around the water bodies, particularly in Mansar. These departments have introduced boats for tourists in Mansar which may cause damage to fauna particularly turtles. Visitors while boating go close to the nesting sites and disturb the birds. The visitors dump the garbage on the bank of lake, which find its way into the water and pollute the water, endangering flora and fauna. Such activities are to be actively regulated by the Wildlife Department.

3.8.4 Habitation: The habitation in the vicinity and catchment area of the lakes is putting considerable pressure on water bodies. There is about 200 families residing in the catchment in Mansar with numerous shops adjacent to the lake. A considerable amount of waste material enters into the lakes as kitchen refuse, detergents, animal excreta and agricultural runoff.

3.8.5 Sedimentation Pattern: Rate of sedimentation in Mansar lake is 0.37 cm³/year near boat club area and in the vicinity of the Mansar Bazaar. The deeper portion receive the sediments at a lower rate i.e., 0.14 cm³. Due to intensive agricultural practices in the adjoining fields and steep catchment area on hill slopes and denudation, a large amount of silt finds its way into the lake particular during rainy season. Most of the sediment deposition takes place near the banks which later on slide to the deeper section. Besides reducing the storage capacity of the lakes, the segment deposition encourages growth of macrophytes and alga in shallow water.

3.8.6 Weed infestation: The weed vegetation plays a key role in lakes ecology particularly in providing cover, nesting and breeding sides to birds but excessive infestation of weed has threatened the lake alarmingly. Ipomoea species has colonized large parts of the lake along its periphery. According to a report by WWF this plant was used by villagers of catchment area as hedge along their fields which found its way into the lake. According to experts if this weed is not removed the lake will be lost to this plant in a matter of few years.

3.8.7 Grazing and animal excreta: -The domestic livestock of local residents graze on the banks which loosens the soil gets its way into the lake. Besides the domestic livestock, particularly buffalo and horses are brought to the water, which increase the concentration of organic matter in the lakes and causes eutrophication.

3.8.8 Socio-religious activities: The lakes besides being famous tourist spots in Jammu region are also revered for their religious sanctity. Numbers of temples located on the bank of these lakes are visited by devotees throughout the year. Various religious activities are performed on the bank of these lakes. The devotees and local residents take bath and wash their clothes using detergents in the lake. The western bank of the Mansar lake is used as cremation ground by the locals. Attempt is made by the Department of Wildlife Protection to shift the cremation ground away from the lake.

3.8.9 Inter agency programmes and problems:- As such there is problem of unemployment in the areas particularly for the youth. Except tourism related activities, there are no major developmental programmes running apart from Government initiatives through Panchayats Agriculture labour work being made available by private farmers.

3.9 Population Estimation:

3.9.1 Population Estimation conducted during March 2013: The pre-defined transects used as routine inspection routes or trails by the field staff were re-identified and marked on ground during reconnaissance Survey. Each transect was walked by a team of trained observers and all the teams started at sunrise and was repeated for three consecutive days.

Results.

In total, ~80 km effort was made to sample the 7 transects during the three days of wildlife population monitoring exercise in the Surinsar-Mansar Wildlife Sanctuary. The number of different species recorded and number of individuals per sighting are shown in Table as under. The encounter rate was

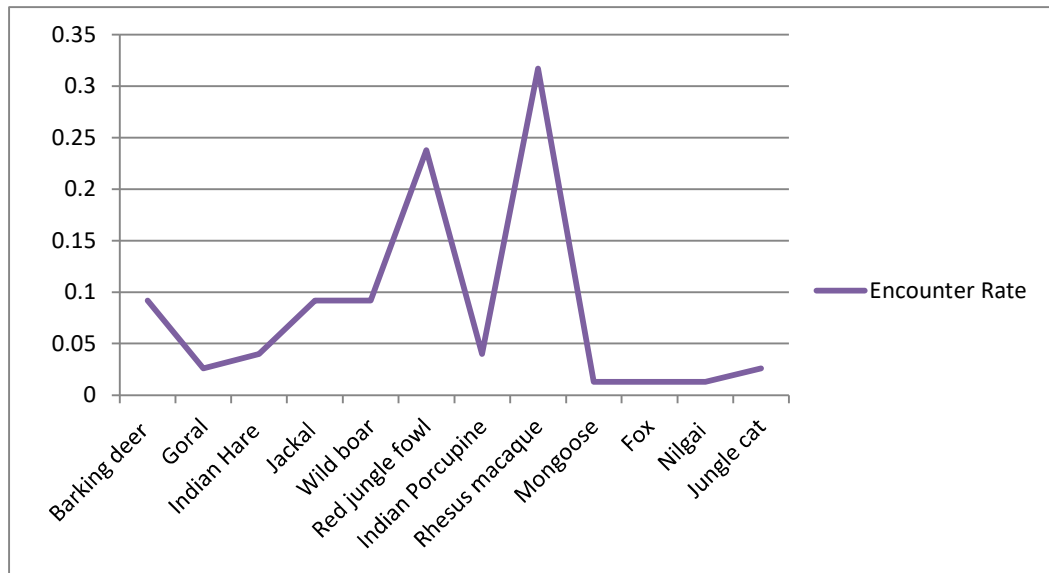
calculated for various species (Table) and the highest encounter rate was recorded for Rhesus macaque (0.317) and lowest for Nilgai (0.013).

Table-3.9 Number of species recorded and number of individuals of various species during surveys conducted on 6th, 7th and 8th March 2013 in Surinsar-Mansar Wildlife Sanctuary.

Species	No. of sightings	No. of individuals
Barking deer	7	7
Fox	1	2
Goral	2	2
Hare	3	3
Jackal	7	7
Jungle Cat	2	2
Macaque	24	356
Mongoose	1	1
Nilgai	1	1
Peafowl	25	59
Porcupine	3	3
Red jungle fowl	18	40
Wild boar	7	7

Table 3.10: Encounter rates of various species during surveys conducted on 6th, 7th and 8th March 2013 in Surinsar-Mansar Wildlife Sanctuary.

Species	Encounter Rate
Barking deer	0.092
Goral	0.026
Indian Hare	0.040
Jackal	0.092
Wild boar	0.092
Red jungle fowl	0.238
Indian Porcupine	0.040
Rhesus macaque	0.317
Mongoose	0.013
Fox	0.013
Nilgai	0.013
Jungle cat	0.026

Fig:3.1 Encounter rates of various species.

3.9.2 Population Estimation conducted during December 2020 to May 2021:

The Census was carried out by the Institute of Mountain Environment, University of Jammu Bhaderwah Campus, J & K.

Methodology and field protocols

Field Sampling

The camera trapping survey was carried out between December 2020 to May 2021 in Mansar-Surinsar Wildlife Sanctuary. For field sampling, divided the whole study area arbitrary into ninety one (91) grids and the size of each grid is 1 km² (Figs 3.2 & 3.3).

Camera trapping (detection / non detection)

The camera traps (IR Cameras) were installed in fifty one (51) grids and avoid rest of the grid owing to high anthropogenic disturbances. At each station, the camera traps were deployed 50 cm above the ground (Jenks *et al.* 2011, O'Connell *et al.* 2011, Tobler *et al.* 2008) along the paths, forest trails, streams, water holes, and other locations likely to record the animal movement in the landscape. The cameras were set to operate round the clock programmed to take sequential photographs with 5 seconds' delay. All the

cameras were deployed for a period of 15 days and checked weekly to download the data or replacement of batteries. The detection of the species in each camera was analysed using occupancy framework (Mackenzie *et al.* 2003) by treating days of operation as sampling replicates.

Data analysis:

All the images were extracted out of the camera traps retrieved from the field. Besides wild animals and birds, the photographs of human traffic (ground staff, villagers, pilgrims and passer byes) and domestic animals (livestock, dogs) were segregated for further analysis. The animals and birds up to species level were identified using field guides viz., Menon (2014) and Grimmet *et al.* (2014). The blank captures including the exposures where the species were unidentifiable besides the data on humans and livestock was excluded from the current analysis. Each photo was rated as an independent event, if the time between consecutive photographs of the same subject was more than 30 minutes (O'Brien *et al.*, 2003). As study is not focused on identifying individual animals, the arbitrary time between independent photos was unbiased. Transect-sampling and camera-trap data were pooled to estimate the species abundance and diversity in MS Excel and Past version 4.1 (Hammer *et al.*, 2001) software. The overall density of mammals was calculated by dividing total number of species by the total area of the sanctuary. The grid wise population density of the species was calculated by dividing the total number of individuals of the species in the grid by the total area of all grids. Menon (2014) and Johnsingh (2013) was followed for assigning dietary guilds to mammals.

Fig:3.2 FCC of Mansar Surinsar Wildlife Sanctuary (98 km2), Kathua

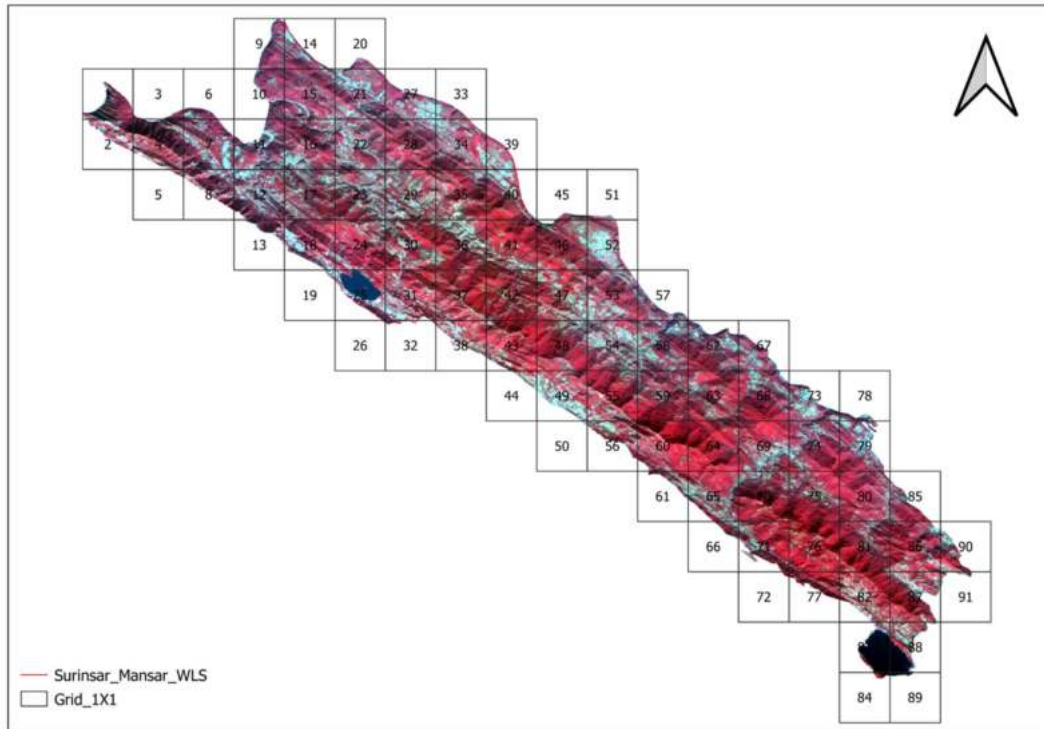
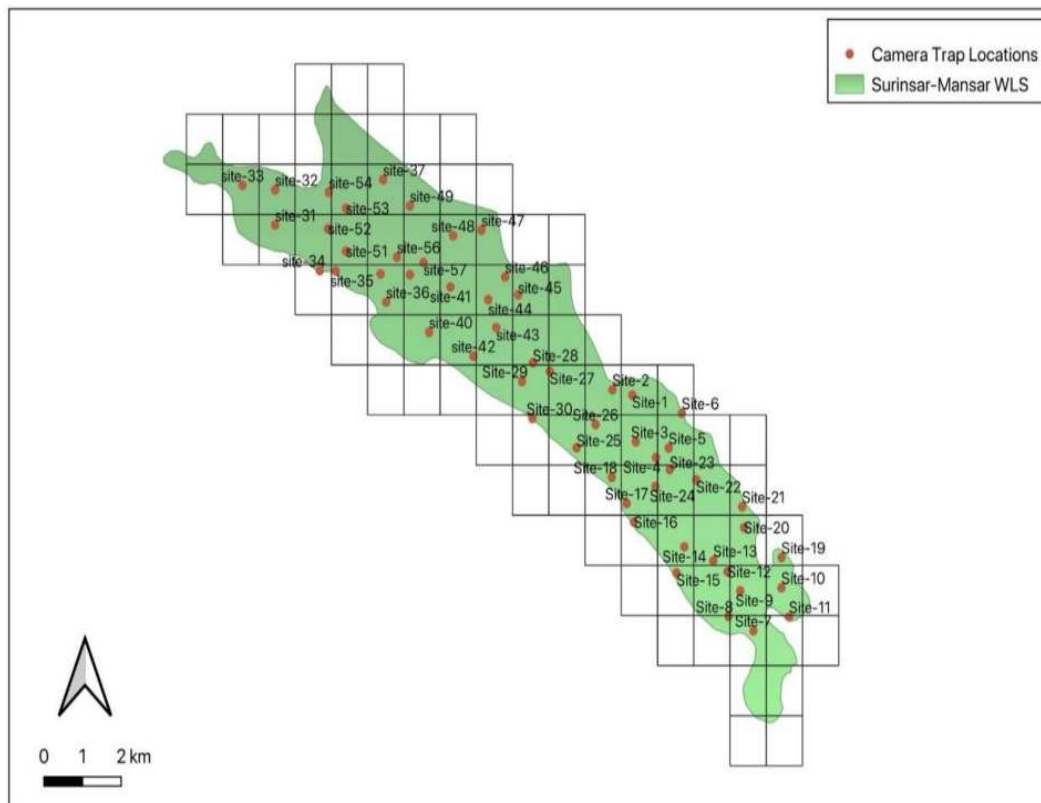


Fig: 3.3 Location of IR Cameras (Camera traps) installed during the sampling period



Results:**Richness and diversity attributes of mammals**

Camera traps were deployed at 57 locations in 51 (1km²) grids for 1195 nights. The observations could not be retrieved for 5 locations due to the device malfunctioning, card damage and theft. A total of 12 species of mammals belonging to 6 orders and 9 families were recorded. Of the total species recorded, family Felidae (2), Viverridae (2) and Cervidae (2) carries two species each whereas the families Cercopithecidae, Herpestidae, Suidae, Leporidae, Manidae, and Hystricidae occupied one species each. According to IUCN 3.1, only three species viz., Indian Pangolin (*Manis crassicaudata*), Sambar Deer (*Rusa unicolor*), and Common Leopard (*Panthera pardus*) are placed in Threatened category as Endangered (Indian Pangolin) and Vulnerable (Sambar Deer, Common Leopard) respectively and remaining all other species (n=9) fall in Least Concern category. Besides mammals, 14 species of birds have been captured by Infra-red cameras in the whole landscape.

Analysis of their feeding behaviour revealed that out of total 12 mammals, five species are omnivores (n=5) followed by herbivores (n=4), carnivore (n=2) and insectivores (n=1). Among the omnivores, Rhesus macaque (*Macaca mulatta*) exhibited the highest relative abundance (RA= 58.55%) followed by Common palm civet (RA= 5.49%), Wild Boar (RA= 4.49%), Small Indian Civet (RA = 2.74%), and Common grey mongoose (RA= 0.74%). Of the four herbivores, Indian Crested Porcupine (RA= 15.23%) was the most encountered followed by Muntjac (RA = 9.61%), Rufous-tailed hare (RA = 0.99%) and Sambar deer (RA =0.74%) was the least. Of the two species of carnivore, Leopard cat (RA=0.74%) was more encountered as compared to Common leopard (0.24%). Indian pangolin (RA= 0.37%) was the only insectivores recorded. The observed relative abundance of the species encountered during the current investigations is presented in

Fig. 3.4. The observed Density of mammals observed in Mansar-Surinsar Wildlife Sanctuary is presented in Fig. 3.5.

Fig.3.4 Relative abundance of all mammals observed in Mansar-Surinsar Wildlife Sanctuary.

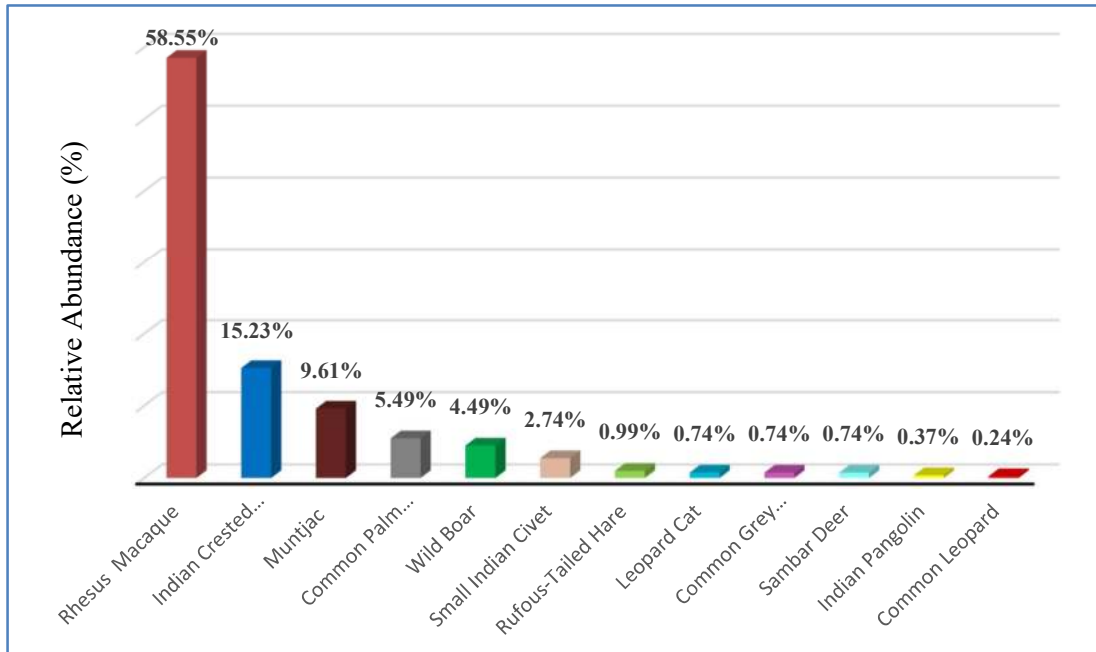
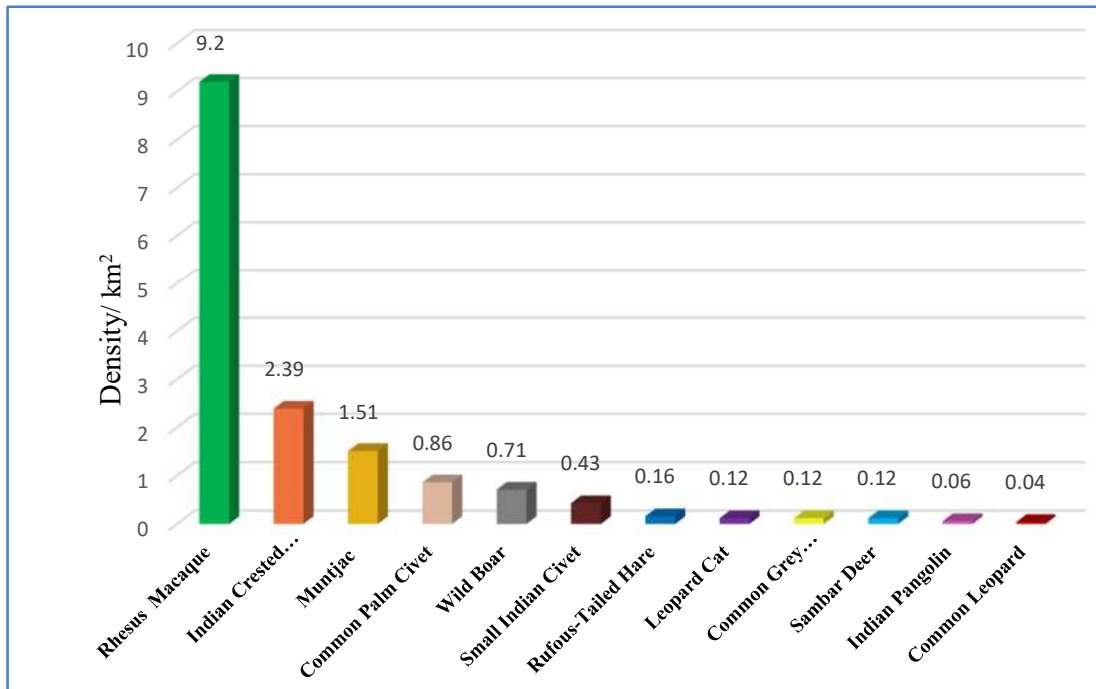


Fig.3.5. Density of mammals observed in Mansar-Surinsar Wildlife Sanctuary



Results of IR Cameras (Camera traps) in Mansar-Surinsar Wildlife Sanctuary



Rhesus macaque (Site-13/Grid-75).



Rhesus macaque (Site-25/Grid-55)



Common Leopard (Site-46/Grid-41)



Common Leopard (Site-12/Grid-76)



Leopard Cat (Site-9/Grid-81)



Leopard Cat (Site-9/Grid-81)

Plate-5



Common Palm Civet(Site-9/Grid-24)



Common Palm Civet(Site-11/Grid-87)



Small Indian Civet (Site-27/Grid-54)



Small Indian Civet (Site-51/Grid-17)



Common Grey Mongoose(Site-55/Grid-30)



Common Grey Mongoose(Site-49/Grid-28)

Plate-6



Sambar Deer(Site-5/Grid-68)



Sambar Deer(Site-21/Grid-79)



Muntjac (Site-13/Grid-75)



Muntjac (Site-49/Grid-28)



Wild Boar(Site-13/Grid-75)



Wild Boar(Site-50/Grid-24)

Plate-7



Plate-8

3.9.3 Management plan preparation and population monitoring of turtles in

Surinsar-Mansar wetland: The Preparation of Management Plan of Surinsar-Mansar Wetland is being prepared by the Wildlife Institute of India, the interim report of which was submitted in December, 2020. The outline of the report is reproduce as under:

Following are the activities conducted during the above-mentioned time period under the ongoing project “**Management plan preparation of Surinsar-Mansar wetland and population monitoring of turtles in Jammu and Kashmir, India**”

1. Carried out water quality analysis of Surinsar- Mansar wetland during the post lockdown period June’ 2020.
2. Identification of cryptic species of softshell turtle based on molecular techniques.
3. Confirmed the first distributional record of freshwater turtle species *Pangshura tentoria* (Indian tent turtle), from Mansar lake, Jammu & Kashmir, India.
4. Preparation of LULC, Infrastructure, Water depth, Fish & Turtle hotspots maps of Mansar lake using GIS tools. [N.B.- Maps for Surinsar lake is under progress.]
5. Result of questionnaire survey on people perception towards conservation of Mansar & Surinsar wetlands was conducted from October’2020 to November’2020.

3.10 Tourism interpretation and conservation education: -

- I. Water pollution (polythene carried by tourists).
- II. Degradation of habitat due to excess tourism.
- III. Irresponsible visitor’s behavior leading to accident involving wild animals or human being.

3.10.1 Research monitoring and training: - The Research in Wildlife and Forest Ecology is being carried by the different agencies including Wildlife

Department and Department of Zoology and Botany of Jammu University. Well organized research on biological and socio-economic aspects help in arriving at appropriate management decisions. A few ecological studies and floral and faunal surveys conducted in Sanctuary by the Department have helped in basic understanding of the Sanctuary. However, several long term and short term studies are yet to be carried out in the Sanctuary.

3.11 Administrative set up: - Presently, Surinsar-Mansar Wildlife Sanctuary is one of the Administrative unit of Wildlife Division Kathua of Warden Kathua. The Sanctuary is managed by Range Officer, Mansar with headquarter at Mansar assisted by two Foresters stationed at Surinsa-Mansar. The day to day activities and protection of Sanctuary is carried out through Wildlife Guards, Helpers and Need based labourers.

3.12 Infrastructure:-

3.12.1 Buildings:- Infrastructure include Range Office, Eco Hut, Chowkidar Hut, Guard Hutt/ Inspection Hut, Control Room, Rescue Centre and Deer Park Mansar.

Table No. 3.11 Building Details

S.No.	Building Name
1	Range Office Complex Mansar
2	Eco Hut Mansar
3	Chowkidar Hut Near Eco Hutt Mansar
4	Guard Hut Kattal Co.7/JDR Mansar
5	Guard Hut (FEED Store) Mansar
6	Guard Hut Pathwar Co. 9/JDR Mansar
7	Inspection Hut Co.10/JDR Surinsar
8	Guard Hut/Control Room Co.10/JDR Surinsar
9	Guard Hut Urkhal Co.15/JDR Surinsar
10	Guard Hut Co.12/JDR Surinsar
11	Guard Hut Bargah Co.14/JDR surinsar

Control Room/ Rescue Centre	Geo-Coordinates
Control Room, Mansar	32°41'47.40"N 75° 8'27.77"E
Rescue centre, Mansar	32°41'48.68"N 75° 8'26.63"E
Control Room Surinsar	32°46'0.14"N 75° 2'27.70"E

3.12.2 Trek paths:- 3 Nos. of Trekking route have been notified in Surinsar-Mansar Wildlife Sanctuary vide Government order no. 215 of FST of 2019 dated: 15-07-2019 (Annexure-V).

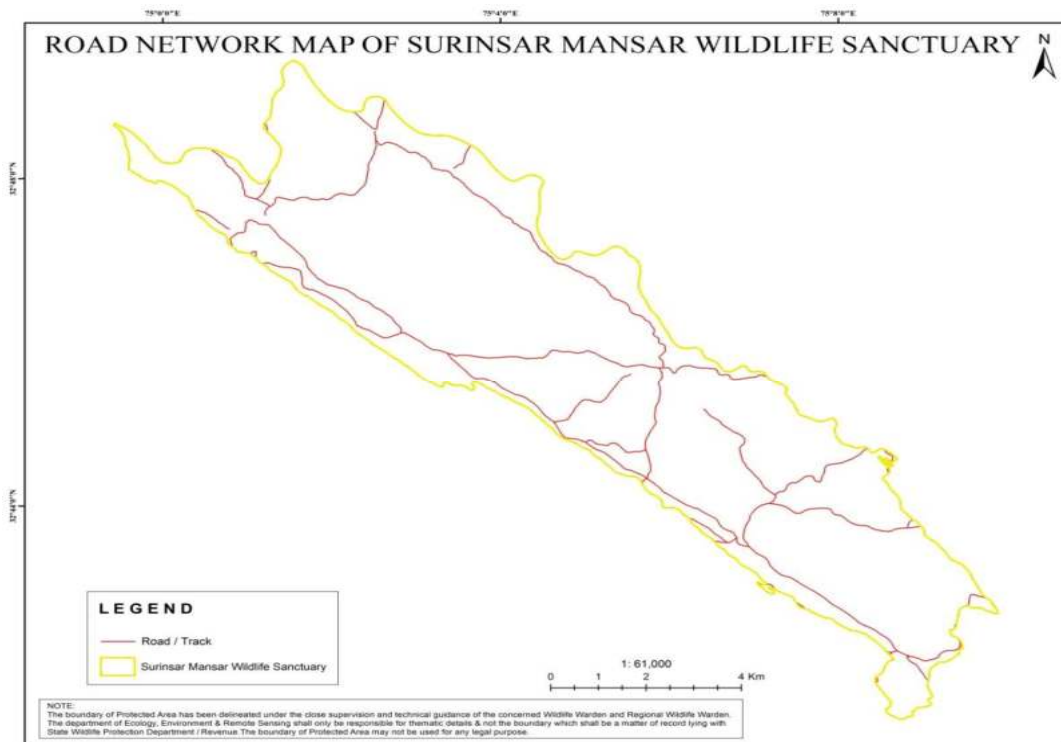
3.12.3 Roads:- There are two major roads in the Sanctuary namely Surinsar to Mansar and Mansar to Battal. Besides, a few fair-weather roads are also there in the Sanctuary.

1.	Surinsar-Mansar	16 Kms
2.	Mansar to Battal	10 Kms

3.13 Communication:- An effective communication in terms of road, telecommunication is very essential. Mostly the telephonic facility is used in the said area because of the good and fast communication network.

POSTAL ADDRESS

Wildlife Warden Wildlife Division Kathua -184101 Telephone No. 01922-234622 Email address: wildlifekathua1@gmail.com Mobile No. +91 9419154255	Range Officer Wildlife Range Mansar-184121 Email address:- surinsarmansarwildliferange@gmail.com Mobile No. +91 7006440871
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3.14 Summary of threats to Wildlife

1. **Grazing by Nomadic grazers:** - The Surinsar-Mansar Wildlife Sanctuary is under heavy pressure of grazing i.e. livestock population of local people and nomadic grazers. This pressure increases during the winter months when nomadic Gujjar and Bakerkwals in large number along with their livestock populations descend to the area of this Sanctuary. These cattle population graze almost in every compartment of the Sanctuary even after the notification of the area as a Wildlife Sanctuary. These nomadic grazers need to be provided with alternate areas outside the Sanctuary. The first important step in controlling the menace in the area is to close or control grazing.
2. **Fires:** - Fires is a global phenomenon and cause extensive loss to biodiversity. Forests fires are seasonal and they usually start in the dry season. Owing to the long spell of dryness during the summer and autumn season. The dried-up grass and trees are prone to natural fires and manmade fires which cause damage to forests and Wildlife.
3. **Protection:** - Crop raiding by the wild animals is another problem. Sambar and Wild boar are the main wild species that damage crops. Peafowl and monkeys also damage the crop. Cattle are grazed by villagers because limited fodder is available in their lands.

The wildlife wing is short of staff. Protection infrastructure is highly inadequate and mobility of staff is a problem, though local casual staff is available for protection. Antipoaching team is also established for handling man-animal conflict situation. Occasionally encroachment is an issue and it is basically due to unclear boundaries of the area and demand for land use for expanding agriculture that is prevalent in the surrounding area.

Besides, following threats poses challenge for Wildlife management in the Sanctuary:

- i. Invasive alien species
- ii. NTFP collection
- iii. Illicit felling
- iv. Firewood collection

- v. Human-wildlife conflict
- vi. Soil erosion
- vii. Encroachments
- viii. Poachers and smugglers
- ix. Wildlife diseases

3.15 Training:- The present staff doesn't carry any experience in Wildlife management, like use of advanced equipments like GPS, Camera trap etc and maintenance and use of firearms and wireless. The lack of trained staff seriously affects the Sanctuary programmes.

3.16 Vehicles:- At present, there is only one Bolero available with this division and is used extensively for Wildlife Warden. It is grossly inadequate to meet the requirements if Wildlife Protection in the whole Kathua district. Rental vehicles are hired for rescue and release of straying wildlife and mobile patrolling, etc. as per requirement.

CHAPTER 4

THE PROTECTED AREA AND THE INTERFACE LAND USE SITUATION

4.1 The existing situation in the zone of influence.

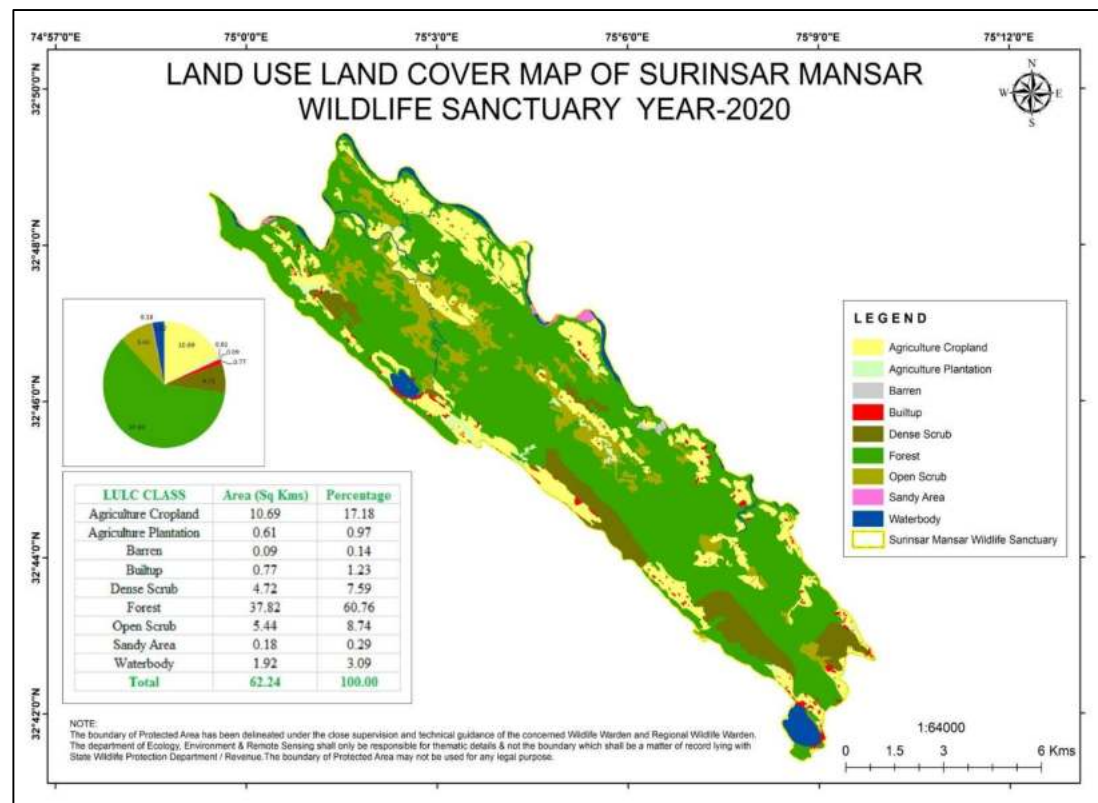
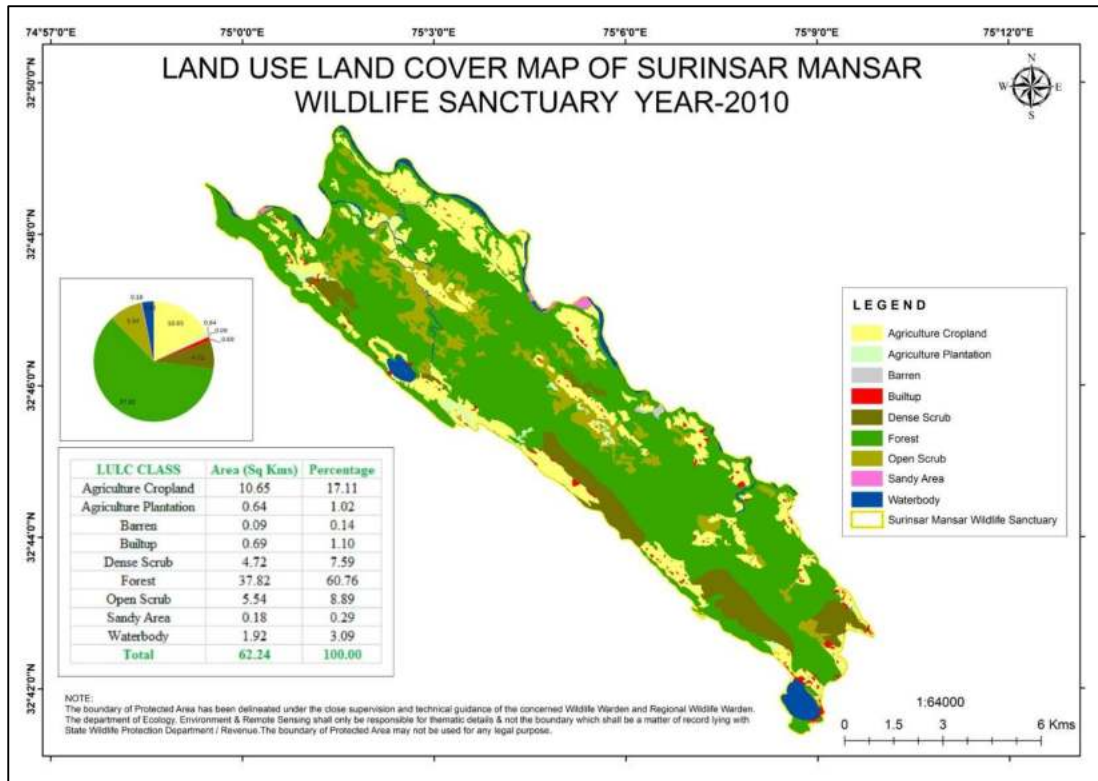
As the rights remain unsettled, it is not possible to distinguish between the genuine right holders and encroachers. The zone of influence within sanctuary varies from the activities of those who occupy the lands within, to those outside who use the sanctuary for livelihood purposes. There are villages living along the boundaries of sanctuary. The livelihood of villagers is agriculture, animal husbandry, poultry and dairy activities. Prior to declaration of Sanctuary, people were dependent upon the resources of the areas such as livestock grazing, firewood collection. The villagers living near to the sanctuary suffer from economic loss like crop raiding and loss of livestock due to straying of wild animals from the sanctuary. Traditionally the fringe residents are conservation oriented and therefore extent of alienation is not very significant but today because of increase in crop damage by Wild boar, Nilgai, Sambar deer, Porcupine and livestock depredation by leopard the attitude is changing. The zone of influence of Surinsar-Mansar Wildlife Sanctuary is upto 2 km of the legal boundaries.

4.1.1 PA- People interference: In the past, the area was mainly used by the villagers for grazing their cattle. People use resources from sanctuary like firewood and often use reserved area for cattle grazing. The various sources from the sanctuary meet their various purposes. Now, the people frequently suffer crop raiding by wild animals.

4.2 Development programmes and conservation issues.

Major activity around the area is expanding agriculture. The agriculture requires massive input in the form of fertilizers and insecticides. Another major issue is extensive construction in the surrounding area which needs to be planned so as to ensure its compatibility with the area. An evaluation of

government agency programmes for development implications for sanctuary area.



(Figure 4.1: Comparative Google Images of 2010 and 2020)

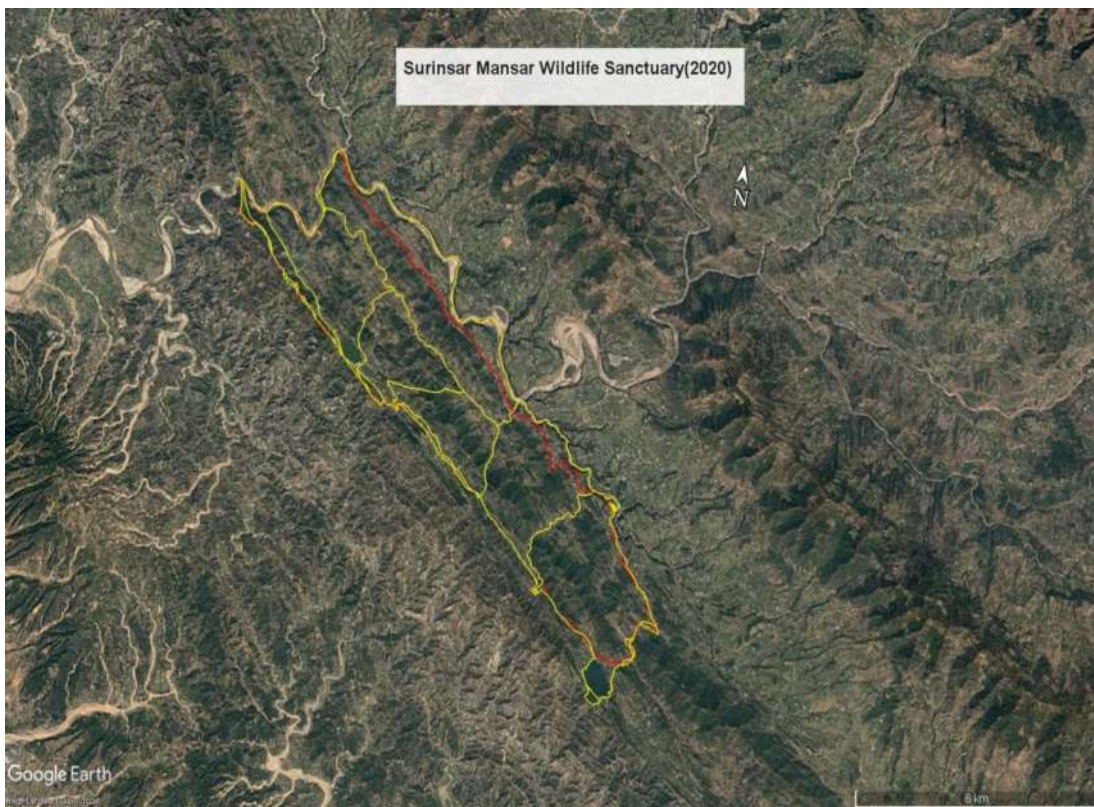
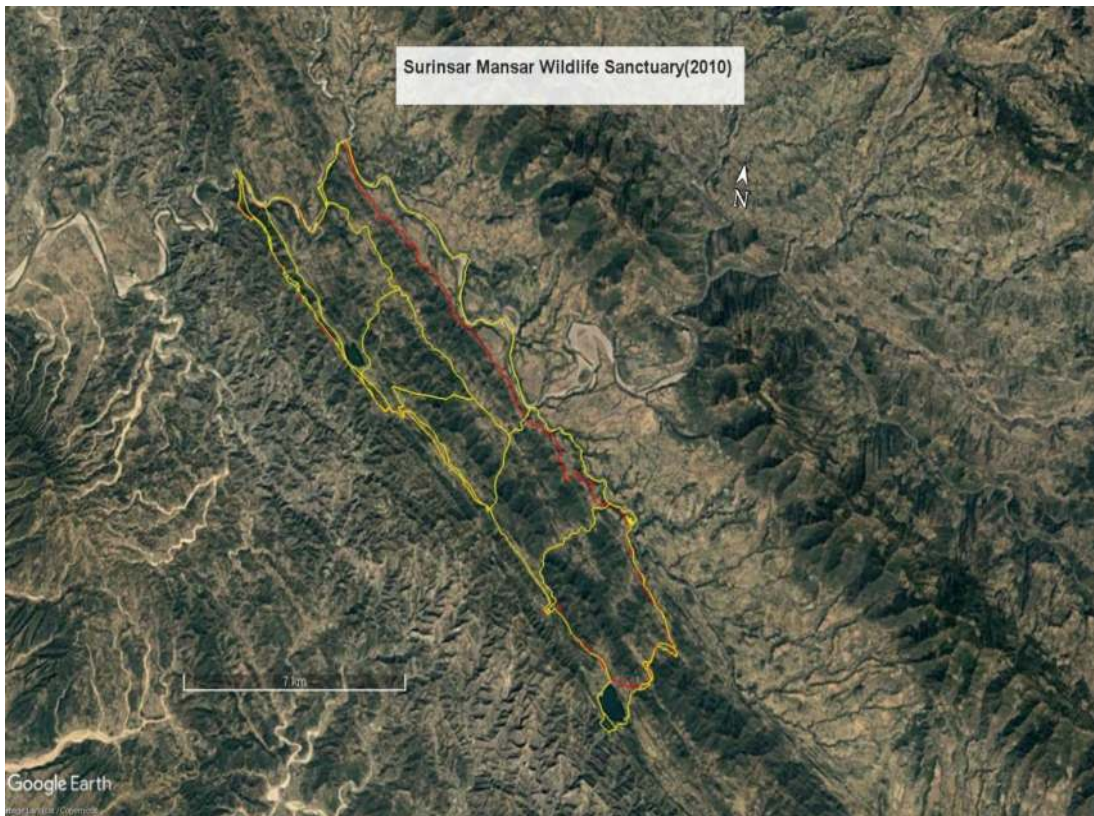


Table:4.1 Landuse change in Surinsar Mansar Wildlife Sanctuary (2010 to 2020)

LULC CLASS	SURINSAR MANSAR WILDLIFE SANCTUARY (2010)		SURINSAR MANSAR WILDLIFE SANCTUARY (2020)		Change in sq.kms
	Area (Sq Kms)	Percentage	Area (Sq Kms)	Percentage	
Agriculture Cropland	10.65	17.11	10.69	17.18	0.04
Agriculture Plantation	0.64	1.02	0.64	0.97	0
Barren	0.09	0.14	0.09	0.14	0
Builtup	0.69	1.1	0.77	1.23	0.08
Dense Scrub	4.72	7.59	4.72	7.59	0
Forest	37.82	60.76	37.82	60.76	0
Open Scrub	5.54	8.89	5.44	8.74	-0.1
Sandy Area	0.18	0.29	0.18	0.29	0
Waterbody	1.92	3.09	1.92	3.09	0
Total	62.24	100	62.24	100	

4.2.1 Evaluation of Government and Non-Government agencies role.

There are several governments and some non-government agencies are working in development of area and the wildlife department is also working in development of sanctuary area like construction of water harvesting structure, plantation, watch tower, bird watching trail etc. and other facilities for tourist visiting in the area.

4.2.2 The interplay of market forces and their impact.

Due to lack of proper marketing system, the marginal farmers of the area may undergo exploitation by intermediaries.

4.2.3 Eco development initiatives.

Though dialogues have been initiated for eco-development activities, it has not taken shape due to certain conflict related to settlement of rights. Efforts towards meaningful eco-development are still going on. The sanctuary does not have a trained team for the planning, implementing and coordinating of eco-development activities.

Table No. 4.2 Eco-development Activities Surinsar-Mansar Wildlife Sanctuary.

Year	Eco-development	Scheme	Financial (in lacs)	Expt.
2015-16	--	--	--	--
2016-17	--	--	--	--
2017-18	--	--	--	--
2018-19	--	--	--	--
2019-20	Construction of Bowli at Ward 5	CAMPA	0.69892	0.69892
	Construction of Bowli at Ward 3	CAMPA	0.75292	0.75292
	Construction of Bowli at Ward 1	CAMPA	0.79642	0.79642
	Construction of inspection path	CAMPA	0.80000	0.80000
	Construction of Bowli at Mansar Ward no. 3	CAMPA	0.79842	0.79842
	Construction of Inspection Path Chilla towards Bhaid	CAMPA	0.90000	0.90000
	Construction of Inspection Path Sagoon	CAMPA	0.90000	0.90000
	Construction of Inspection Path Co 10/JDR	CAMPA	0.90000	0.90000
	Construction of Inspection Path Sumwal	CAMPA	0.90000	0.90000
	Construction of Bowli at Ward 5	CAMPA	0.80022	0.80022
	Construction of Bowli	CAMPA	0.79728	0.79728
	Construction of Bowli	CAMPA	0.80280	0.80280
	Construction of Bowli	CAMPA	0.69817	0.69817
	DRSM near Guard Hut Badga	CAMPA	0.10950	0.10950
	Repair and renovation of pond	CAMPA	0.10400	0.10400
	Construction of Bowli	CAMPA	—	—
	Maintenance and upkeep of Battery Operated Vehicles/printing of tickets etc	CAMPA	—	—



Part-II
PROPOSED MANAGEMENT

CHAPTER 5

VISION, OBJECTIVES AND PROBLEMS IN ACHIEVING THE OBJECTIVES

VISION: Wildlife Management with Special Emphasis on conservation of Biodiversity and Watershed Management.

5.1. Management objectives:

The objectives of management can be briefly summarized below:

1. To conserve and protect habitat, restore physical integrity of the area in addition to restoring the degraded portion of the sanctuary so that endangered and endemic flora and fauna inhabiting the area are adequately protected and propagated.
2. To mitigate man-animal conflict and to create awareness among the people in general and the children in particular about nature and wildlife with particular emphasis on the ecological role of the sanctuary area.
3. To promote Eco-tourism for conservation, awareness, education and scientific exploration without affecting the sensitive ecosystem adversely.
4. To reduce the dependence of the people on forest-based resources in the zone of influence, with sensitivity to cultural and economic well-being of the communities, through eco-development activities.
5. To improve capacity building of staff and local communities for efficient management of the sanctuary through better training and infrastructure.
6. To promote scientific and ecological studies that will help the sanctuary management in assessing the physical and biological resources, planning for conservation of these resources and monitoring the health of the habitat.

5.2. Problems/constraints in achieving the objectives of management.

<p>Objective 1: - To conserve and protect the habitat, restore the physical integrity of the area in addition to restoring the degraded portion of the sanctuary so that endangered and endemic flora and fauna inhabiting the area are adequately protected and propagated.</p>

Challenges	Proposed Strategies
1. Encroachment and Boundaries not consolidated.	<ul style="list-style-type: none"> • Proper demarcation & 100% fixation of B.P in Wildlife area during the Plan period. • Coordination with FPF/ Territorial staff/ Revenue/ Police personal. • Capacity building and training.
2. Rights not determined/Settled.	<ul style="list-style-type: none"> • Coordination with Eco-development committees/Bio-diversity committees. • Right settlement through respective committee. • Involvement of panchayats.
3. Pressure of grazing by seasonal nomads.	<ul style="list-style-type: none"> • Alternate grazing lands outside the Sanctuary should be identified.
4. Invasion of weeds.	<ul style="list-style-type: none"> • Manual removal of weeds and plantation of native species.
5. Fire	<ul style="list-style-type: none"> • Strengthening of Control Room. • Construction & Maintenance of fire lines. • Engagement of seasonal fire watchers. • Awareness camps. • Fire-fighting equipments. • Involvement of local/Panchayats.
6. Tough terrain.	<ul style="list-style-type: none"> • Inspection paths. • Natural Trails. • Catchment area treatment. • Water points/water holes/ salt licks.

Objective 2: - To mitigate man-animal conflict and to create awareness among the people in general and the children in particular about nature and wildlife with particular emphasis on the ecological role of the sanctuary area.

Challenges	Proposed Strategies
1. Challenge posed by nilgai, wild boar, porcupine and monkey.	<ul style="list-style-type: none"> • Monkey menace needs to be mitigated on scientific basis. • Population estimation. • Plantation of Fruit crops. • Awareness among tourist to stop feeding monkey roadside area.

<p>2. Wild Animal movements in human habitation.</p>	<ul style="list-style-type: none"> • Awareness among people in respect of habits of Leopards. • Do's and don'ts. • Removal of weed for free movement of animals. • Avoid unregulated grazing. • Optimums use of crackers/ drum beating. • Sensitization of locals.
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<p>Objective 3: To promote Eco-tourism for conservation, awareness, education and scientific exploration without affecting the sensitive ecosystem adversely.</p>	
<p>Challenges</p>	<p>Proposed Strategies</p>
<p>1. No resource persons.</p>	<ul style="list-style-type: none"> • Capacity building for locals and other resource persons as part of Eco-tourism promotion initiative. • Awareness camps among the people.
<p>2. Nature interpretation facility.</p>	<ul style="list-style-type: none"> • Interpretations are required at grass root level in collaboration with panchayats members. • Celebration of important days like World wetlands day/ Environment day/ Wildlife week. • Regular programme in different schools to inculcate the feeling of responsiveness among children. • Awareness through media-print/electronic media/ Posters. • Provision for Nature Interpretation Centre.

<p>Objective 4: To reduce the dependence of the people on forest-based resources in the zone of influence, with sensitivity to cultural and economic well-being of the communities, through eco-development activities.</p>	
<p>Challenges</p>	<p>Proposed Strategies</p>
<p>1. Rights of locals not settled.</p>	<ul style="list-style-type: none"> • Demarcation. • Settlement of Rights.
<p>2. Inadequate Co-operation from panchayats and other</p>	<ul style="list-style-type: none"> • Regular meeting at different hierarchical level and implementation of decisions

departments.	<p>made in consultation with Wildlife Protection.</p> <ul style="list-style-type: none"> Engagement with Eco-development committees/ Biodiversity committees as suggested in MEE report.
3. Zone of influence not demarcated	<ul style="list-style-type: none"> Demarcation of land in zone of influence is required with revenue department.
4. Crop damaged by wildlife animal wild boar, sambhar, nilgai and cattle lifting by large carnivore.	<ul style="list-style-type: none"> Production of Sufficient food/fodder requirement for wild animals within protected area. Management of herbivorous population.
5. Agriculture is the only means of livelihood.	<ul style="list-style-type: none"> Generation of alternative livelihoods for locals.

Objective 5: To improve capacity building of staff and local communities for efficient management of the sanctuary through better training and infrastructure.

Challenges	Proposed Strategies
1. Inadequate training and capacity building of staff.	<ul style="list-style-type: none"> Training programme with the relevant institutions.
2. Lack of information on Biodiversity.	<ul style="list-style-type: none"> Periodic population estimation on Wildlife. Ethno botanical knowledge sharing by locals.

Objective 6: To promote scientific and ecological studies that will help the sanctuary management in assessing the physical and biological resources, planning for conservation of these resources and monitoring the health of the habitat.

Challenges	Proposed Strategies
1. No population estimates/ inadequate studies of wildlife and habitat.	<ul style="list-style-type: none"> Population estimation. Other researches through various institutions.
2. Inadequate data on impact of Tourism.	<ul style="list-style-type: none"> To check the tourism pressure on specific entry. Entry of Plastics should be banned with tourist.

3. Inadequate detail of graziers/ domestic animals dependent on wildlife area (Forest dependent communities).	<ul style="list-style-type: none"> • Domestic animals census needs to be done. • Graziers dependency on sanctuary area should be maintained on the basis of carrying capacity.
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Management Effectiveness Evaluation (MEE) report of 2018-19:

Surinsar–Mansar Wildlife Sanctuary, Jammu & Kashmir has MEE Score- 51.66% (Fair) and has suggested the following actionable points given as under:

Immediate Actionable Points

1. *The management plan under preparation, should be in accordance with the guidelines of Wildlife Institute of India and should include assessment of the threats and strategy to mitigate the challenges due to degradation of the habitat, protection, tourism and climate/ecology change management issues.*
2. *Check post need to be established at both ends of the national highway passing through the sanctuary to regulate the entry of people, tourists and vehicles as per the rules of the sanctuary.*
3. *There is a shortage of staff and infrastructure for management of the sanctuary. One more post of Range Officer, three more posts of Forester and five more posts of Forest Guard need to be sanctioned for effective management of the sanctuary, including eco-tourism.*
4. *Two four-wheeled vehicles, including one rescue vehicle, four motor cycles, four boats (two for each lake), 20 camera traps, 10 pairs of binoculars and two spotting scopes (one for each lake) are required to manage the sanctuary better.*
5. *The fund flow is quite erratic. The CSS funds need to be released promptly within the financial year. The Government of Jammu & Kashmir needs to pay special attention in this regard.*
6. *The people's co-operation is very essential to check the encroachment, deforestation, forest fires, large-scale grazing and discharge of garbage into the two lakes. Constitution of eco-development committees in the villages within the sanctuary and on the periphery is essential for ensuring their co-*

- operation as well for the DFO to seek funds under various schemes for eco-development activities.*
- 7. A minimum four anti-poaching camps need to be established within the sanctuary for affording better protection and for studying the habits and habitats of wild animals regularly within the sanctuary, apart from the routine visits of the patrolling staff from Surinsar or Mansar.*
 - 8. The concerns of members of the frontline subordinate staff about their promotion and special pay, adequate number of residences and barracks, etc. need to be addressed on priority.*
 - 9. Research and documentation need to be promoted. Regular periodic biodiversity assessments of the sanctuary need to be undertaken with the help of the field staff and students of Jammu University, under the guidance of wildlife-trained faculty members of Jammu University. The Research Officer posted in the office of the CWLW should take up other research projects according to the requirements of the management.*
 - 10. The tourism needs to be regulated. The provisions of the Wildlife (Protection) Act are to be notified through information boards at different places to facilitate compliance of the rules.*
 - 11. The crematorium adjacent to Mansar lake needs to be shifted immediately as it is polluting the lake.*
 - 12. The Surinsar–Mansar Development Authority should not be allowed to carry on any activity within the sanctuary without the clearance under Forest Conservation Act, 1980.*
 - 13. The Wildlife Warden should take up all eco-tourism activities using funds provided by the tourism department.*

The above-mentioned points in **Management Effectiveness Evaluation (MEE) report of 2018-19** for Surinsar–Mansar Wildlife Sanctuary have been considered and addressed and prescribed in the present management plan with holistic approach.

CHAPTER 6

THE STRATEGIES AND ACTION

Boundaries, Zonation, Zone Plans and Theme Plans.

6.1 Boundaries: The Surinsar-Mansar Wildlife Sanctuary is inhabited by 17 villages, Since the rights have not been settled so there is huge pressure of encroachment in the Protected Area. The Wildlife Protection department shall facilitate for settlement of right. Legal boundary of the Sanctuary is as per the notification given in the Annexure.

6.2 Zonation and Zone Plan: The objectives of the zonation are to provide a geographical framework to manage the sanctuary. Sanctuary zonation scheme has been developed to:

- Provide a geographical framework to manage the Sanctuary.
- Indicate which management directions have priority in particular part of the Sanctuary.
- Indicate the types and levels of use appropriate throughout the Sanctuary, assist in minimizing existing and potential conflicts between uses and activities, or between these and the protection of Sanctuary values.
- Provide a basis for assessing the suitability of future activities and development proposals.

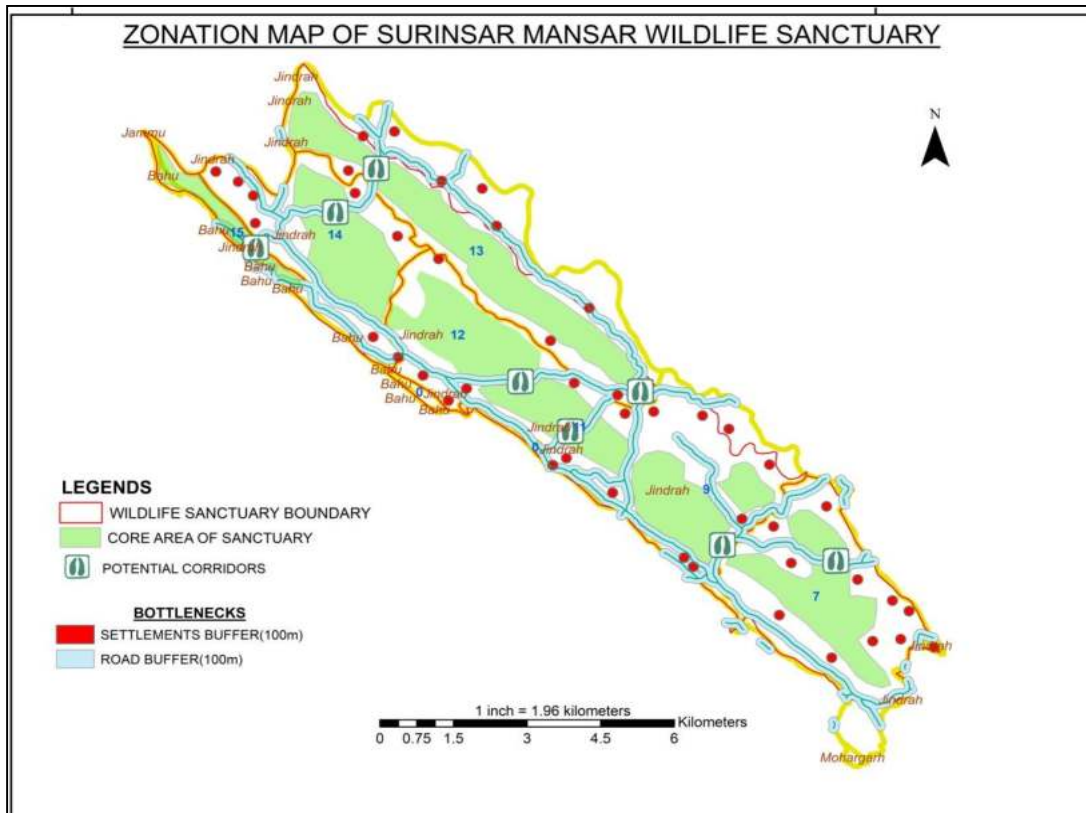
6.2.1 Zonation: In order to achieve the objectives, the sanctuary is divided into the following zones.

A. Core zone: The "no disturbance" zone is called the core zone. In other words, no public moment is allowed in this core zone. Part of Compartment 7/JDR, 9/JDR, 11/JDR, 12/JDR, 13/JDR, 14/JDR and 15/JDR are in this zone comprising of total area **3537.047 Ha**

B. Buffer Zone: Buffer zone of the Sanctuary consists of the tourism zone and the eco-development zone.

- i. Eco-Tourism zone and Interpretation zone.
- ii. Eco-development zone.

C. **Eco-restoration zone:** This zone primarily comprises of the existing plantations, weed infested and degraded areas within the buffer zone.



6.2.2 Zone plans:

6.2.2.1 Plan for Core zone: The "no disturbance" zone is called the core zone. In other words, no public moment should be allowed in core zone. Part of Compartment 7/JDR, 9/JDR, 11/JDR, 12/JDR, 13/JDR, 14/JDR and 15/JDR and 13 are in this zone comprising of total area **3537.047 Ha**. In the core zone, the following activities should be carried out during the plan period.

- Fire protection measures.
- Water holes.
- Consolidation and maintenance of boundary.
- Protection camps i.e. anti-poaching camps.

- Communication facilities.
- Habitat improvement/ Management.

6.2.2.2 Plan for Buffer Zone: Buffer zone of the Sanctuary consists of the Eco-tourism zone and the eco-development zone. The Eco-Tourism related activities shall be restricted to buffer zone and notified trekking route vide Government Order No: 215 - FST of 2019 D a t e d 15 -07-2019 given as Annexure V.

- i. Plan for Eco-Tourism and Interpretation zone:** Although tourism is considered as important source of employment to a large number of travel agents, local guides, pack animal owners and local communities but within the Surinsar-Mansar Wildlife Sanctuary, it has to be managed in a way that it should not become taxing on the natural resources of the Sanctuary and it does not lead to degradation and littering of the lakes. Large parties of tourists often require equally large infrastructure including camping gear and support staff.

Hence, all tourism activities within the premises of sanctuary needs to be organized by sanctuary management through community-based organizations. Major activities proposed for management of tourism in the sanctuary include identification and designation of camping sites away from sensitive wildlife habitats, better garbage disposal, encouraging to manage tourism in an organized manner.

Activities under Eco-tourism.

It is proposed to establish visitor information centers and develop simple en-route signage for the benefit of visitors.

Strategies and Activities.

- Environmental conservation awareness.
- Facilitating nature-based regulated tourism.
- Reduction in water level (historical) by opening the outlets upto original level.

- Proper drainage system.
- Master plan should be prepared implemented by Surinsar-Mansar Development Authority in consultant with Wildlife Protection Department.
- Shifting of common carp and need to introduce indigenous flora and fauna i.e. lotus and other vegetation like *Acorus Calamus* in Surinsar.
- Regular desilting.
- Development of catchment area by means of plantation/ DRSM/ Silt chambers.
- Proper demarcation and fixation of boundary pillar in wildlife area.
- Capacity building and training.
- Weeds like *Ipomea* should be manually removed.
- Habitat improvement with special focus on Pasture development.

ii. Plan for Eco-development zone. The major issues related to people-Protected Area interface are human wildlife conflict. In the villages around the sanctuary are dependent on the Protected Area. The Eco development programmes are yet to take off mainly due to hostility of local people regarding settlement of rights and also due to paucity of funds and absence of trained staff and support team. To strengthen the people Protected Area interface, the following strategies and activities are proposed.

- Development of appropriate barriers to prevent wildlife especially wild boar entering the farmlands timely assessment of wildlife dangers.
- To conduct habitat improvement programmes within the sanctuary to prevent the animal from drifting outside.
- Designing and implement community-based ecotourism programmes.
- Imparting training to staff.

For regulating and control over grazing, firewood and NWFP collection and transportation of goods through mules, the following strategies are proposed.

1) Grazing:

- Study and monitor the number, extent and impact of grazing.
- Reduce number of cattle by providing alternate livelihood and encourage staff feeding.
- Ensure vaccination of cattle- twice a year. Move proposal for notifying veterinary hospitals near Protected Area as supporting agency.

2) Firewood collection:

- Study the extent and impact of firewood collection.
- Prevent collection of indigenous species as fuel wood.
- Exotic species may be permitted to be collected as fuel wood with mutual commitments as part of phased removal of exotics.
- Propose fuel wood plantation, wherever required within community land/ Eco-development zone.
- Provide energy saving devices.

3) NTFP.

- Study the extent and impact of Non-Timber Forest Produce collection.
- Proposed alternate livelihood to prevent unscientific/ unsuitable collection.
- Encourage regeneration of Non-Timber Forest Produce and medicinal plant species.

6.2.2.3 Plan for Eco-restoration Zone. In order to protect the natural resources of the protected zone the following strategies and activities are proposed.

- Consolidation and maintenance of boundary.
- Establishments of administrative units.
- Proposed anti-poaching camps.
- Patrolling schedule.
- Management of cattle grazing.
- Fire Management strategies.
- Deployment of staff.

- Arm and ammunition.
- Communication facilities.
- Watch Towers.

6.3 THEME PLANS:

- **Theme Plan for Protection.**
- **Theme Plan for Habitat and Watershed Management.**
- **Theme Plan for Fire Protection.**

6.3.1 THEME PLAN FOR PROTECTION

6.3.1.1 Infrastructure related to Protection.

- Antipoaching Camps:** Antipoaching camps should be conducted at certain corridors mentioned in zonation map.
- Check post:** New check post are proposed in Surinsar-Mansar Wildlife Sanctuary.
- Roads & Trek paths:** Even though there are two roads within the core area of the Sanctuary. The periodic maintenance of the fair-weather roads is required.
- Vehicles:** Maintenance and timely replacement of departmental vehicles.
- Communication:** The existing wireless towers, permanent sets, mobile sets are to be maintained for effective communication. Official SIM cards for mobile sets are to be provided to the field staff upto the level of Wildlife Guards
- Protection Equipment:** Existing 1 Tranquilizing Gun (Non-functional), Proposed 1 Long range, 2 Short Range T. Guns/pistol including darts, Drugs with accessories, Distribution of crackers in and around the Sanctuary.
- Buildings:** Construction/ Maintenance of existing infrastructure is proposed.
- Camping Equipments:** Camping equipments / field gears such as sleeping bags, tents, carry bags, shoes, socks, torches, camera, binoculars, search lights, night vision equipments, GPS etc. will be procured and supplied to all the staff.

- ix. **Use of advance Technology:** Provision for computer and accessories, GPS, Camera trap, radio collars, internet facilities, software, use of modern tool and technology including drones and other advanced technological inputs will be procured and used for better and efficient management of the Sanctuary.
- x. **Boundary Consolidation:** The Boundaries on fringe areas, especially near habitation shall be delineated and consolidated by installation of boundary pillars (BP) accordingly during the period of current management Plan.
- xi. **Staff Welfare:** The optimum staff strength and their basis requirements for day-to-day activities for welfare shall be considered and fulfilled.
- xii. **Capacity building:** Staff will be trained in matters related to the provisions of wildlife and forest Acts, Rules and Regulations, identification of wildlife articles in trade, weapon handling and maintenance, intelligence gathering and wildlife crime investigation.
- xiii. **Wildlife Veterinary care:**
 - Establishment of a veterinary units under the guidance of a veterinary surgeon.
 - Procurement of tranquilizing equipments.
 - Capacity building training programmes.
 - Rescue Van.

6.3.2 THEME PLAN FOR HABITAT AND WATERSHED MANAGEMENT.

- i. **Watershed Management / Soil and Moisture Conservation.** The Surinsar-Mansar Wildlife Sanctuary has three micro watersheds with the following details;
 - a. In Surinsar, two micro-watersheds are **T_{2b7} =1296 Ha & T_{2b5} = 1115 Ha.**
 - b. In Mansar, one micro-watershed is **T_{2c11} = 1718 Ha.**
 - Mapping and Monitoring of water sources – water holes, check dams, Ponds, streams and other natural sources.
 - Updation of drainage map and vegetation map on regular basis.
 - Construction and maintenance of water harvesting structures.

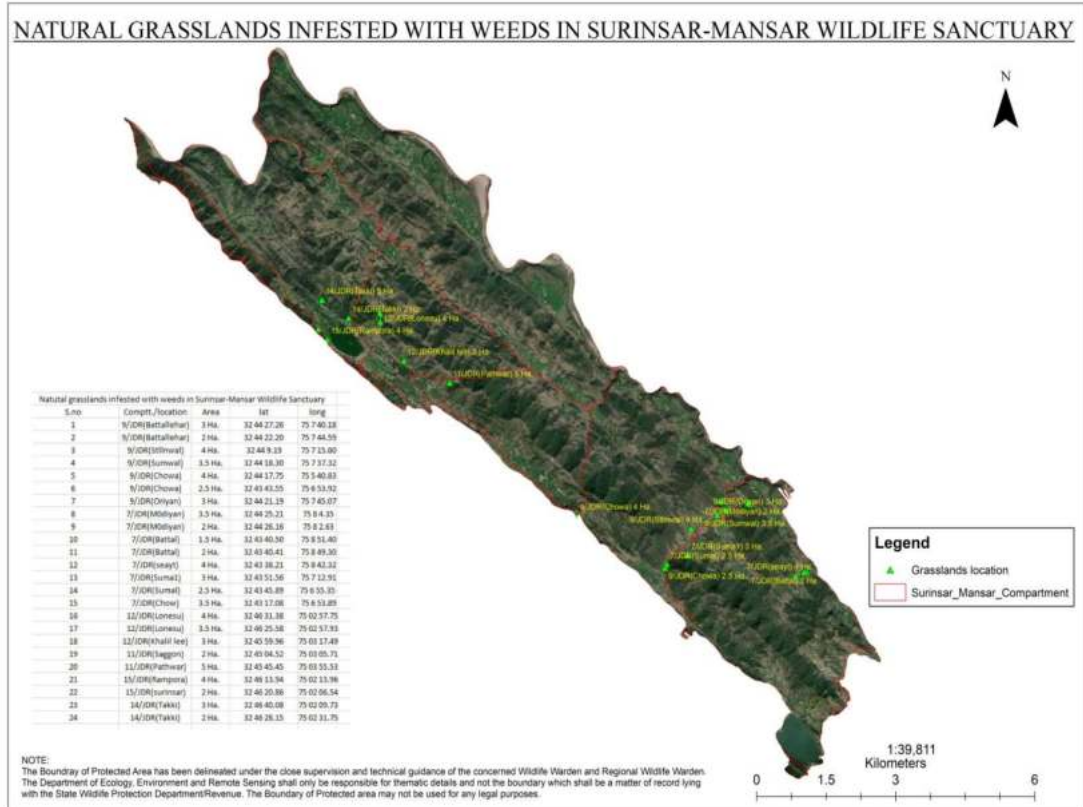
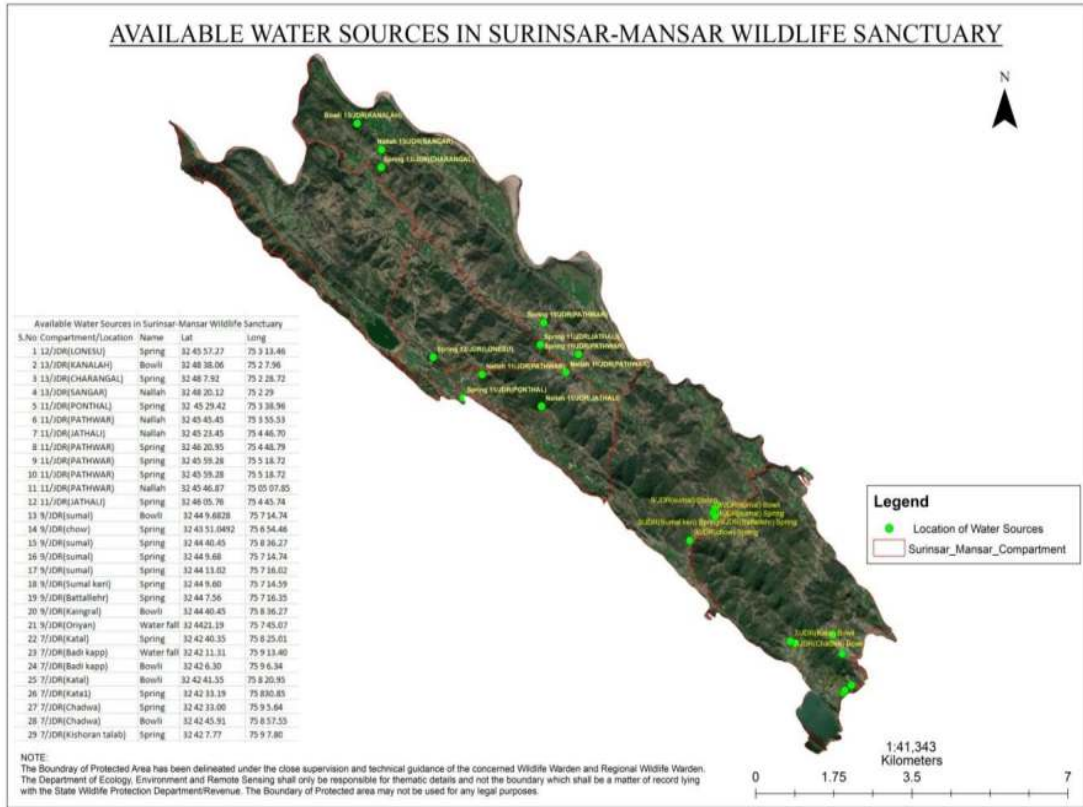
- The landslide areas shall be treated by plantation of soil binding species like *Agave*, *Moringa sp.*, *Lannea sp.*, *Mulberry sp.*, *Gliricidia sp.* etc.

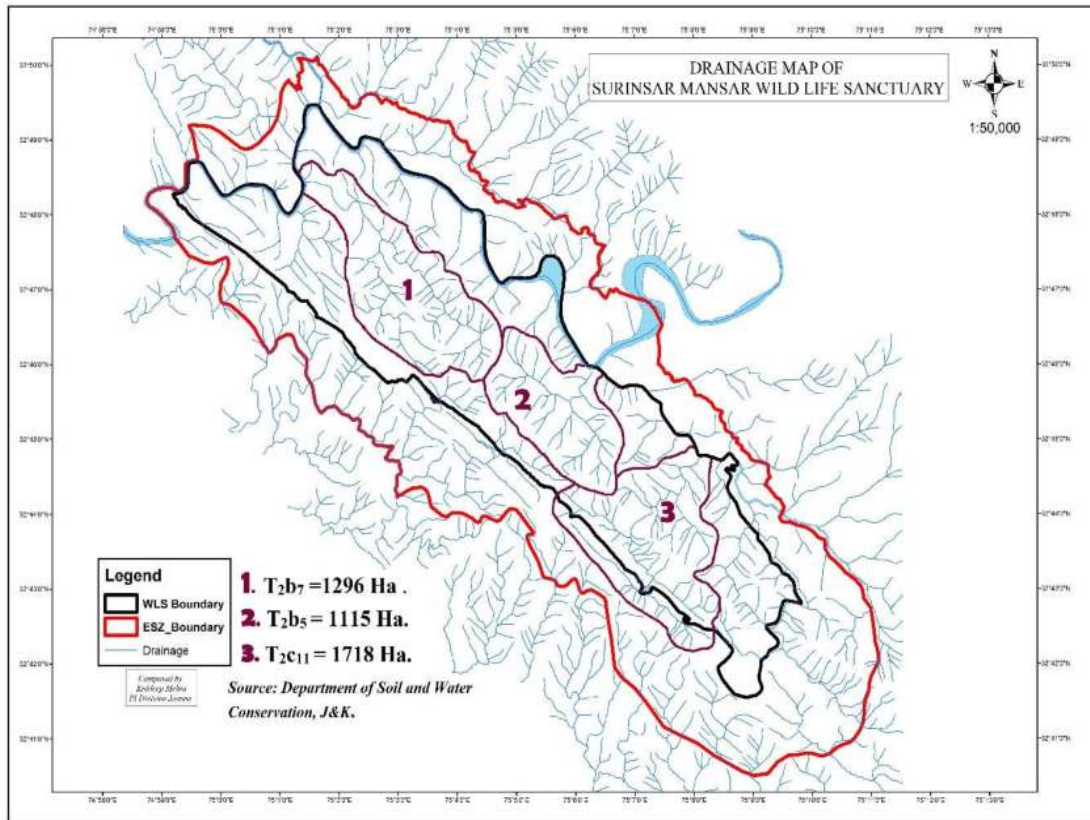
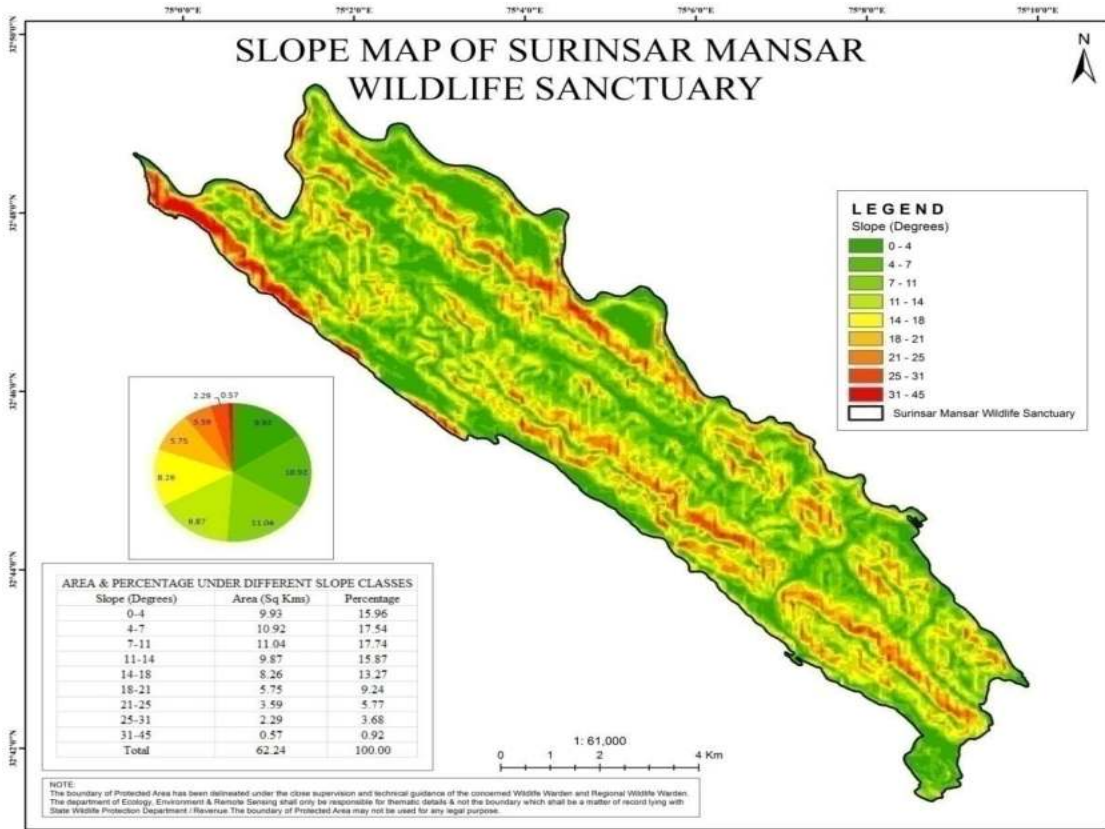
Table No. 6.1 List of Natural waters sources in Mansar Block of Surinsar-Mansar Wildlife Sanctuary.

S.no.	Comptt. no.	Name	Geo coordinates
1.	9/JDR(sumal)	Bowli	N 32 44 9.6828 E 75 7 14.74
2	9/JDR(chow)	Spring	N 32 43 51.0492 E 75 6 54.46
3.	9/JDR(sumal)	Spring	N 32 44 40.45 E 75 8 36.27
4.	9/JDR(sumal)	Spring	N 32 44 9.68 E 75 7 14.74
5	9/JDR(sumal)	Spring	N 32 44 13.02 E 75 7 16.02
6.	9/JDR(Sumal keri)	Spring	N 32 44 9.60 E 75 7 14.59
7	9/JDR(Battallehr)	Spring	N 32 44 7.56 E 75 7 16.35
8	9/JDR(Kaingral)	Bowli	N 32 44 40.45 E 75 8 36.27
9.	9/JDR(Oriyan)	Water fall	N 32 44 21.19 E 75 7 45.07
10.	7/JDR(Katal)	Spring	N 32 42 40.35.26 E 75 8 25.01
11.	7/JDR(Badi kapp)	Water fall	N 32 42 11.31 E 75 9 13.40
12.	7/JDR(Badi kapp)	Bowli	N 32 42 6.30 E 75 9 6.34
13.	7/JDR(Katal)	Bowli	N 32 42 41.55 E 75 8 20.95
14.	7/JDR(Katal)	Spring	N 32 42 33.19 E 75 8 30.85
15.	7/JDR(Chadwa)	Spring	N 32 42 33.00 E 75 9 5.64
16.	7/JDR(Chadwa)	Bowli	N 32 42 45.91 E 75 8 57.55
17.	7/JDR(Kishoran talab)	Spring	N 32 42 7.77 E 75 9 7.80

Table No. 6.2 List of Natural waters in Surinsar Block of Surinsar-Mansar wildlife sanctuary.

S.no.	Comptt./location	Name	Geo coordinates
1.	12/JDR(Lonesu)	Spring	N 32 45 57.27 E 75 3 13.46
2	13/JDR(Kanalah)	Bowli	N 32 48 38.06 E 75 2 7.96
3.	13/JDR(Charangal)	Spring	N 32 48 7.92 E 75 2 28.72
4.	13/JDR(Sangar)	Nallha	N 32 48 20.12 E 75 2 29.00
5	11/JDR(Ponthal)	Spring	N 32 45 29.42 E 75 3 38.96
6.	11/JDR(Pathwar)	Nallha	N 32 45 45.45 E 75 3 55.53
7.	11/JDR(Jathali)	Nallha	N 32 46 23.45 E 75 4 46.70
8.	11/JDR(Pathwar)	Spring	N 32 46 20.95 E 75 4 48.79
9.	11/JDR(Pathwar)	Spring	N 32 45 59.28 E 75 5 18.72
10.	11/JDR(Pathwar)	Spring	N 32 45 59.28 E 75 5 18.72
11.	11/JDR(Pathwar)	Nallha	N 32 45 46.87 E 75 5 07.85
12.	12/JDR(Jathali)	Spring	N 32 46 05.76 E 75 4 45.74





ii. **Habitat improvement.**

- The habitat should be restored by patch sowing and low-cost seed balls.
- Regular maintenance of water holes and water supply to water holes during dry season by water tanks.
- The landslide prone area should be treated by planting soil binding species like *Agave*, *Moringa sp.*, *Lannea sp.*, *Mulberry sp.*, *Gliricidia sp.* etc. and grass species.
- The eradication of weeds followed by plantation of grass slips, fruits and fodder saplings.

iii. **Management of Weeds.**

- Eco-restoration activities will be taken up in weed eradicated areas.
- Continuous monitoring shall be done in areas where weeding was once done. Studies on the littoral species should be conducted.
- Possibility of making use of the materials from these weeds by the local people with the help of necessary training should be proposed.
- Weed management in the plantations and other degraded forest areas in the buffer zone can be converted into a labour generating programme for the local communities.

iv. **Management of Plantations and Grasslands.**

- The weed removal shall be followed by plantation of saplings of fruits, fodder and palatable grass slips of *Seteria sphaceleta*, *Panicum maximum*, *Cenchrus ciliaris*, *Cenchrus setigrus*, *Pennisetum purpureum*, *Pennisetum pedicellatum* to ensure the sustained availability of grasses for young fawn/calves.
- The local leguminous species should be encouraged alongwith grass slips.

Table No. 6.3 Available Grass land in Surinsar-Mansar Wildlife Sanctuary

S.no	Comptt./location	Geo-coordinates	Area
1.	9/JDR(Battallehar)	N 32 44 27.26 E 75 7 40.18	3 Ha.
2.	9/JDR(Battallehar)	N 32 44 22.20 E 75 7 44.59	2 Ha.
3.	9/JDR(Sumwal)	N 32 44 9.19 E 75 7 15.60	4 Ha.
4.	9/JDR(Sumwal)	N 32 44 18.30 E 75 7 37.32	3.5 Ha.
5.	9/JDR(Chowa)	N 32 44 17.75 E 75 5 40.83	4 Ha.
6.	9/JDR(Chowa)	N 32 43 43.55 E 75 6 53.92	2.5 Ha.
7.	9/JDR(Oriyan)	N 32 44 21.19 E 75 7 45.07	3 Ha.
8.	7/JDR(Modiyan)	N 32 44 25.21 E 75 8 4.35	3.5 Ha.
9.	7/JDR(Modiyan)	N 32 44 26.16 E 75 8 2.63	2 Ha.
10.	7/JDR(Battal)	N 32 43 40.50 E 75 8 51.40	1.5 Ha.
11.	7/JDR(Battal)	N 32 43 40.41 E 75 8 49.30	2 Ha.
12.	7/JDR(seayt)	N 32 43 38.21 E 75 8 42.32	4 Ha.
13.	7/JDR(Sumal)	N 32 43 51.56 E 75 7 12.91	3 Ha.
14.	7/JDR(Sumal)	N 32 43 45.89 E 75 6 55.35	2.5 Ha.
15.	7/JDR(Chow)	N 32 43 17.08 E 75 6 53.89	3.5 Ha.
16.	12/JDR(Lonesu)	N 32 46 31.38 E 75 02 57.75	4 Ha.
17.	12/JDR(Lonesu)	N 32 46 25.58 E 75 02 57.93	3.5 Ha.
18.	12/JDR(Khalil lee)	N 32 45 59.96 E 75 03 17.49	3 Ha.
19.	11/JDR(Saggon)	N 32 45 04.52 E 75 03 05.71	2 Ha.
20.	11/JDR(Pathwar)	N 32 45 45.45 E 75 03 55.53	5 Ha.
21.	15/JDR(Rampora)	N 32 46 13.94 E 75 02 13.96	4 Ha.
22.	15/JDR(surinsar)	N 32 46 20.86 E 75 02 06.54	2 Ha.
23.	14/JDR(Takki)	N 32 46 40.08 E 75 02 09.73	3 Ha.
24.	14/JDR(Takki)	N 32 46 28.15 E 75 02 31.75	2 Ha.

6.3.3 THEME PLAN FOR FIRE PROTECTION.**ii. General guidelines for preparation and implementation of Fire****Management Plan.**

- Identify the cause and consequences of fire.
- Provide adequate training to fire-fighting squad in fighting fires and self-defense.
- Develop infrastructure by procuring necessary equipment and materials required for fire protection based on annual assessment.
- Ensure timely implementation of interventions.

iii. Fire Management Strategies.**a) Fire Prone Areas:**

- **High fire prone areas:** Co.15/JDR adjoining to village chilla, Co.10/JDR Jaithly, Co.14/JDR Surinsar are the high fire prone Compartments/ Areas.
 - **Low fire prone areas:** Co. 12/JDR, Co.7/JDR are the low fire prone Compartments/ Areas.
- iv. **Deploying firewatchers.**
- **Fire watchers** shall will be engaged throughout the season for efficient protection activities. The number of persons engaged for this purpose will be decided based on the intensity of fire and severity of drought.
- v. **Awareness and Training.**
- Awareness campaigns may be arranged for **fringe area** people and representatives of societies on the impact of fires on forests. This may be done by mass involvement of people, talks, information display boards, banners, etc. **Panchayats based awareness campaigns** highlighting fire preventive and containment measures among children and youth in the localities should be arranged during the fire season. Creative programmes in this regard should be conduct.
- vi. **Training programmes.**
- Training programmes for **staff, watchers** and other **members of the community involved** in fire protection should be organized.
- vii. **Fire watchtowers and communication network.**
- The present infrastructure and communication facilities will be made use of in fire protection to prevent the fire incidents and to mobilize additional forces in case of necessity.
- viii. **Firefighting equipment.**
- The equipments like gum boots, fire resistant suit etc. may be procured and made available to the fire management groups for effective tackling fire.
 - **Fire Reporting/Mapping:-** The daily reporting of the fire incidents should be recorded as per format given in the control form.

CHAPTER 7

HUMAN-WILDLIFE CONFLICT

7.1 Human-Wildlife Conflict.

Human-Wildlife conflict simply refers to the interaction between man and Wildlife animal and resulting into negative impact on man and his resources or animal and its habitat. Conflicts between the man and animal have occurred since the dawn of humanity. However, it has come to light ever more frequently in recent times.

With changing times and an ever-increasing population, the lines between human settlements and forests have started to blur, resulting into more conflicts. The result of this conflict is severe which result into the loss of crops to farmers, human beings getting injured or killed and concerns for wildlife conservation as well.

Often many strategies have been employed by people to minimize their loss. Administrative agencies are using different tactics to minimize these conflicts. However, most of these methods and strategies have proved ineffective in minimizing the conflict.

This has increased a need to understand why and how such conflicts ensue and what could be done to minimizing these conflicts and protection of both man and animal.

7.2 Kinds of Human-Wildlife conflicts.

The incidents of Man-Animal Conflicts can be categorized into following major types:

- Human beings get killed or injured by wild animals in Man-animal Conflicts.
- Livestock/Cattle reared by man get killed or injured in Man-animal conflicts.
- Crop raised by man get damaged in Man-animal conflicts.
- Wild animals get killed or injured in Man-animal conflicts.

7.3 Causes of conflict

- **Fragmentation and shrinking of habitat:** - The conversion of forest land for non-forest purposes, result into wildlife habitat shrinking. This makes that landscape unavailable for wild animals as their needs are not fulfilled. Resulting into in animals straying out of habitat in search of food, water or shelter bringing them in conflict with humans.
- **Road Kills:** - In recent times, expansion of road and rail network through Wildlife areas has resulted in animals getting killed or injured in accidents on roads or railway tracks.
- **Land use transformations:** - In recent times growing demand for food there is rapid conversion of forest lands into farm fields for cultivation. Also, forest is being cleared for mining and developmental activities resulting in destruction of habitat of wildlife. This results into herbivores straying out of the forest and causing depredation of crops.
- **Infestation of wildlife habitat:** - Infestation of wildlife habitat by the invasive exotic weeds like *Lantana*, *Parthenium* etc. have resulted in decreased availability of edible grasses for the wild herbivores. As a result, herbivores come out of forest area and cause depredation of agricultural crops on the fringes.
- **Impact of human activities:** - The increasing population has led to many human settlements coming up near the peripheries of protected areas and encroachment in the forest lands by local people for cultivation and collection of food and fodder etc. thus increasing pressure on limited natural resources in the forests.
- **Livestock grazing:** - livestock grazing in the forest areas has increased man-animal conflicts as carnivorous are attracted to easy prey thus becoming the direct enemy of man. Livestock grazing has also led to the

shortage of food for wild herbivores as they have to compete with livestock for food.

- **Decreased prey base of herbivores:** - Due to illegal poaching in forest areas the prey base is on the decline as a result carnivore are forced to roam into nearby villages in search of food. This leads to the killing of cattle by these carnivores, thus bringing them into conflict with humans.

7.4 Consequences for humans

The aftermaths of the human-wildlife conflict are more serious in the tropics and in developing countries where livestock holdings and agriculture are an important part of livelihoods and incomes of people in rural areas.

- **Injury or loss of human lives:-** People living near forest areas and buffer zones are mostly at risk of attack by carnivores, straying out of forest areas in search of food.
- **Crop depredation:-** The destruction of crops by wild animals like Wild boar, Monkey, Nilgai, Porcupine etc. can result in loss of income of rural households and threatening the household's food security.
- **The killing of livestock:-** The killing of livestock by carnivores destroys income source of agro-pastoralists who depend exclusively on cultivation and production of livestock. The loss of a family's small herd of cattle to predators can effectively destroy that family's wealth and way of life.

7.5 Consequences for wildlife and environment

- **The killing of wild animals:-** The killing of wild animals in retaliation for incidents of human-wildlife conflict is a common reaction, even though the identification of the real culprit is seldom possible. This has also resulted into wiping out of the whole population of some species from certain areas and also endangering their existence.

- **Destruction of habitat:-** Due to increase in demand for land for housing and cultivation, forest lands are increasingly being transformed into farm fields and housing projects etc. resulting in the destruction of habitat for wildlife.
- **Destruction of ecosystem:-** Due to the killing of wild animals and diversion of forestland for non-forest purposes many ecosystems across the world are on the verge of being destroyed.

7.6 Proposed strategies:

Department has already taken up many possible mitigation measures, such as construction of chain-link fencing, engaging local labour for man-animal conflict, use of crackers, planting of fruits bearing trees, fodder grasses etc. for scaring away the wild animals from cultivation areas. Following measures will be taken up during the plan period for addressing human wildlife conflict issues.

- In fringe areas of Sanctuary cracker shall be distributed to scare wildlife from habitation.
- Construction of chain-link fencing in encroachment prone area
- Bio fencing by planting *Agave*, *Rosa*, *Euphorbia* etc. at suitable areas.
- Provision for deploying animal scaring squads consisting of staff, watchers and local people with vehicle and arms required.
- Provision for improving existing forest roads, trek paths
- Efficacy of existing conflict mitigation methods will be assessed and necessary modifications will be made. Monitoring of problematic animals should be carried out.
- Habitat improvement activities should be taken up in the buffer to provide sufficient fodder within Sanctuary.
- To enlist public support in conservation, awareness programmes should be conducted for general public and media persons on various aspects of human-wildlife conflict issues.
- People will be encouraged to change crop patterns.

- Use of Modern tools like GPS, Radio collar, Camera trap to monitor Man-Animal conflicts hotspots.

Man-animal conflicts have bad consequences not only for the mankind and the society but also for the wildlife. Though we cannot completely avoid the man-animal conflict, it can be minimized and controlled to a large extent by adoptive following measures sincerely.

7.6.1 To control poaching: Poaching of wild animals especially herbivores should be strongly checked so that the number of wild animals can be stabilized and equilibrium between the numbers of prey animals and predators in the forest ecosystem can be maintained.

7.6.2 Wildlife corridors: Wildlife corridors will provide a safe pathway to animals in the human-inhabited and developed areas. This will not only protect the animals from road kills but it can also steer them away from the human population thus prevent the man-animal conflict.

7.6.3 Awareness Programmes: It is important to create awareness among people and sensitize them about the Do's and Don'ts in the forest areas to minimize the conflicts between man and animal.

7.6.4 Solar Fencing around agriculture fields: Agriculture fields situated near wildlife habitat/forest areas can be protected by stone fencing or solar fencing.

7.6.5 Paying Compensation to the people: Compensation should be paid promptly to the victims of wildlife attack so as to maintain harmony between man and wildlife. In case of crop loss/ damage due to wild animals, the compensation may be covered under Pradhan Mantri Fasal Bima Yojana (PMFBY) as per admissibility.

7.6.6 Eco-development activities: Eco-development activities in villages around Protected Areas to elicit the cooperation of the local community in the management of the Protected Areas can also help in minimizing the conflict.

7.6.7 Eco-Tourism: Eco-Tourism in the wildlife areas can also help to create an alternate source of income for local people and boost the local economy thus it can also help in minimizing man-animal conflict on account of crop depredation or livestock killing.

7.6.8 Use of ICT: Information technology tools like GIS, Camera trap, GPS, high-frequency radio collars etc. can help track the movement of animals and warn the local population. It can also monitor hotspots of man-animal conflict. Identifying conflict hot spots helps to pinpoint required manpower and funding to proactively address the issue of man-animal conflict.

CHAPTER 8
ECO-TOURISM, INTERPRETATION AND CONSERVATION
EDUCATION.

8.1. Introduction.

Regulated eco-tourism in the form of nature education and interpretation tours is the main objective of visitor use and management programs. Average annual tourist inflow for the last five years is 10,000 with the maximum number in the months of April to June. Existing visitor facilities such as Deer Park, Battery cars, Boating, Inspection huts etc. are located at Surinsar-Mansar Lake.

For effective management of eco-tourism and education interpretation activities, a separate Tourism Zone for eco-tourism, interpretation and conservation education activities is delineated.

8.2. Objectives.

- Provide wilderness experience to visitors through regulated eco-tourism
- Developing Surinsar-Mansar Wildlife Sanctuary as a Centre of Excellence for conservation awareness and nature education

8.3. Problems.

Major problems identified in visitor management are the following.

- Inadequate eco-tourism packages.
- Improper system of waste management within the tourism zone
- Lack of sufficient staff and teams with expertise for conducting education extension programmes.
- Inadequate training programmes for staff.
- Entry of private vehicles in the tourism zone.
- Tourism density concentrated near Surinsar-Mansar Lakes.

8.4. Strategies and Actions.

8.4.1. Strategies to develop Surinsar-Mansar Wildlife Sanctuary as a Centre of Excellence for Conservation Awareness and Nature Education.

The major problems identified in developing Surinsar-Mansar Wildlife Sanctuary as a centre of excellence for conservation awareness and nature education lack required infrastructure for in-house and extension awareness programmes, lack of sufficient trained staff and lack of enough publicity and education materials. To overcome the deficiencies and to strengthen education, interpretation and extension activities, the following are proposed.

- A specialized team to plan, orient, conduct and follow up conservation awareness and nature education programmes will be constituted in the Sanctuary. The team would consist of Range Officer, field staff with good aptitude and communication skills for awareness creation and members of the panchayat with good knowledge of the area, terrain, biodiversity and values of the Sanctuary. Resource persons from outside may also be involved in education programmes.
- Special education programmes on themes like ecology, biodiversity, cultural significance, watershed values and ecosystem services, etc will be developed with the help of researchers/experts.
- More importance will be given to field interpretation of the Sanctuary values and suitable nature trails will be identified for the same.
- Staff involved in implementation of education programmes should be well trained and a panel of resource persons will be identified for taking classes in the awareness camps.
- Training will be given to member of local community as guides to visitors and nature camp participants.
- Important days / events related to wildlife and environment conservation should be conduct in the Sanctuary with the participation of public.

- One of the major constraints in conducting education and interpretation programmes is the lack of required infrastructure at the Sanctuary. Hence development of the following infrastructure is proposed during Plan period.
- Interpretation Centre under construction near Range office should be managed to communicate history of Sanctuary, conservation significance and activities to all sectors of visitors. Equipments requiring minimum maintenance but with effective and maximum output shall be installed.
- Souvenir shops as sale outlet for the products of local made in Surinsar-Mansar Wildlife Sanctuary.
- Maintenance of existing infrastructure and Inspection huts at Surinsar-Mansar Wildlife Sanctuary.
- Provision for establishment of Nature Interpretation Centre (NIC) is recommended for future consideration.

8.4.2. Strategies for Regulated Eco-Tourism.

Issues related to regulation of Eco-tourism activities within the sanctuary, eco-tourism zone are not properly demarcated, inadequate tourism packages, large number of private vehicles in the eco-tourism zone, inadequacies in waste management and infrastructure and trained manpower.

Following activities are proposed for effective visitor management and improving visitor satisfaction.

1. Fixing carrying capacity for Visitation.
2. Maintenance of notified Trekking routes in Surinsar-Mansar Wildlife Sanctuary as per Annexure V.
3. Plastic is totally prohibited in the Sanctuary and this will be ensured by the guides and staff on duty.

CHAPTER 9

ECO-DEVELOPMENT

Involvement of people in management of forests and natural resources is envisaged in the National Forest Policy, 1988. Since early 1990s, many protected areas in the country started addressing the issues related to people's dependency on forests and their livelihood security. The Surinsar-Mansar Wildlife Sanctuary spreads over 97.82 sq kms and is inhabited by 19 villages (Annexure-I) having 1302 households and 7763 souls (2011 census) resulting in heavy biotic pressure. The Eco-Development activities are being carried out through Panchayats. The Biodiversity Management Committees (BMCs) may also be consulted for Eco-Development activities.

9.1 Objectives

Main objective of eco-development inputs proposed in this plan is to improve livelihood opportunities and reduce negative impact of people on Sanctuary and vice versa.

9.2 Specific issues

The major pressures on the forests by the fringe area people and vice versa are the following:

- Pressures for resource use such as fire wood collection, grazing, unscientific collection of NTFPs, etc.
- Non-utilization of land with nomads.
- Inadequate documentation of traditional knowledge.
- Non identification of zone of influence.
- Lack of micro planning support team.
- Man-animal conflict.
- Non settlement of forest rights.
- Lack of alternate employment.
- Inadequate infrastructure for local communities and
- Inadequate environmental awareness.

9.3 Broad Strategies

To address the above issues, following broad strategies and actions are proposed.

- Formation of a Microplan support team
- Consultation of BMC/PRI to address specific issues and preparation of microplans.
- Revisiting of microplans following the guidelines for participatory management.
- Providing alternate livelihood support to reduce dependency on Sanctuary.
- Measures to reduce negative impact of Sanctuary on people.
- Training to the staff and BMC/PRI members in various aspects of implementation of eco-development activities.
- Awareness creation among the fringe area people to achieve the above strategies.

9.4 Measures to Reduce Negative dependencies on the Forests.

Major negative dependencies of people in the settlements include cattle grazing, firewood collection, and unscientific collection of NTFPs. To address these issues, following measures are suggested.

9.5 Cattle Grazing.

The Surinsar-Mansar Wildlife Sanctuary spreads over 97.82 sq kms and is inhabited by 19 villages (Annexure-II) having 1302 households and 7763 souls (2011 census) resulting in heavy biotic pressure. Following activities are proposed for effective management of the problem:

- Carry out timely vaccination of cattle as per the provisions of Wild Life (Protection) Act, 1972.
- Encourage stall feeding.

- Initiate dialogue with the people to phase out cattle.
- Create awareness among dependent community and stakeholders.

9.6 Unscientific collection of NTFP.

No scientific information is available on the methods of collection of NTFPs, quantity of resources removed and their impact on ecosystem. To address the issue, following prescriptions are made.

- Generate data on the species collected and map the zone of influence.
- Study the resource availability and restrict/regulate collection of threatened species, or impose seasonal regulations in collection based on the information generated in the study.
- Stop collection of NTFPs from critical wildlife habitats.
- Impart training in scientific collection, storage, value addition and marketing of NTFPs.
- Encourage cultivation of medicinal plants.

9.7 Firewood collection.

Firewood is collected for self use by nomads and local people in the buffer. Though this is not a major problem at present, measures needed to be taken to contain the issue to an optimum level by specifying areas for collection and quantity that can be removed. Following options are proposed to address the problem:

- Fuel wood reserve may be proposed in the settlements or peripheral area of settlement. People may be encouraged to plant fuel wood species in the space available within their settlements.
- Fuel efficient devices (LPG gas, solar system) promotes and encourage must be provided for saving energy.
- Bio-gas plants should be encouraged.

9.8 Eco-development activities.

Eco-development activities including supply of wood-saving cooking appliances, energy saving devices and other forest produce saving devices & construction of pond, path bowli, etc. in consultant with local communities should be carried out by the Wildlife Protection Department in order to built the confidence of the local communities.

CHAPTER 10**RESEARCH, MONITORING AND TRAINING.**

Research, monitoring and training are among the weakest area in wildlife management. The need is acknowledged but there is very little progress. Research has suffered due to lack of policy, unclear objectives, priorities, inadequate funding support; lack of adequate employment opportunities inclusive of reasonable career advancement prospects and therefore want of suitable personnel.

The Sanctuary was declared in 1990 and not explored much from the biodiversity point of view. In order to accomplish the plan objectives, the following research, monitoring and training activities are proposed.

10.1 Research.

Major gaps identified in information include inadequate documentation of small mammals, reptiles, amphibians, fishes and invertebrates, weeds etc, gaps in information on flora and fauna in buffer area and inadequate dissemination of available information. An institutional mechanism for conduct of research, collation and dissemination of information is required. Liaison with academic and research institutions and involvement of staff will also improve the database required for management.

The major research activities to be taken up in the Sanctuary are as follows:

- I. Study & monitor the carrying capacity & impact of eco-tourism on wetland.
- II. Study & monitoring number, extent and impact of grazing.
- III. Conduct studies to document flora and fauna of the Protected Area including RET and endemics.
- IV. Study and document traditional knowledge of indigenous communities.
- V. Study and identify invasive species that have negative impact on eco-tourism.

- VI. Study the extent of the wildlife damage problem including the wildlife and crops involved.
- VII. Conduct studies on small mammals, rodents, bats, insectivores and lesser carnivores, reptiles, amphibians, fishes and invertebrates
- VIII. Introduce short term management-oriented research – impact of fire, man-animal conflict etc.
- IX. Study succession in grasslands.
- X. Develop long term monitoring plots in different types of habitats to study the changes in phenology, animal behaviour and species shift with respect to climate change and vegetation dynamics.
- XI. Review of practices for removal of weeds.
- XII. Study the status of weeds and provide suggestions for phased removal
- XIII. Continuous monitoring of weed infested areas and areas where weeding was done.
- XIV. Evaluation and monitoring of fire and its impact.
- XV. Identification of strategies for managing fire including controlled burning.
- XVI. Quantification of loss in various habitats.
- XVII. Prepare fire management plan with the output from research and monitoring.

10.2 Monitoring.

Regular monitoring of habitat, biodiversity, wild animal population, impact of climate change etc. should be done by the research unit. The findings of the monitoring programmes could be used in management decisions of the Sanctuary. Initial data collection should be done by the staff of the Division who will be properly trained by the research unit for the purpose. Soil processes in forest ecosystems and indicators of soil quality to be analyzed. Biodiversity database for major forest types should be developed and the uses of this biodiversity to be examined. The effect of changes in ecosystem structure and functioning in response to global biophysical and sociological

impacts on the delivery of ecosystem services, both tangible and non-tangible, should be documented.

The following monitoring strategies should be taken up during the plan period.

- I. Population monitoring of herbivores.
- II. Annual estimation of major mammals.
- III. Annual surveys of Birds, reptiles, amphibians, and invertebrates.
- IV. Monitor wildlife cases – especially involving leopard and maintain proper records.
- V. Monitoring of problematic animals.
- VI. Monitoring the seasonal water availability in natural streams, check dams and waterholes and generate maps.
- VII. Review and implement wildlife health monitoring protocol.
- VIII. Establish a logbook to record observation of all Antipoaching camps, in and around Sanctuary.
- IX. Monitor and document the impact of human activities on natural habitats, including the spread of disease, impact of fires started to facilitate grazing and NTFP collections.
- X. Monitor mortality of wild animals and document.
- XI. Monitoring regeneration status and soil erosion.
- XII. Regular wildlife health monitoring.
- XIII. Population monitoring of selected species of flora and fauna.
- XIV. Monitoring of intrusion and regeneration of invasive species.
- XV. Monitoring the regeneration of natural species in the restoration zone.
- XVI. Monitoring impact of eco-tourism programmes.

10.2.1 Radio collaring: A collar with an attached radio transmitter that is put on a wild animal so that its movements in its natural habitat can be remotely monitored. Radio tracking involves fitting the study animal with a radio collar. These collars are designed to minimize impact on the animals' behaviour and to maximize their detectability. The use of tracking collars is one of the most common methods of monitoring wild animals.

1. It allows researchers and managers to collect baseline data like home range sizes, daily movements, behavioral data and diet.
2. Radio tracking involves fitting the study animal with a radio collar. These collars are designed to minimize impact on the animals' behaviour and to maximize their detectability.
3. They come in a variety of belt and battery sizes; in general, the weight of the collar should be no more than 4 to 5 percent of the animal's body weight for mammals, depending on the species. For example, the weight of a collar for a wild dog shouldn't exceed 450 grams.

Depending on the species of animal, the collars can be customized with sensors to recognize different movement activity, temperature and even mortality. When the movement sensor detects no movement, after a pre-programmed period of time, it changes the pulse rate to a higher or lower rate indicating change in behaviour (e.g. resting or stationary). In Surinsar-Mansar Wildlife Sanctuary, Radio collaring of RET and Rescued species is prescribed for effective Monitoring of Wildlife.

10.3 Training.

Various training programmes for skill development should be organized frequently for the staff of all categories. Following topics are proposed for training to improve the capacity of staff and BMC.

- I. Understanding of relevant sections and rules made there under of laws in Forest Act, Wildlife Protection Act, IPC, CrPC, Arms Act, NDPS Act, Environmental Protection Act, Guidelines, Policies and recommendations of subjects related environment and Forests etc.
- II. Training on identification of wildlife parts and products.
- III. Understanding of principles and procedures of intelligence gathering.
- IV. Instructions for safe keeping of seized materials/ parts.
- V. Knowledge of various types of arms, ammunition and their use and maintenance.

- VI. Knowledge of fire management, assessing loss due to fire, preparation of fire plan.
- VII. Knowledge of predator specific signs of killings, monitoring of cattle lifting cases, disposal of carcass etc.
- VIII. Knowledge of procedures to deal with human injuries and death caused by wild animals.
- IX. Knowledge on significance of soil conservation treatments.
- X. Significance of habitat monitoring including protocols and periodicity.
- XI. Understanding population estimation methodologies, use of compass, range finders, night vision equipments, GPS and camera traps.
- XII. Daily monitoring protocol and its implementation.
- XIII. Knowledge of zoonotic diseases, prevention of infectious diseases.
- XIV. Knowledge of collection, preservation and transport of samples.
- XV. Knowledge in handling of sick and injured animals.
- XVI. Scientific collection, storage and value addition of NTFP.
- XVII. Training to staff and guides in visitor management, conduct of eco-tourism programmes, etc and enhance skill in identification of birds, butterflies, tree species and medicinal plants.
- XVIII. Knowledge of first aid, stress management and personality development.

Presently the Project on **“Management Plan Preparation & Population Monitoring of Turtles in Surinsar-Mansar Wetlands”** is under progress by the Wildlife Institute of India which shall be the **Annexure to this Management Plan.**

Further, it is prescribed that a periodic research-oriented survey at least every 5 year should be conducted to access the biodiversity and status of wildlife in the sanctuary and also monitor the Aquatic fauna including turtle population and their behavioral study should be conducted at least every three years.

Rescue Operations in and around Surinsar-Mansar Wildlife Sanctuary

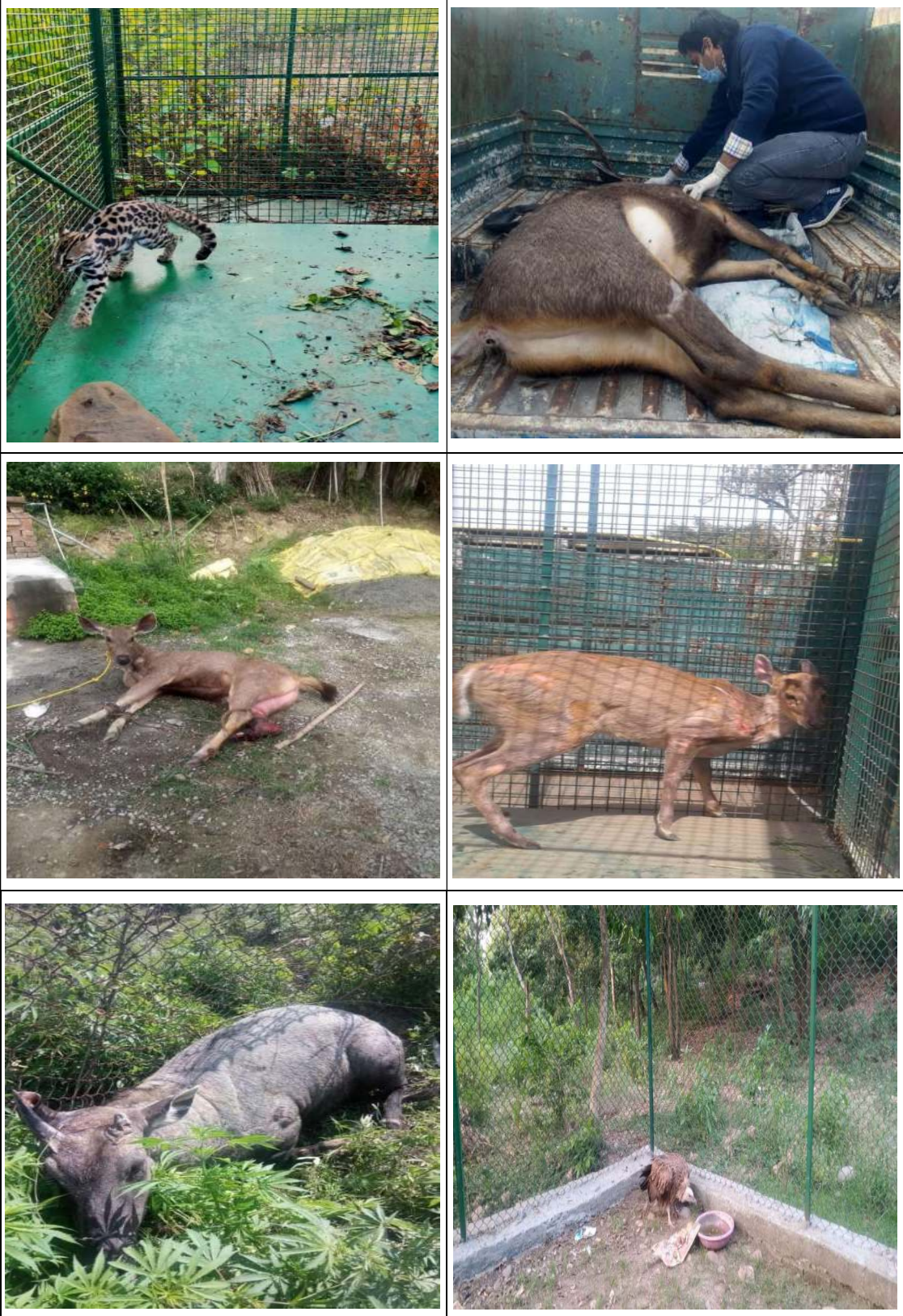


Plate-9

Wildlife Habitat Management interventions Surinsar-Mansar Wildlife Sanctuary



Plate-10

Wildlife Habitat Management interventions in Surinsar-Mansar Wildlife Sanctuary



Plate-11

Wildlife Habitat Management interventions in Surinsar-Mansar Wildlife Sanctuary

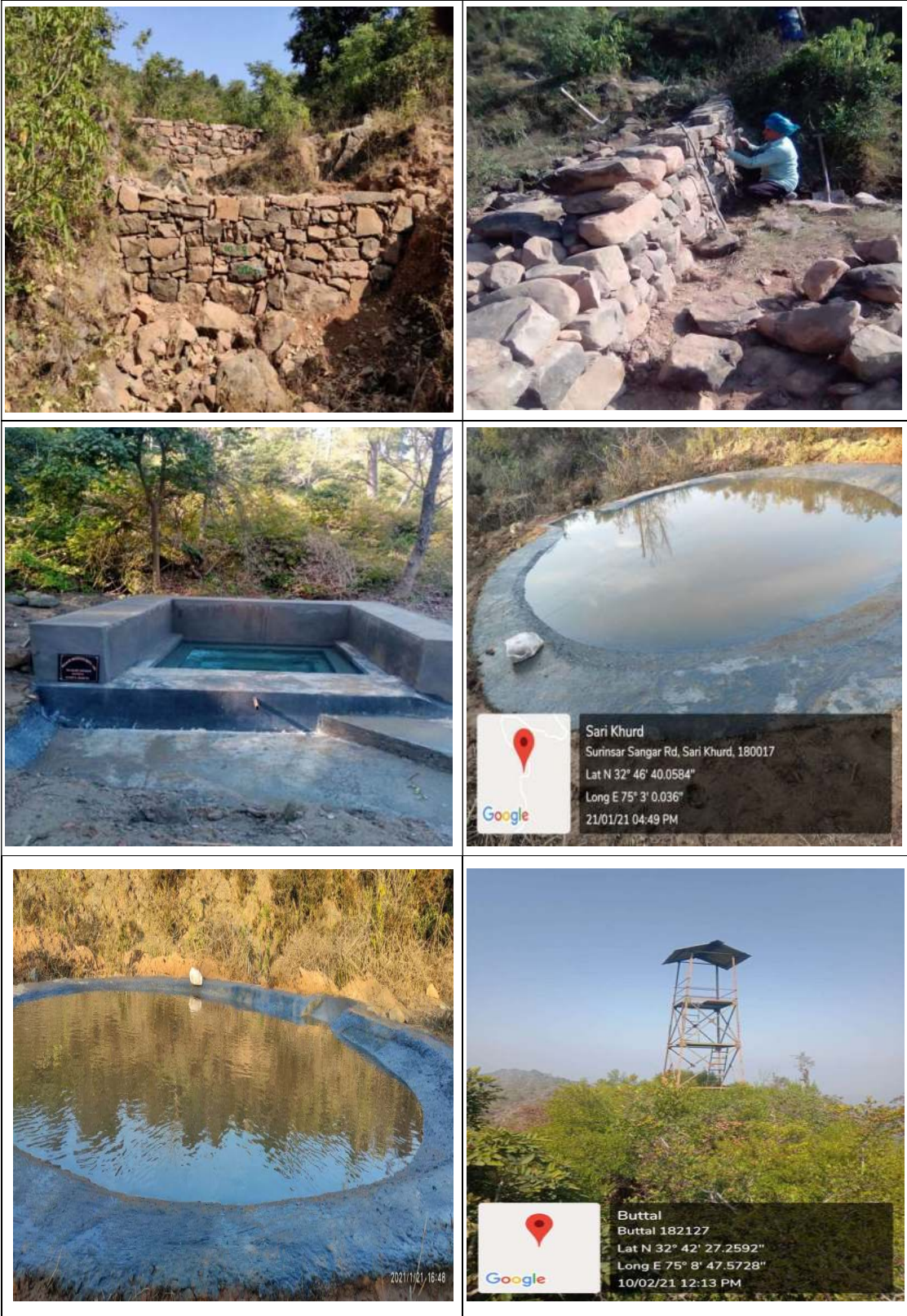


Plate-12

Major Wildlife in Surinsar-Mansar Wildlife Sanctuary



Plate-13

Common Birds found in Surinsar Lake



Plate-14

Turtle Species found in Surinsar-Mansar Lakes



Nilssonia gangeticus



Lissemys punctata



Pangshura tecta



Pangshura tentoria



Pangshura smithii



Pangshura smithii

Plate-15

CHAPTER 11

ORGANISATION AND ADMINISTRATION

11.1 Objectives

Main objective of administration programme is to ensure that technical and administrative staff required to manage the Sanctuary effectively are approved, developed and posted. Improvements in financial organizational systems should aim for the financial sustainability for the Sanctuary.

11.2 Staff pattern

The present Sanctioned staff strength of Wildlife Division, Kathua is as follows:

Annexure “A10” to order No. 92 of 2020 Dated: 10.08.2020

S.No.	Category of Post	Pay Level	Sanctioned Strength	Working Strength
Gazetted				
1.	Wildlife Warden	Level 8	1	1
2.	Range Officer Gr-I	Level 6E	1	1
Total Gazetted			2	2
Non- Gazetted				
1.	Range Officer Gr-II	Level 6	1	0
2.	Wildlife Forester	Level 5	4	5
3.	Senior Assistance	Level 5	1	0
4.	Junior Assistance	Level 4	2	0
5.	Deputy Foresters	Level 3B	1	0
6.	Wildlife Guards/ Anti-poaching Guard	Level 2	30	4
7.	Watcher	Level 2	1	0
8.	Orderly	SL1	1	0
9.	Chowkidar	SL1	1	1
10.	Helper	SL1	26	31
Total Non- Gazetted			68	41
Total Strength			70	43

In addition to the Working strength, following staff is also working in division with details as under:

General Service Assistant (GSA) - 4 Nos
Rehbar-e-Janglaat – 1 No.

The Wildlife Division Kathua is facing acute shortage of Ministerial and field staff to manage day to day Wildlife activities. Accordingly, it is prescribed to fill the vacant posts with following details as given under table 11.1.

Table No. 11.1 Additional staff required

Category	No. of post required
Senior Assistance	1
Junior Assistance	2
Deputy Foresters	2
Wildlife Guards/ Anti-poaching Guard	26
Driver	1

Table No. 11.2 Working staff strength in Surinsar-Mansar Wildlife Sanctuary

S.No	Category of Post	Working Strength	Proposed Working Strength
1.	Range Officer Grade-I	1	1
2.	Forester	1	2
3.	Deputy Foresters	0	2
4.	Junior Assistant	0	1
5.	Wildlife Guard	2	8
6.	Watcher	0	8
7.	Chowkidar	0	4
8.	Helpers	18	8
9.	GSA	3	0
	Total	25	34

11.3 Duties and Responsibilities

11.3.1 Wildlife Warden Kathua:

The Sanctuary is managed by Wildlife Warden who works under the guidance of Regional Wildlife Warden, Jammu. Main responsibilities of Wildlife Warden are as under. He shall:

- supervise and coordinate all the matters related to wildlife protection and management of PAs, ecological critical areas, critical watersheds, wetlands of international importance, and environmental management under Wildlife Preservation Act and other Ordinance, Rules and Regulations and Directives issued by the government from time to time;
- be responsible for overall administration of the sanctuary.
- be responsible to take necessary measures and efforts to fulfill national obligations towards wildlife, biodiversity and other forestry and environmental related international treaties, protocols and conventions endorsed by the government;
- be responsible for completion of all works within the budget provision of the division and distribution of funds within his budget grant among the ranges under him;
- be responsible for all correspondences relating to wildlife management from time to time;
- be responsible for taking programme related to conservation and management of PAs. Supervision of environmental management and nature conservation functions outside the PAs;
- be responsible for drawing up programme for monitoring, survey and research in the PAs in relation to wildlife and biological diversity;
- be responsible for preparation of budget and revised budget of his Division;
- be responsible for appointment, promoting, disciplinary action, disposal of appeal cases,

- be responsible for providing proper executive and operational guidelines to the field staff of the Wildlife & Nature Conservation divisions. Exercise control and supervision on the Divisions under his jurisdiction;
- be responsible for preparation of development annual programme related to conservation of biodiversity and eco-tourism;
- be responsible for preparation and annual inspection of divisional offices within his jurisdiction;
- be responsible for proper execution of all development programmes within his circle;
- be responsible for auditing of divisional accounts and according financial.
- technical sanctions within his powers;
- be responsible for drawing and disbursing in respective offices as well as submission of accounts to the Accountant General;

11.3.2 Range Officer Wildlife Range Surinsar-Mansar:

The Range Officer Wildlife Range Surinsar-Mansar as officer in-charge for Surinsar-Mansar Wildlife Sanctuary will directly report to the Wildlife Warden.

The following are responsibilities for Range Officer. He/she will:

- be responsible for overall administration of the Range within his jurisdiction;
- be responsible for exercise of powers given under various Acts and Rules there under;
- help Wildlife Warden in conducting smooth administration of the Division in which they are posted;
- help Wildlife Warden in the matter of maintenance of discipline of the Division;
- be responsible for the matter of raising plantation and nursery for habitat improvement within his jurisdiction;

- be responsible for execution of development programme related to protected area management and wildlife conservation within his jurisdiction;
- be responsible for the matter of checking theft and pilferage of forest produces and wildlife;
- be responsible of checking encroachment of Wildlife areas;
- facilitating and catalyzing linkages for livelihood programs in the identified landscape zones;
- maintain close liaison with FD staff responsible for the management of neighboring forests and social forestry plantations; and any other duties assigned by the WLW,
- be assisted by a Block Officers (in discharging his duties effectively), who will be responsible for the management of field staff, and protection.

CHAPTER 12
THE BUDGET

12.1 Plan Budget

The main financial allotment to this Division is under various budget heads as detailed below.

Table No. 12.1 Surinsar-Mansar Wildlife Sanctuary Allotment (in Lacs).

Plan Heads	2015-16	2016-17	2017-18	2018-19	2019-20
Campa 2015-16	6.30	11.58	34.72	55.95	184.04
Revaild 2014-15	3.75	4.37	0.91	34.9136	69.40
CSS	26.15	8.70	13.99	20.22	0.00
Capex	16.89	10.52	7.40	7.70	10.393
NPCA	0.00	0.00	38.016	38.709	0.00
Grand Total	53.09	35.17	95.04	157.49	263.83

Table No. 12.2 Budget Allotment in Kathua Wildlife Division Under Non-Plan (in Lacs).

Code	Heads	2015-16	2016-17	2017-18	2018-19	2019-20
001	Salaries	229.30	190.0	208.80	297.58	123.56
002	T.E	0.25	0.14	0.05	0.10	0.172
006	Telephone	0.075	0.05	0.13	0.10	0.10
007	OE	0.05	0.18	0.25	0.10	0.25
008	Electricity	0.50	0.70	0.68	1.10	0.50
009	Rent Rate and Taxes	0.00	0.20	0.20	0.25	0.00
010	Material and Supplies	4.00	9.00	11.00	8.60	9.568
014	POL	0.05	0.20	0.40	0.10	0.20
0011	Books Periodicals and pub.	0.00	0.00	0.20	0.00	0.00
017	Honorarium and remuneration	0.00	0.00	0.00	0.00	5.295
020	Machinery & Equipments	1.45	0.00	0.60	0.30	0.00

021	Training	0.80	0.75	0.75	0.25	0.00
023	Maintenance & Repair	0.50	0.20	0.60	0.90	0.605
037	Prof & Spl Service Charges	0.25	0.05	0.12	0.00	0.04
054	Furniture and Furnishing	1.00	0.00	0.00	0.00	0.00
070	Arms and Ammunition	0.30	0.20	0.25	0.15	0.07
071	Medical Reimbursement	0.30	0.00	0.00	0.00	0.00
098	Advertisement and Publication	0.90	2.50	1.00	0.60	0.00
180	Protection from fire	0.20	0.00	0.00	0.00	0.00
320	Research Survey	0.25	0.00	0.00	0.00	0.00
363	Outsourcing of upkeep	2.52	2.52	2.52	3.496	1.697
633	Compensation	2.15	6.00	5.00	0.00	6.00
641	Define pension scheme	0.285	0.434	0.27	0.59	0.00
670	Pension and other benefits	6.6674	15.5025	0.00	11.75	0.00
	G.Total	251.7974	228.6265	232.82	325.966	148.057

Table No. 12.3 Budget Allotment in Surinsar-Mansar Wildlife Sanctuary Under different schemes (in Lacs).

Plan Heads	2015-16	2016-17	2017-18	2018-19	2019-20
Campa 2015-16	6.30	11.58	34.72	55.95	184.04
Campa Revalidated 2014-15	3.75	4.37	0.91	34.9136	69.40
CSS	26.15	8.70	13.99	20.22	0.00
Capex	16.89	10.52	7.40	7.70	10.393
NPCA	0.00	0.00	38.016	38.709	0.00
G.Total	53.09	35.17	95.04	157.49	263.83

Table No. 12.4 Proposed Budget for Surinsar-Mansar Wildlife Sanctuary (2020-21 to 2029-30)

SL. No.	Activity	Financial requirement (Lakhs)										Total
		1 st Year	2 nd Year (2021-22)	3 rd Year (2022-23)	4 th Year (2023-24)	5 th Year (2024-25)	6 th Year (2025-26)	7 th Year (2026-27)	8 th Year (2027-28)	9 th Year (2028-29)	10 th Year (2029-30)	
A.	Improvement of Wildlife Habitat											
1.	Plantation including fruits /fodder species.	5.60	6.97	7.00	7.50	8.00	8.00	8.50	8.50	9.00	9.00	78.07
2.	BUC in old closures	1.39	3.50	0.95	1.00	1.50	2.00	2.00	2.50	2.50	3.00	20.34
3.	Lantana/weeds/ bushes clearance for growing of grasses and free movement of wild animals/restoration of the areas by patch sowing, grass slips, broadcasting of seeds etc.	3.20	6.20	6.30	6.50	6.50	6.50	6.70	6.70	7.00	7.00	62.60
4.	Grass Slips.	3.56	3.24	3.60	3.60	4.00	4.00	4.50	4.50	4.50	5.00	40.50
5.	Patch Showing.	0.94	1.31	1.50	1.50	2.00	2.50	2.50	3.00	3.00	3.00	21.25
6.	Earthen bag filling in slopy area.	1.20	0.00	1.50	1.50	2.00	2.00	2.50	2.50	2.50	2.50	18.20
7.	Eradication of Ipomea and Lantana	0.00	0.92	0.00	0.95	1.00	1.00	1.50	1.50	1.50	1.50	9.87
8.	Construction/Maintenance of water hole.	3.40	5.95	5.00	5.00	5.00	6.00	6.50	6.50	7.00	7.50	57.85

Surinsar-Mansar Wildlife Sanctuary

SL. No.	Activity	Financial requirement (Lakhs)										Total
		1 st Year (2020-21)	2 nd Year (2021-22)	3 rd Year (2022-23)	4 th Year (2023-24)	5 th Year (2024-25)	6 th Year (2025-26)	7 th Year (2026-27)	8 th Year (2027-28)	9 th Year (2028-29)	10 th Year (2029-30)	
9.	Providing of water supply to water holes during dry season by water tank.	1.00	0.80	1.00	1.00	1.50	2.00	2.00	2.50	2.50	2.50	16.80
B.	Protection of plantation and PA s demarcation											
10.	Repair and renovation of Chainlink fencing with toe wall and its painting in release pan.	5.00	0.00	4.50	5.00	4.00	4.50	4.50	5.00	5.00	5.50	43.00
11.	Repair of Barbed Wire.	0.24	0.00	0.50	0.60	1.00	1.00	1.00	1.00	1.00	1.00	7.34
12.	Fencing with G.I Barbed wire using PCC square posts.	5.50	0.00	5.00	5.00	5.50	6.00	0.00	6.50	3.00	7.00	43.50
13.	Consolidation of Boudaries by fixation of Boundary pillars (BP's).	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	100.00
14.	Construction of Watch Tower	0.00	28.00	28.00	30.00	30.00	30.00	32.00	35.00	35.00	35.00	283.00
C.	Soil and Moisture conservation Works.											
15.	Const. /Maintenance of Chainlink fencing in encroachment sensive areas roadside.	0.00	30.00	20.00	0.00	10.00	0.00	10.00	0.00	10.00	0.00	80.00

Surinsar-Mansar Wildlife Sanctuary

SL. No.	Activity	Financial requirement (Lakhs)										Total
		1 st Year (2020-21)	2 nd Year (2021-22)	3 rd Year (2022-23)	4 th Year (2023-24)	5 th Year (2024-25)	6 th Year (2025-26)	7 th Year (2026-27)	8 th Year (2027-28)	9 th Year (2028-29)	10 th Year (2029-30)	
16.	DRSM/Gully Plugging/ check dams in soil erosion prone areas.	16.00	55.00	55.00	58.00	60.00	62.00	65.00	65.00	68.00	70.00	574.00
17.	DRSM with crates	0.00	11.75	17.00	17.00	17.30	17.30	18.00	18.00	18.50	19.00	153.85
18.	Construction of DRSM with concrete band	0.00	36.60	38.00	38.50	39.00	40.00	40.00	40.50	41.00	41.00	354.60
19.	Construction of Rock filled Check Dam	0.00	34.70	40.00	40.00	40.00	40.50	41.00	42.00	42.00	42.00	362.20
20.	Planting of Soil binder species /grass slips etc in slopy /landslide areas.	4.25	4.64	5.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	55.89
21.	Construction/ Maintenance of Bowli.	4.00	4.25	5.00	6.00	6.00	6.00	4.00	7.00	4.00	8.00	54.25
22.	Construction/ Maintenance of Pond.	5.25	7.60	7.60	8.00	8.00	8.50	7.00	8.50	8.50	9.00	77.95
23.	Fabrication and installation of artificial bird perching.	2.50	0.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00	6.50
D.	Forest Fire prevention and control measures											
24.	Construction of fire line 10 m in width with standard specification	0.00	1.76	2.00	3.00	0.00	3.00	0.00	0.00	0.00	4.00	13.76

Surinsar-Mansar Wildlife Sanctuary

SL. No.	Activity	Financial requirement (Lakhs)										Total
		1 st Year (2020-21)	2 nd Year (2021-22)	3 rd Year (2022-23)	4 th Year (2023-24)	5 th Year (2024-25)	6 th Year (2025-26)	7 th Year (2026-27)	8 th Year (2027-28)	9 th Year (2028-29)	10 th Year (2029-30)	
25.	Maintenance of fire line with standard specification	0.46	3.08	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	16.54
26.	Payment for Fire Protection Labour (SoS) for 3 months.	3.24	3.24	4.00	4.50	4.00	4.50	4.50	5.00	5.00	5.50	43.48
27.	Contingency/ unforeseen expenses including office/Computer stationery, vehicle, POL/repair and maintenance of equipment's etc.	1.00	2.00	2.00	2.00	2.00	3.00	3.00	3.50	3.50	4.00	26.00
E.	Establishment, operation and maintenance of animal rescue centre, control room and veterinary treatment facilities.											
28.	Purchase of snake sticks, snake box, cages etc.	2.00	1.00	1.00	2.00	2.00	2.00	2.00	2.50	2.50	3.00	20.00
29.	Purchase of crackers used during rescue operations	1.00	1.00	1.50	2.00	2.00	2.50	2.50	2.50	2.50	3.00	20.50
30.	Procurement of green fodder/feed for rescued animals	1.50	0.50	1.00	1.50	1.50	2.00	2.00	2.50	2.50	3.00	18.00
31.	Hiring of private vehicles for rescue operation and human animal conflict resolution.	0.50	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.50	3.00	16.00

Surinsar-Mansar Wildlife Sanctuary

SL. No.	Activity	Financial requirement (Lakhs)										Total
		1 st Year (2020-21)	2 nd Year (2021-22)	3 rd Year (2022-23)	4 th Year (2023-24)	5 th Year (2024-25)	6 th Year (2025-26)	7 th Year (2026-27)	8 th Year (2027-28)	9 th Year (2028-29)	10 th Year (2029-30)	
32.	Purchase of Drugs/tranquilizing drugs/medicines etc. for Wild animals	2.00	1.00	2.00	2.00	2.00	3.00	3.00	3.00	3.50	4.00	25.50
33.	Purchase of tranquilizing Guns/Pistols with accessories	0.00	3.00	3.00	3.50	3.50	4.00	4.50	4.00	4.50	4.50	34.50
34.	Purchase of binoculars, search lights, night vision equipments GPS etc.	0.00	1.00	2.00	2.00	0.00	2.50	0.00	3.00	0.00	3.50	14.00
35.	Purchase of Drone Camera for monitoring of wildlife	0.00	2.50	0.00	0.00	3.00	0.00	0.00	3.00	0.00	3.50	12.00
36.	Purchase of Radio Collaring devices for monitoring of wildlife.	0.00	0.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	40.00
37.	Purchase of Computer/laptop and accessories	0.00	0.50	0.70	0.80	0.80	0.90	0.90	1.00	1.50	1.50	8.60
38.	Procurement of tranquilizing protected equipments etc.	1.50	1.50	1.00	1.00	1.00	1.00	1.50	1.50	2.00	2.00	14.00
39.	Purchase of supplements/Darts/drugs/Salt licks for kept Wild animals kept at Deep Park Mansar	1.00	1.00	1.00	1.50	1.50	1.50	1.50	1.50	1.50	1.50	13.50
40.	Expenses for running of control room	2.00	2.00	2.00	2.50	2.50	2.50	2.50	3.00	3.50	4.00	26.50

Surinsar-Mansar Wildlife Sanctuary

SL. No.	Activity	Financial requirement (Lakhs)										Total
		1 st Year (2020-21)	2 nd Year (2021-22)	3 rd Year (2022-23)	4 th Year (2023-24)	5 th Year (2024-25)	6 th Year (2025-26)	7 th Year (2026-27)	8 th Year (2027-28)	9 th Year (2028-29)	10 th Year (2029-30)	
40.	Purchase of Rescue vehicle.	9.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	10.00	29.00
41.	Contingency/ unforeseen expenses including office/ Computer stationery, vehicle, POL/repair and maintenance of equipment's etc.	1.50	1.00	2.50	2.50	3.00	3.00	3.50	3.50	4.00	4.00	28.50
42.	Purchase/Maintenance of boat for Rescue purpose.	5.40	0.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	165.40
F.	Eco-development activities including supply of wood-saving cooking appliances and other forest produce saving devices etc in forest fringe villages in consultation with local communities											
43.	Purchase of gas stove, etc and other solar cooking appliances for distribution among locals	1.00	0.89	1.50	1.50	1.50	2.00	2.00	2.50	3.00	3.00	18.89
44.	Solar Lantern, Solar home lighting, Solar lights etc	1.00	3.00	3.00	3.50	3.50	3.70	3.50	3.50	4.00	4.00	32.70
45.	Purchase and distribution of cloth bags in and around PA area.	0.79	0.90	1.00	1.50	1.50	1.50	2.00	2.00	2.00	2.00	15.19

Surinsar-Mansar Wildlife Sanctuary

SL. No.	Activity	Financial requirement (Lakhs)										Total
		1 st Year (2020-21)	2 nd Year (2021-22)	3 rd Year (2022-23)	4 th Year (2023-24)	5 th Year (2024-25)	6 th Year (2025-26)	7 th Year (2026-27)	8 th Year (2027-28)	9 th Year (2028-29)	10 th Year (2029-30)	
46.	Ecodevelopment activities like construction of pond, path, bowli etc. in consultation with local communities.	11.00	20.00	20.00	21.00	21.50	22.00	22.00	22.50	23.00	23.00	206.00
G	Development of Wetlands.											
47.	Construction of protection wall near Range Office towards lake at Mansar Lake.	0.95	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	4.95
48.	Construction/Maintenance of inlets/outlets drains including silt retension chamber towards outwards lakes	41.00	20.30	46.00	48.50	51.00	52.50	54.50	55.00	27.50	59.00	455.30
49.	Installation of dustbins at various locations around the lake to prevent plastic entry into lake	2.00	2.00	2.00	2.30	2.50	2.50	2.50	2.50	3.00	3.00	24.30
H.	Construction of residential and official buildings for front line staff/ Infrastructure development.											

Surinsar-Mansar Wildlife Sanctuary

SL. No.	Activity	Financial requirement (Lakhs)										Total
		1 st Year (2020-21)	2 nd Year (2021-22)	3 rd Year (2022-23)	4 th Year (2023-24)	5 th Year (2024-25)	6 th Year (2025-26)	7 th Year (2026-27)	8 th Year (2027-28)	9 th Year (2028-29)	10 th Year (2029-30)	
50.	Repair and renovation of feed store near Range Office Complex Mansar	0.99	0.95	1.00	1.00	1.00	1.00	2.00	1.00	1.00	1.00	10.94
51.	Repair and renovation of Inspection Hut.	0.63	0.91	1.00	1.00	1.00	1.00	1.50	1.00	1.00	1.00	10.04
52.	Repair and renovation of Eco-Hut and Range Office Mansar.	0.00	0.90	1.00	2.00	2.00	2.50	3.00	2.00	3.00	3.00	19.40
53.	Construction of interpretation centre at Mansar near Range Office and installation of pictures of flora and fauna etc.	10.00	10.50	11.00	11.00	12.00	12.30	12.50	13.00	13.00	13.50	118.80
54.	Purchase of photography cameras	0.00	2.00	2.50	2.50	2.50	3.00	3.00	3.00	3.50	4.00	26.00
I.	Construction, up-gradation and maintenance of inspection paths, fire lines, watch towers etc											
55.	Construction /Maintenance of inspection path 1.5 m wide	3.39	6.33	6.30	6.50	6.50	5.00	5.00	5.00	5.00	5.00	54.02

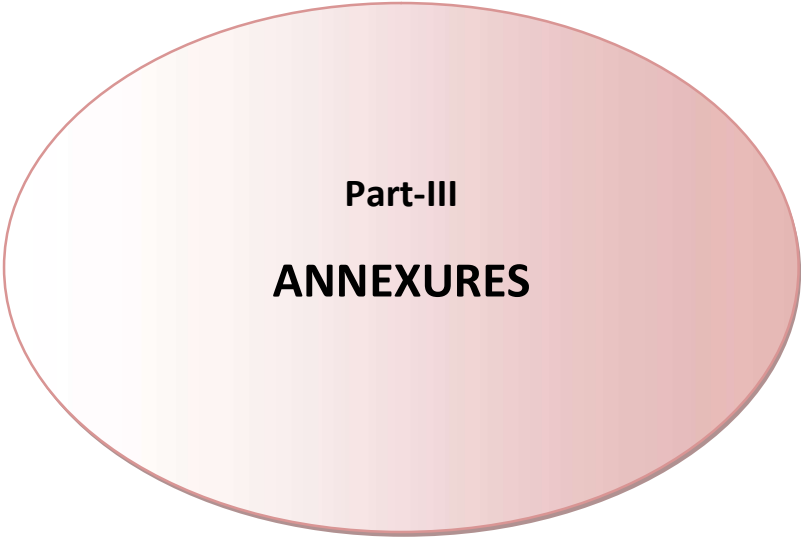
Surinsar-Mansar Wildlife Sanctuary

SL. No.	Activity	Financial requirement (Lakhs)										Total
		1 st Year (2020-21)	2 nd Year (2021-22)	3 rd Year (2022-23)	4 th Year (2023-24)	5 th Year (2024-25)	6 th Year (2025-26)	7 th Year (2026-27)	8 th Year (2027-28)	9 th Year (2028-29)	10 th Year (2029-30)	
56.	Construction/Maintance of Rescue-Shed/at Release Pan/Deer Park	2.00	2.00	2.00	2.50	2.50	2.50	3.00	3.50	3.50	3.50	27.00
J.	Casual engagement of Labour to supplement the field staff											
57.	Wages for casual Labour/Need based workers/Driver engaged under CAMPA.	6.50	5.83	6.00	6.50	6.50	7.00	7.50	7.00	7.00	7.50	67.33
58.	Payment for local Labour/informers for Anti-poaching Works/ Man-Animal conflict resolution.	3.00	3.28	3.50	4.00	4.00	4.50	4.50	4.50	5.00	5.00	41.28
K.	Publicity cum awareness programmes.											
59.	Organizing of Awareness Camps	2.00	2.00	3.00	3.00	3.50	4.00	4.50	4.80	5.00	5.50	37.30
60.	Celebrations of wildlife week, Van-Mahotsav, wetland day etc.	1.50	3.00	2.50	2.00	2.00	2.50	2.50	2.50	2.50	3.00	24.00
61.	Printing of awareness material regarding man-animal conflict, flora and fauna etc.	2.00	1.50	2.50	2.00	2.00	2.00	2.50	2.50	3.00	3.00	23.00

Surinsar-Mansar Wildlife Sanctuary

SL. No.	Activity	Financial requirement (Lakhs)										Total
		1 st Year (2020-21)	2 nd Year (2021-22)	3 rd Year (2022-23)	4 th Year (2023-24)	5 th Year (2024-25)	6 th Year (2025-26)	7 th Year (2026-27)	8 th Year (2027-28)	9 th Year (2028-29)	10 th Year (2029-30)	
62.	Installation of Hoarding and Sign Boards in adjacent to the Protected area along the National Highway/ link roads etc.	2.00	2.50	2.50	2.00	3.00	2.50	2.00	3.50	2.00	3.50	25.50
L.	Documentation of Biological Diversity.											
63.	Listing, detailing, examination, census /survey and documentation and printing of biodiversity	2.00	2.50	3.00	3.50	30.00	3.50	3.50	3.50	4.00	32.50	88.00
64.	Research, monitoring and evaluation.	1.00	0.00	15.00	2.00	18.00	2.00	20.00	0.00	20.00	20.00	98.00
	Grand Total (A to L)	199.88	369.80	453.45	441.25	503.10	480.70	499.10	497.00	499.50	591.50	4535.28

Note: *The financial estimate/ Budget Proposed shall be subject to the Govt. scheduled Rates issued from time to time.*



Part-III
ANNEXURES

Annexure-I STATEMENT SHOWING AREA WITH STATUS OF LAND IN SURINSAR MANSAR WILDLIFE SANCTUARY

S.No.	Name of Tehsil	Name of Niabat	Name of Patwar halqa	Name of Village	Khasra No.	Area											
						Private Land		State Land		Forest Land		Shamlat Land		Kahcharai Land		Total Land	
						K	M	K	M	K	M	K	M	K	M	K	M
1	Jammu	Surinsar	Pounthal	Pounthal	951	3178	09	4410	09	1091	00	482	02	00	00	9192	00
2	Jammu	Surinsar	Pounthal	Sangar	412	2010	07	1630	09	375	12	775	17	00	00	4792	05
3	Jammu	Surinsar	Pounthal	Chillana	542	1816	16	982	04	2008	06	1109	16	00	00	5917	02
4	Jammu	Surinsar	Pounthal	Balad	138	1666	10	549	00	1577	00	00	00	00	00	3792	10
5	Jammu	Surinsar	Pounthal	Tarjad	205	620	17	00	00	2133	18	514	19	00	00	3269	14
6	Jammu	Surinsar	Pounthal	Panal	60	285	06	10	14	793	03	00	00	00	00	1089	03
7	Jammu	Surinsar	Pounthal	Dabar	99	495	09	00	00	503	06	00	00	00	00	998	15
8	Jammu	Surinsar	Pounthal	Barga	1029	562	12	131	08	1301	12	203	14	00	00	2199	06
9	Jammu	Surinsar	Pounthal	ChakChila	167	1088	01	377	02	3707	15	66	10	00	00	5238	19
10	Jammu	Surinsar	Surinsar	Surinsar	2244	2122	06	17709	13	2267	06	1572	18	00	00	23672	03
11	Jammu	Surinsar	Surinsar	Chilla	836	4385	16	3057	15	1777	10	1535	19	00	00	10757	00
12	Jammu	Surinsar	Sagoon	Badwal	79	288	14	164	03	1547	00	00	00	00	00	1999	17
13	Jammu	Surinsar	Sagoon	Batla Laid	185	476	17	425	03	623	00	25	05	00	00	1550	05
14	Jammu	Surinsar	Sagoon	Ringal	50	116	05	256	03	806	14	00	00	00	00	1179	02
15	Jammu	Surinsar	Sagoon	Kangrail	663	782	06	1350	18	1656	12	349	04	00	00	4139	00
16	Jammu	Surinsar	Sagoon	Pathwar	268	1467	03	1156	14	7976	08	233	07	00	00	10833	12
17	Jammu	Surinsar	Sagoon	Sagoon	746	2712	00	420	01	16206	11	1452	08	00	00	20791	16
18	Majalta	Mansar	Battal	Sarailchoa	-	1955	12	12609	15	671	19	2040	07	42	03	15443	01
19	Majalta	Mansar	Battal	Battal	-	4231	01	11501	19	00	00	1762	11	728	14	23328	09
20	Majalta	Mansar	Channi Mansar	Bhupnair Garh	-	66	02	142	19	3900	16	-	-	-	-	1409	17
21	Majalta	Mansar	Channi Mansar	Chani Mansar	-	1943	10	7721	11	-	-	1405	15	-	-	11070	16
Total						32263	179	64599	180	50917	168	13522	172	770	17	162656	172

Annexure- II
Government of Jammu and Kashmir
Civil Sectt: Forest Department

Notification
Jammu, the 10th April, 1990

SR0-138:- Whereas, it appears to the Government that the area specified in Annexure-“A” to this Notification, has adequate ecological, faunal, floral, geomorphological significance for purposes of the protecting, propagating and developing Wildlife & its environment.

Now, therefore, in exercise of the powers conferred by section 17 of the Jammu and Kashmir Wildlife (protection) Act, 1978, the Government hereby declare the said area as a Sanctuary.

By Order of the Government of Jammu and Kashmir.

Sd/-
Commr./ Secretary to Government,
Forest Department

No. FST/9/WL/80

Dated:-10-10-1990

Copy for information and necessary action to the:-

1. Secretary to Government, Law Department. (w.5.s.c.)
2. Secretary to Government, Revenue Department.
3. Chief Wildlife Warden, Srinagar.
4. Deputy Commissioner concerned District.
5. Manager Government Press, Jammu for publication in Government Gazette.

Sd/-
Under Secretary to Government,
Forest Department

foroz/

**STATUS SURVEY REPORT OF THE PROPOSED SURINSAR-MANSAR
WILDLIFE SANCTUARY.**

NOMENCLATURE:

The proposed Sanctuary has been named after the two Lakes i.e., situated at two corners, sixteen kilometers apart.

Easy accessibility and aesthetic, ecological, faunal and floral, significances of the area makes it fit to be declared as Wildlife Sanctuary. The inhabiting fauna and deteriorated habitat due to over grazing need immediate and adequate attention to revive both.

SITUATION:

The tract is situated between river Tawi in the north and north-west, Udhampur Samba road in South East, with the two Lakes located at two extremities; Surinsar in North west and Mansar in South-east.

BOUNDARIES:

- North -River Tawi
- East -Udhampur -Samba Road & Gambhir Khad.
- South-East -Battal-Billawar Road & Mansar Lake
- South-West - Surinsar –Mansar Road
- North-West - River Tawi&Surinsar Lake

AREA AND LIMITS:

The area of interest is spread over 97. 82 sq.kms and is roughly rectangular in shape. It comprises of compartments 7,9,11,12,13,14 and 15 of Mansar block. The proposed tract is located on G.T Sheet No: 43 P/1 (Surveyed in 1961-62 1st edition) now 43 P/2 (Surveyed in 1967-68 2nd edition).

The area experiences the altitudinal range between 547 to 834 m. Above M.S.L.

It lies between 32°41'. 29" to 32°49'.28" North Latitude and 74° 59'.54" to 75°09'.12" East longitude.

The map of the in question is enclosed.

APPROACHES:

The projected area is quite accessible from Jammu by battled road Surinsar is 42 kms from Jammu, whereas Mansar is 61 kms via Samba, Surinsar is also approachable from Udhampur and is located at 38 kms distance road links Mansar with Surinsar, running along southern boundary of the area.

LEGAL STATUS:

The area of interest is a reserve forest and after its identification as a potentially viable Wildlife area, it was agreed to notify it is a Wildlife Sanctuary vide Government Order No: FST/20 OF 1981, dated: 04-04-1981. Presently the area is under the administrative and technical control of the Department of Wildlife Protection, which is protecting and propagating the life forms supported by the area with the help of scientific management practices.

FLORA:

As per the Champion and Seth classification the forest of this area are mixed scrub forest comprising mainly broad-leaved trees and shrubs, except in compartment 15 where chir Pinus is predominant. Among broad-leaved species the principal species are *Acacia modesta*, *A. catechu*, *Lannea grandis*, *Mallotus philippines*, *Cassia fistula*, *Zizyphus jujuba*, *Dalbergia sissoo*, *Emblica officinalis*, *Ficus benghalensis*, *Ficus religiosa* and *Bauhinia variegata*,

The under story includes *Adhatoda vasica*, *Dodonea viscosa*, *Carissa opaca*. The dominant climber in these forests is *Bauhinia vahlii*.

FAUNA:

The Wildlife (mammals) of the area includes Goral, Wild bear, Barking deer, Jackal, Porcupine, Hare and Jungle cat.

Since the year 1980-81 the area is being managed by this department. Apart from affording protection to the wild populations of herbivores, the department. Has successfully bred to Sambar, Chetal and Indian Gazelle in capacity of which Sambar have been released in the release pens and are going well over there.

The area support diverse and rich avi-fauna of which most common species are Red Jungle fowl, Pea fowl, Black partridge, Grey partridge, Ringdove, Blue rock pigeon etc. The bird populations include both migratory and resident species; most of them are very rare.

Sd/-
Chief Wildlife Warden,
Jammu and Kashmir
Government,
Srinagar.

Annexure- III**Details of protected area diverted under FCA in Surinsar-Mansar Wildlife Sanctuary.**

S.No.	Name of the Project.	Area involved	Govt. Sanctioned Order No.
1.	Proposal for diversion of 7.35 Ha. Forest land for 132 KV/DC Hiranagar Battal-Manwal Transmission line for Power Development Department.	7.35 Ha. in Surinsar-Mansar Wildlife Sanctuary.	08-FST of 2017 dated: 30-01-2017.
2.	Construction of Road from Dhar Road Larey to Sumal.	1.995 Ha. in Surinsar-Mansar Wildlife Sanctuary.	Draft Stage.
3.	Construction of Road from Sumwal to Sarail Choa (JK 14-402).	0.73 Ha. in Surinsar-Mansar Wildlife Sanctuary.	Stage I Approval accorded.
4.	Construction and Upgradation of Road L-060 Kothar to Ponthal.	1.482 Ha. in Surinsar-Mansar Wildlife Sanctuary.	Submitted to the higher Authorities.

Annexure- IV**Year wise statement of death/injury cases due to Man Wild animal Conflict of Wildlife Division Kathua.**

Year	O.B		Received		Total		Settled		Pending		Total Amount Paid (Rs)		Remarks
	Death	Injury	Death	Injury	Death	Injury	Death	Injury	Death	Injury	Death	Injury	
2011-12	0	0	0	3	0	3	0	3	0	0	0	23200	1.Sh. Masood Ahmed S/o Sh. Tota Bakarwal R/o Dhar Sarthal Bani. Amount paid Rs. 3200/=
													2.Sh. Mohd Youns S/o Sh. Ab. Gani R/o Raore Distt Samba. Amount paid Rs. 10,000/-
													3.Sh. Mohd Tahir S/o Sh. Ibrehim R//o Raore Distt Samba. Amount paid Rs. 10000/=
2012-13	0	0	0	2	0	2	0	2		0	0	10000	1. Mrs.Sawtri Devi W/o Late Taj Ram R/o Daghore Tehsil Samba Amount paid Rs. 5000/=
													2. Ms Kanu Salgotra D/o Sh. Raj Kumar Daghore Tehsil Samba Amount paid Rs. 5000/=
2013-14	0	0		0		0	0	0	0	0			No such case has received by this office during the year.
2014-15	0	0	0	2	0	2	0	2	0	0	0	100000	1.Smt. Skina Begum S/O Mohd. Ramzan R/O Lohai Tehsil Bani Distt. Kathua. Amount paid Rs.100000/=

Surinsar-Mansar Wildlife Sanctuary

												15000	2 Smt. Amina Begum W/O Noor Hussain R/O Sandroon Tehsil Bani Distt. Kathua. Amount paid Rs. 15000/=
2015-16	0	0	0	0	0	0	0	0	0	0	0	0	
2016-17	0	0	2	0	2	0	1	0	1	0	300000	0	Smt. Krishna Devi W/O Sh. Baba Ram R/O Chak Manga Gujran Samba injury/death by Wild Boar. Amount paid Rs. 300,000/-
													Ms. Neha Devi D/O Sh. Harbans Lal R/O Mansar Disstt. Samba death by Snake bite. The case has been resubmitted vide this office No. WLW/K/842 dated 28.02.2017 for the review and re-consideration as this is the first case of snake bite for ex-gratia and the decision of higher authorities is still awaited.
2017-18	1	0	1	0	2	0	1	0	1	0	300000	0	1. M/s Saima Devi W/o Mansa Ram R/o Dhaggar Tehsil (Saroola) Bani. Amount paid Rs. 300,000/-
2018-19	1	0	0	0	1	0	0	0	1	0	0	0	

Surinsar-Mansar Wildlife Sanctuary

2019-20	1	0	2	0	3	0	2	0	1	0	300000	0	1. One case is pending since 2016-17 2. Case of Late Sh. Kartar Singh S/O Sh. Munshi Ram R/O Lahri Tehsil Billawar died due to leopard attack on 02.07.2019. The case has been sanctioned vide Chief Wildlife Warden order No. 17 of 2020 Dated 13.02.2020. Compensation of INR 300000/= has been paid to the legal heir of the deceased.
											300000	0	3. Case of Late Sh. Parshotam Kumar S/O Mahinder Kumar R/O Makwal Tehsil Ramkote died due to leopard attack on 11.11.2019. The case has been sanctioned vide Chief Wildlife Warden order No. 154-of 2019 Dated:-26-11-2019. Compensation of INR 300000/= has been paid to the legal heir of the deceased
2020-21	1	0	0	0	0	0	0	0	1	0	0	0	
2021-22	1	0	0	0	0	0	0	0	1	0	0	0	
											1200000	148200	

Annexure- V
Government of Jammu and Kashmir
Forest, Ecology & Environment Department,
Civil Secretariat, J&K, Srinagar.

Subject: Promotion of Eco-Tourism by allowing Trekking on the identified routes falling inside the Wildlife Protected Areas of the State.

Ref. No:- State Administrative Council Decision No. 160/17/2019 dated 03.07 2019.

Government Order No:- 215 - FST of 2019.

D a t e d: 15 -07-2019.

Sanction is hereby accorded to the notification and development of eleven(11) Trekking routes by Wildlife Department, as per the Annexure 'A' of this Government Order for allowing guided Trekking opportunities in pristine Wildlife Protected Areas and involving local communities for livelihood improvement. The Wildlife Department shall workout detailed modalities for management of the Trekking routes/ Programmes.

By order of the Government of Jammu & Kashmir.

Sd/

(Manoj Kumar Dwivedi) IAS
Commissioner/Secretary to Government
Forest. Env. & Ecology Department

No-FST/Land/02/2005

Dated: 15-07-2019

Copy to the:

1. Pr. Chief Conservator of Forests, J&K Srinagar.
2. Chief Wildlife Warden, J&K. Srinagar.
3. Director Archives & Archaeology J&K, Srinagar.
4. OSD with Advisor(K) to Hon'ble Governor, J&K.
5. Pvt Secy. to Commissioner/Secretary to Government, General Administration Department.
6. Pvt Secy. to Commissioner/Secretary to Government, Forest, Env. & Ecology Department.
7. Pvt Secy. to Special Secy.(T), Forest Department.
8. Government Order file (W2 SC).

Riyaz -Ul-Haq
Under Secretary to Government
Forest, Env. & Ecology Department.

Annexure to Government Order No: 215 – FST of 2019 dated 15-07-2019

S.No	Region	Name of the Wildlife Protected Area	Name of the proposed Trekking Route	Length in KMS	Duration of Trek
1.	Kashmir	Brain & Khonmoh Wildlife Conservation Reserve	Cheshmashahi – Zowra	10	1 day (5 Hour Duration Ascend)
2.	-do-	Dara Wildlife Conservation Reserve & Dachigam National Park	Dara – Mahadev – Back	10 x 2	2 day (6 & 4 hour Duration) Ascend as well as Descend
3.	-do-	Overa Aru Wildlife Sanctuary & Dachigam National Park	Aru – Tarsar – Marsar & back	25x2	4 day (6 hour Duration/Day) Ascend /Descend
4.	-do-	Overa Aru Wildlife Sanctuary	Aru – Kolhai Glacier	23 x 2	4 day (6 hour Duration/Day) Ascend /Descend
5.	-do-	Dara Wildlife Conservation Reserve	Dara – Hayen	13	1 day (5 hour Duration) Descend
6.	Jammu	Nandni Wildlife Sanctuary	Nandni to Bail Khad and Back	5.5	1 day (2 hour Duration)
7.	-do-	Sudhmahadev Wildlife Conservation Reserve	Mantali to Patnitop	12.5	1 day (6 hour Duration)
8.	-do-	Jasrota Wildlife Sanctuary	Sanctuary Gate to Gura Surjan	6	1 day (3 hour Duration)
9.	-do-	Surinsar Mansar Wildlife Sanctuary	Sagoon Surinsar to Purmandal	12	1 day (6 hour Duration)
10.	-do-	-do-	Covering Forest Co: No 5&8/JDR (Staring & End Point Same)	9.8	1 day (4 hour Duration)
11.	-do-	-do-	Covering Forest Co: No 7 JDR (Staring & End Point Same)	7.6	1 day (3.5 hour Duration)

**Annexure- VI
CONTROL FORMS**

FORM – 1**Restoration of habitat: Weed control**

S. No	Location & name of site	Year	Extent of area(Ha)	Species of weed	Operation	Total Cost	Cost/ha	Remarks
1	2	3	4	5	6	7	8	9

Location : By compartment, site name or land feature

Operation : Uprooting, cutting, burning, ploughing, manual or by using animals or machinery.

Remarks : Measure of success and or problem faced

FORM – 2**Restoration of habitat: Controlled burning**

Sl. No	Location & Name of site	Year	Extent of area (Ha)	Area treated(ha)	Period	Total Cost	Cost/h a	Remarks
1	2	3	4	5	6	7	8	9

Location : By compartment, site name or land

Feature Period : Date of starting operation and completion.

Remarks : Mention resultant structure (e.g. a mosaic, %burned, % intact),
Problems

FORM-3**Restoration of habitat: Soil conservation measures- Initial operations and subsequent maintenance.**

Sl. No	Location & name of site	Year	Extent of area(Ha)	Area treated(ha)	Period	Total Cost	Cost/h a	Remarks
1	2	3	4	5	6	7	8	9

Location : By compartment, site name or land

Extent of area : Total area identified for such treatment. In case of streams or gullies, the length involved

Area treated : If linear feature then quote length; otherwise area

Operation : Structures involved such as gully plugs, trench-cum-mound, terracing, spurs and bunds etc.

Remarks : Mention if initial work or maintenance.

FORM-4

Creation of new artificial waterholes.

Sl. No	Category	Year	Location	Cost	Performance
1	2	3	4	7	8

Category : Masonry anticut, 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 (give reason for the latter two)

FORM-5

Maintenance of Waterholes-Natural.

Sl. No	Category	Perennial/ seasonal	Location	Year	Nature of Work	Cost	Performance
1	2	3	4	5		6	7

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 : Successful, partially successful, failure (give reason for the latter two)

FORM-5

Maintenance of Waterholes- Artificial.

Sl. No	Category	Perennial/ seasonal	Location	Year	Nature of Work	Cost	Performance
1	2	3	4	5		6	7

Category : Masonry anicut, earthen bund, lined depression, borewell and pump, reservoir, spring fed, tanker fed, guzzler, aquifer, etc.

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 works.

Performance : Successful, Partially successful, failure (give reason for the latter two)

FORM –6

Animals – New records

Sl. No	Species	Location	Year	How discovered	Details of number, age, sex	Habitat description	Remarks
1	2	3	4	5	6	7	8

Note : Animal will include vertebrates and invertebrates

How discovered : Sighting, dead specimen, reliability of sighting, captured specimen, incontrovertible other evidence.

No., age, sex, etc. : As applicable to vertebrates

Habitat description : Broad habitat description such as vegetation, and elements such as water, large old trees, den trees, snags, down log material. Use microhabitat descriptors only if relevant.

Remarks : Any other useful information

FORM – 7**Animals – Mortality other than that attributable to an offence**

Sl. No	Species	Location	Year	Sex and age	Number	How discovered	Cause of mortality	Remarks
1	2	3	4	5	6	7	8	9

Location : By compartment, landmark etc.

Sex and age : As per parameters for age class, Sex, if possible to identify.

He discovered : Carcass, complete or partial, skull or any other recognizable remains collected where only some remains of an animal are found.

Cause of mortality : If known, e.g. territorial fight, accident, possible disease (following postmortem results), old age, cause difficult to determine, predation etc.

Remarks : Any other useful information

FORM – 8**Animals – Mortality attributed to poaching or an act of vandalism**

Sl. No	Species	Location	Cause of mortality, number, sex, age class	Remarks
1	2	3	4	5

Location : By compartment or 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 – 9**Animals – Predation on domestic live stock by wild carnivores**

S. No	Range	Month	Category of livestock killed	Location	Number	Compensation paid	Carnivore involved	No. of case Undecided	Remarks
1	2	3	4	5	6	7	8	9	10

Col.4 : Buffalo, cow, bullock (adult, sub-adult, calf), camel, horse, donkey, sheep, goat, poultry, etc.

Col.5 : Comptt. No. or landmarks where killed and the village of the owner.

Col.8 : Indicate species responsible for the kill if identify is confirmed.

Col.9 : Either in progress or dropped.

Col.10 : Record observations like- attended or unattended animals, killed in forest or waterhole or in the pen/shed, field and whether kill was in area closed to livestock trespass.

FORM – 10**Animals: Killing of a human by Wild life or injury caused**

Sl. No	Range	Month	No. of incidents	No. of people killed, age & sex	Location, circumstances & species	No. of people injured, age & sex	Location, circumstances & species	Compensation (Rs.)
1	2	3	4	5	6	7	8	9

Location, circumstances: Location by comptt. No., the village to which the person belongs and a description of the site and species activity such as- open grassy patch, cutting grass, or under a mahua tree collecting flowers etc. Mention species on proof.

FORM – 11

Animals: Wildlife damage to private or public property

Sl. No	Range	Month	The category of property	Extent of damage	Species involved and number	Remarks
1	2	3	4	5	6	7

Location : By comptt. No., village survey no., name of village or land mark.

Category of property : e.g. Agriculture field-wheat, huts in a village, any kind of vehicle.

Extent of damage : Crop damage by area, estimated loss of produce and monetary loss. Similar yard sticks for other items like partial or total destruction of huts and belongings with estimated monetary loss.

Remarks : Any relevant information or circumstances e.g. Wild elephant was provoked by people.

FORM – 12

Plants: New records

Sl. No	Range	Kind of produce	Species	Quantity	Revenue realized	Free of change quantity	Agency involved	
							Local people	Outsiders
1	2	3	4	5	6	7	8	

Kind of produce : Mention Name, can be biological or geomorphic in origin

Species : If applicable

Quantity : Use the appropriate units

Local people : applies to people within Sanctuary.

FORM – 13

NWFP Collection: Plants and other produce Range

Sl. No	Year	Kind of produce	Species	Quantity	Revenue realized	Free of charge quantity	Agency involved	
							Local people	Out siders
1	2	3	4	5	6	7	8	

- Kind of produce : Mention Name, can be biological or geomorphic in origin
- Species : If applicable
- Quantity : Use the appropriate units
- Local people : applies to people within Sanctuary.

FORM – 14

Grazing of domestic livestock

Sl. No	Year	Grazing unit No.	List of villages in the unit	Village-wise listed population of cattle	Capacity of the unit(cattle units) an number of cattle grazed	Total cattle unit grazed		Remarks
						Legal	Illegal	
1	2	3	4	5	6	7	8	9

- Remarks :
- (i) Mention number of cattle immunized against FMD, RP, anthrax as the case might be and the number of cattle without the prophylactic cover
 - (ii) If grass is allowed to be cut for cattle being stall-fed, mention the village and number of such cattle.

FORM – 15**Programmes of NGO's**

Sl. No	Year	Name of agency	HQ location	Nature of the scheme operated	Physical & financial targets		Area & location	Remarks
					Given	achieved		
1	2	3	4	6	7	8	9	10

Remarks: Success, adverse impacts, incompatibility with Sanctuary management objectives or failures should be mentioned. These programmes and activities could be within the management area or those that are outside the management area but are capable of influencing the state of the management area-either complimenting efforts or adversely impacting.

FORM – 16 A**Construction of Infrastructure: Roads and Bridges (New) Range**

S. No	Year	Category	Surface	Name or number	Length covered	Cross, drainage works, bridges with type	Total cost and status
1	2	3	4	5	6	7	8

Category of road : National/State highway, district road etc. Public road or open only to managers should be stated

Surface type : Black topped, metal, earth etc. Applies to road.

Name/number : as the case may be

Cross drainage type : e.g. for culverts-box, hosepipe culverts etc.

Bridge Type : Wooden trestle, suspension, metal muly span, masonry arch etc

Status : Work completed or ongoing. State also the agency responsibility; state whether operational or non-operational.

FORM – 16 B

Maintenance of Infrastructure: Roads and Bridges (existing) Range

Sl. No	Year	Category	Surface	Name or number	Length covered	Cross, drainage works, bridges with type	Total cost and status
1	2	3	4	5	6	7	8

Category of road : National/State highway, district road etc. Public road or open only to managers should be stated

Surface type : Black topped, metal, earth etc. Applies to road.

Name/number : as the case may be

Cross drainage type : e.g. for culverts-box, hosepipe culverts etc.

Bridge Type : Wooden trestle, suspension, metal multy span, masonry arch etc.

Status : Work completed or ongoing. State also the agency responsibility; state whether operational or non-operational.

FORM – 17

Construction of Infrastructure: Buildings (New) Range

Sl. No	Year	Nature of the building	Location	Type of construction	Number	Total cost	Status
1	2	3	4	5	6	7	8

Nature of the building : E.g. Residential (guard), office, store, chauki, watch tower, tourist facility, hide, barrier, patrolling camp, (temporary/permanent) etc.

Location : The 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.

FORM – 18 A

Developing Infrastructure: Fire lines (New)

Sl. No	Year	Fire line Category or width	Name of points Connected	Length (Mt)	Cost	Remarks
1	2	3	4	5	6	8

Category : Main or subsidiary etc. Record width.

FORM – 18 B

Outbreaks of fires: Surinsar-Mansar Wildlife Sanctuary.

Sl. No	Year	Location	Extant (ha)	Dates		Reason	Estimated loss	Remarks
				Detected	Controlled			
1	2	3	4	5		6	7	8

Location : By compartment

Reason : Established or suspected

Estimated Loss : e.g. no. of trees damaged, stacked firewood/ timber/ bamboo destroyed/ damaged by volume and cost, wild animals dead, particulars of sensitivity 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 fire has been mapped.

FORM – 19

Offence cases detected: Surinsar-Mansar Wildlife Sanctuary.

Sl. No	Year	Category	Numbers	No. of cases detected		No. of cases under process	No. of cases compounded	Remarks
				Successful	Failure			
1	2	3	4	5		6	7	8

Category : e.g. Illegal cutting of trees, illegal firewood, illegal NWFP, poaching, encroachment, illegal grazing etc, Category 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 col. 8 pertain to area of Non PA status under management which do not involve an endangered species. (Schedule-I).

FORM – 20

Research projects under implementation through PA manpower with or without collaboration with other agencies Surinsar-Mansar Wildlife Sanctuary.

Sl. No.	Year	Title	Completed	Ongoing	New	Status	Financial outlay (Rs)	Expenditure incurred (Rs)	Remarks
1	2	3	4	5	6	7	8	9	10

Completed : State date of completion and the status of the project reports

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 projects which has been dropped or held in abeyance etc.
- Remarks** : Any other relevant information. If the project is 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 collections are being housed.

FORM – 21

Survey and inventories: Surinsar-Mansar Wildlife Sanctuary.

Sl. No	Year	Title of survey, inventory activity	Completed	Ongoing	New	By PA	By other agency	Remarks
1	2	3	4	5	6	7	8	9

- Completed** : State date of completion of field work and the status of the report
- Ongoing** : State since when the is it under operation and when is expected to be completed.
- New** : State the date of commencement and duration.
- By PA personal** : Will include collaboration or contractual arrangement. State the case as relevant.
- Other agency** : State the name of the agency.
- Remarks** : If specimen plants/animals are being collected, state where the collections are being housed and authority. Any other useful information.

FORM – 22**The Monitoring programme: Surinsar-Mansar Wildlife Sanctuary.**

Sl. No	Year	Title of the programme	Date of initiation	Responsible agency	Technique	Status of collaborate on and analysis of data	Remarks
1	2	3	4	5	6	7	9

Technique : PCQ, belt transect, line transect and plots, pugmarks etc. by the title of the technique.

Status of collaboration : write only if applicable.

FORM – 23**Format for firewood collection in Surinsar-Mansar Wildlife Sanctuary.**

House No.	Whether using fuelwood	Whether LPG/biogas available	Whether kerosene is used	Actual fuelwood consumption (quintal)	% consumption met from Pvt. land	% consumption met from forests
1						
2						

FORM- 24**Format for fodder/ grass for stall feeding in Surinsar-Mansar Wildlife Sanctuary.**

House No.	Fodder available as a by-product from agro crops		Fodder from fodder crops		Total fodder production (quintal)
	Crop	Quantity (quintal)	Crop	Quantity (quintal)	
1					
2					

FORM – 25

Eco development programme: Targets and implementation Surinsar-Mansar Wildlife Sanctuary.

Sl. No	Year	Nature of the programme	Sector (Central/ State) or NGO sponsored	Target set		Achievements		Village (buffer/ enclaved)	Remark
				Phy.	Fin.	Phy.	Fin.		
1	2	3	4	5		6		7	8

Nature of the programme : e.g. pasture development, fodder plantations, establishing biogas plants, livestock improvement, establishment and development of sericulture, revival of local skills such as handicraft, water harvesting systems, adult education etc.

Village : Site where programme is being implemented-whether buffer or inside PA.

Remarks : State problems, state failures and thereof, reasons for not attaining targets, for non-implementation or deviation etc. State whether it is on the right tracks in context of achievement of objectives.

Annexure-VII



**Government of Jammu & Kashmir
Office of the Chief Wildlife Warden, J&K**

Boulevard Road, Near Lalit Grand Palace, Sr
190001 Tel/Fax No: 0194-2501069 (May-Oct)
Manda - Hills (Near Ashoka Hotel) Jammu -
Tele/Fax: 0191-2572570 (November-April)
Email: jwfd@jwfd.org

**Minutes of the meeting held under the Chairmanship of Chief Wildlife
Warden, Jammu and Kashmir on 21.08.2020 to discuss the draft
Management Plans of Wildlife Sanctuaries of Jammu region.**

A meeting was held at Wildlife Complex, Manda Jammu under the Chairmanship of the Chief Wildlife Warden, Jammu and Kashmir to discuss the draft Management Plans of Wildlife Sanctuaries of Jammu region on 21.08.2020. The meeting was attended by following members of the committee constituted vide No. 13 of 2020 dated 28.01.2020 and officers:

1. Shri J. Frankoi, IFS, Addl. Pr. CCF, Ecotourism
2. Shri Samuel Changkiza, IFS, CF East Circle, Jammu
3. Dr. Harpreet Kaur, Spl. Secretary, Technical,
Forest Administrative Deptt.
4. Shri Vijay Kumar, Wildlife Warden, Kathua
5. Shri Anil Kumar Atri, Wildlife Warden, Jammu
6. Shri Amit Sharma, Wildlife Warden, Jambu Zoo
7. Dr. Arun Gupta, Wildlife Warden, Headquarter / Research
8. Dr. R. S. Katoch, Veterinary Asstt. Surgeon, Jammu
9. Shri Tahir Mahmood Mirza, Wildlife Prosecutor
10. Shri Guldev Raj from NGO (Himalayan Avian).

*Shri
Kathua*

Regional Wildlife Warden, Jammu could not attend due to health problem.

At the outset, the Chief Wildlife Warden J&K welcomed the participants and advised concerned Wildlife Wardens to make presentations one by one. The draft Management Plans of various Wildlife Sanctuaries of Jammu region were presented by the respective Wardens, issues raised during presentation were discussed and decisions taken as under:

1. Surinsar-Mansar Wildlife Sanctuary:

The Wildlife Warden, Kathua made presentation regarding draft Management Plan of Surinsar-Mansar Wildlife Sanctuary. He mentioned that the previous Management Plan of the Sanctuary was not approved by the Competent Authority of the time. He further mentioned that the total area of the Sanctuary as per Notification is 97.82 km² wherein almost 50% is agricultural land. After detailed discussions following decisions were taken:

- a) The actual area of Sanctuary to be checked on GIS platform.
- b) Land use of the sanctuary area during last 10 years through available Google images should be analyzed and incorporated.
- c) The financial implications of the plan should be given component wise and not scheme wise.
- d) The financial implications should have provisions for rate revision as per standing Government orders.
- e) The Management Plan should focus on Sanctuary management and not lake management which is a separate document being prepared by Wildlife Institute of India.
- f) The Management Plan should reflect specific measures to conserve key species of the area.
- g) While making prescriptions, it should be noted that proposed activities should conform to the provisions of Wildlife Protection Act and relevant orders of the Hon'ble Supreme Court.
- h) The Management Plan should be prepared keeping in view the guidelines laid down by Shri W B Sawarkar.
- i) The extent of area with respect to forest land, agriculture land, government land and other land need to be worked out and presented in the next meeting.

2. Jasrota Wildlife Sanctuary:

Wildlife Warden, Kathua also presented the Management Plan of Jasrota Wildlife Sanctuary. He mentioned that it is a small Sanctuary with 7.60 km² area. Various issues during the presentation were discussed and decisions taken as under:

- a) The actual area of sanctuary to be checked on GIS platform.
- b) Land use of the Sanctuary area during last 10 years through available Google images should be analyzed and incorporated.
- c) The financial implications of the plan should be given component wise and not scheme wise.
- d) The financial implications should have provisions for rate revision as per standing Government orders.
- e) The Management Plan should reflect specific measures to conserve key species of the area.
- f) While making prescriptions, it should be noted that proposed activities should conform to the provisions of Wildlife Protection Act and relevant orders of the Hon'ble Supreme Court.
- g) The Management Plan should be prepared keeping in view the guidelines laid down by Shri W B Sawarkar.
- h) The gap between the Forest area and Sanctuary area, which was not clear in the maps shown during presentation, need to be worked out and clarified in the next meeting.
- i) The delineation of boundaries should be clearly recorded in the map after ground verification.
- j) The extent of area with respect to forest land, agriculture land, government land and other land need to be worked out and presented in the next meeting.

3. Ramnagar Wildlife Sanctuary:

The draft Management Plan of Ramnagar Wildlife Sanctuary was presented by Wildlife Warden, Jammu. He mentioned that the previous Management Plan was not approved by the Competent Authority of the time.

- a) The actual area of Sanctuary to be checked on GIS platform.
- b) Land use of the Sanctuary area during last 10 years through available Google images should be analyzed and incorporated.
- c) The financial implications of the plan should be given component wise and not scheme wise.
- d) The financial implications should have provisions for rate revision as per standing Government orders.
- e) The Management Plan should reflect specific measures to conserve key species of the area.
- f) While making prescriptions, it should be noted that proposed activities should conform to the provisions of Wildlife Protection Act and relevant orders of the Hon'ble Supreme Court.
- g) The Management Plan should be prepared keeping in view the guidelines laid down by Shri W B Sawarkar.
- h) The delineation of boundaries should be clearly recorded in the map after ground verification.
- i) The extent of area with respect to forest land, agriculture land, government land and other land need to be worked out and presented in the next meeting.
- j) The issue with regard to diversion of Sanctuary area for other uses as per orders of Competent Authority need to be examined vis-à-vis terms and conditions laid down by the sanctioning authority. The prescription should mention about taking over of additional area to be added to the Sanctuary in lieu of diversions.

5. Tattakuti Wildlife Sanctuary:

Wildlife Warden, Jambu Zoo presented the draft Management Plan of Tattakuti Wildlife Sanctuary. He mentioned that this is the first attempt to make a Management Plan of this Sanctuary. Various issues during the presentation were discussed and decisions taken as under:

- a) The actual area of Sanctuary to be checked on GIS platform.
- b) Land use of the Sanctuary area during last 10 years through available Google images should be analyzed and incorporated.

Various issues during the presentation were discussed and decisions taken as under:

- a) The actual area of Sanctuary to be checked on GIS platform.
- b) Land use of the Sanctuary area during last 10 years through available Google images should be analyzed and incorporated.
- c) The financial implications of the plan should be given component wise and not scheme wise.
- d) The financial implications should have provisions for rate revision as per standing Government orders.
- e) The Management Plan should reflect specific measures to conserve key species of the area.
- f) While making prescriptions, it should be noted that proposed activities should conform to the provisions of Wildlife Protection Act and relevant orders of the Hon'ble Supreme Court.
- g) The Management Plan should be prepared keeping in view the guidelines laid down by Shri W B Sawarkar.
- h) The delineation of boundaries should be clearly recorded in the map after ground verification.
- i) The extent of area with respect to forest land, agriculture land, government land and other land need to be worked out and presented in the next meeting.
- j) Since the Sanctuary is adjoining Jammu city, adequate focus in the Management Plan should be given to awareness component involving locals keeping in view the monkey menace.
- k) The prescriptions should also refer to the balance area of the Sanctuary to be taken over from the Territorial Forest Division.

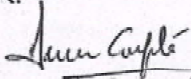
4. Nandini Wildlife Sanctuary:

The Wildlife Warden, Jammu also presented draft Management Plan of Nandini Wildlife Sanctuary. The Wildlife Prosecutor apprised that some area of the Sanctuary has been diverted for non-forestry uses as per the legal provisions and hence suggested for reworking the boundaries and area. Various issues during the presentation were discussed and decisions taken as under:

1

- c) The financial implications of the plan should be given component wise and not scheme wise.
- d) The financial implications should have provisions for rate revision as per standing Government orders.
- e) The Management Plan should reflect specific measures to conserve key species of the area.
- f) While making prescriptions, it should be noted that proposed activities should conform to the provisions of Wildlife Protection Act and relevant orders of the Hon'ble Supreme Court.
- g) The Management Plan should be prepared keeping in view the guidelines laid down by Shri W B Sawarkar.
- h) The delineation of boundaries should be clearly recorded in the map after ground verification.
- i) The extent of area with respect to forest land, agriculture land, government land and other land need to be worked out and presented in the next meeting.
- j) Special focus with regard to the research and survey in the Sanctuary need mention. This is in view of unique features of Sanctuary area.

Issued with the approval of Chief Wildlife Warden, J&K.


(Dr. Arun Gupta)
Wildlife Warden
Headquarter

No: WLP/Res/Mgmt.Plan/2020/530-37.

Date: 28-08.2020

Copy to the:

1. Conservator of Forests, East Circle, Jammu
2. Regional Wildlife Warden, Jammu Region, Jammu
3. Spl. Secretary, Technical, Forest Administrative Deptt.
4. Wildlife Warden, Kathua
5. Wildlife Warden, Jammu
6. Wildlife Warden, Rajouri-Poonch
7. Wildlife Warden, Jambu Zoo
8. Shri Guldev Raj from NGO (Himalayan Avian).

Minutes of the meeting of Standing Committee on draft Management Plan of PA's of Jammu Region.

To discuss the draft Management Plans of Protected Areas of Jammu region, meeting of the Standing Committee constituted vide Order No. 13 of 2020 dated: 28-01-2020 was held on 28th November, 2020 in the Information Centre of Manda Zoo at 10.30 AM.

01). List of Standing Committee members and special invitees' took part in the meeting is listed in ANNEXURE "A" to this MoM.

02). At the outset Member Secretary welcomed Chairman, members and other special invitees and briefed the Committee regarding decision of the previous meeting w.r.t draft Management Plan prepared by Management Plan Officers (MPO) and WWF team lead by Dr Pankaj Chandan in respect of draft Management Plan KHANP.

03). Following were the decision taken Protected Area (PA) wise after detailed deliberation.

(I) Jasrota Wildlife Sanctuary:

Wildlife Warden, Kathua Wildlife Division presented the draft Management Plan of Jasrota Wildlife Sanctuary. After giving a brief account on draft revision viz a viz previous decision taken by the SC, WLW Kathua elaborated sanctuary area reconciliation with GIS data and "Land Use Land Cover" change over 10 years time. Following were the various decisions taken after detailed discussion.

- a)** To carryout ground truthing of change detected in land use pattern and incorporate appropriate management proposal as per Management Plan objectives.
- b)** To reconsider buffer zone as 500mts and redraw core zone accordingly.
- c)** To delineate and consolidate boundaries on fringe areas, especially near habitation, accordingly, keeping provisions for Boundary Pillar (BP) installation.
- d)** Draft MP to incorporate bibliography/references of earlier research/documentation carried out by various research institutions in brief.

- e) Keeping in consideration the herbivore population and grazing pressure, draft MP plan to reflect extent of natural blanks/grass lands viz a viz other forest types and identify potential areas as per optimum requirement to be maintained under grass land.
- f) Geo-tagging of water bodies and plan for their maintenance.
- g) Draft MP to have a special mention about micro biodiversity hot spot and related conservation measures.
- h) Wherever feasible management plan to make provision for different management circle like afforestation, improvement, soil moisture conservation, etc.
- i) Sufficient plan consideration and financial provisioning for creation and maintenance of Water Harvesting Structures (WHS).
- j) Appropriate consideration and financial provisioning for up-gradation/improvement of rescue centre and protection equipments.
- k) Adequate mention of religious tourism, its impacts on sanctuary and sustainable measures for mitigation.
- l) To reflect optimum staff strength requirement and likely impact of inadequate staffing.
- m) Considering the existing high level of slope and erosion potential draft plan to have adequate provision for Catchment Area Treatment (CAT) of major watersheds.
- n) Plan proposal for use of modern tools and technology, inter alia to have provision for drone.

(II) Surinsar-Mansar Wildlife Sanctuary:

Wildlife Warden, Kathua Wildlife Division presented the draft Management Plan of Surinsar-Mansar Wildlife Sanctuary. After giving a brief account on draft revision viz a viz previous decision taken by the SC, WLW Kathua elaborated sanctuary area reconciliation with GIS data and "Land Use Land Cover" change over 10 years time. Following were the various decisions taken after detailed discussion.

- a) To carryout ground truthing of change detected and incorporate appropriate management proposal as per Management Plan objectives.
- b) To reconsider buffer zone as 500mts and redraw core zone accordingly.

- c) To delineate and consolidate boundaries on fringe areas, especially near habitation, accordingly, keeping provisions for Boundary Pillar (BP) installation.
- d) Draft MP to incorporate bibliography/references of earlier research/documentation carried out by various research institutions in brief.
- e) Keeping in consideration the herbivore population and grazing pressure, draft MP plan to reflect extent of natural blanks/grass lands viz a viz other forest types and identify potential areas as per optimum requirement to be maintained under grass land.
- f) Wherever feasible management plan to make provision for different management circle like afforestation, improvement, soil moisture conservation, etc.
- g) Geo-tagging of water bodies and plan for their maintenance.
- h) Draft MP to have a special mention about micro biodiversity hot spot and related conservation measures.
- i) Sufficient plan consideration and financial provisioning for creation and maintenance of Water Harvesting Structures (WHS).
- j) Considering the existing high level of slope and erosion potential draft plan to have adequate provision for Catchment Area Treatment (CAT) of major watersheds.
- k) Appropriate consideration and financial provisioning for up-gradation/improvement of rescue centre and protection equipments.
- l) Adequate mention of religious tourism, its impacts on sanctuary and sustainable measures for mitigation.
- m) To reflect optimum staff strength requirement and likely impact of inadequate staffing.
- n) Plan proposal for use of modern tools and technology, inter alia to have provision for drone.

(III) Kishtwar High Altitude National Park (KHANP):

Following were the observations of the Standing Committee with respect to revised draft management plan of KHANP.

- a) Special section devoting to hangul and snow leopard conservation and recovery.

- b) Management Plan to address issues of fringe areas including community dependence if any on the KHANP.
- c) Adequate focus on importance of aquatic flora and fauna.
- d) Existing corridor for connecting KHANP with adjoining forest across Pir Panjal, Ladak and Himachal be reflected and referred.
- e) Keeping in consideration the herbivore population and grazing pressure, draft MP plan to reflect extent of natural blanks/grass lands viz a viz other forest types and identify potential areas as per optimum requirement to be maintained under grass land.
- f) Geo-tagging of water bodies and plan for their maintenance.
- g) To reflect optimum staff strength requirement and likely impact of inadequate staffing.
- h) Wherever feasible management plan to make provision for different management circle like afforestation, improvement, soil moisture conservation, etc.
- i) Plan proposal for use of modern tools and technology, *inter alia* to have provision for drone, camera trap, and voice/weather recorder.

(IV) Tatakuti Wildlife Sanctuary (TWS):


Detailed power point presentation on draft management plan of tatakuti wildlife sanctuary was given by Sh. Amit Sharma. Following were the observations of the Standing Committee with respect to draft management plan of TWS.

- a) Relevant observations as mentioned in respect of Jasrota and Surinsar-Mansar WS.
- b) Ten year change analysis of land use land cover pattern.
- c) Management plan for the whole of the wildlife area including freshly notified area of 66 SqKm.
- d) Itemized past five year plan allotment and perspective five year budgetary proposals.
- e) Special chapters on key species conservation.
- f) Separate chapter on Man Animal Conflict including monkey menace.
- g) Wherever feasible management plan to make provision for different management circle like afforestation, improvement, soil moisture conservation, etc.

(V) Ramnagar and Nandini Wildlife Sanctuary:

Observations as mentioned in earlier MoM dated 21-08-2020 issued vide communication No. WLP/Res/Mgmt/2020/530-37 dated: 28-08-2020 and relevant comments made out above in respect of Jasrota and Surinsar-Mansar WS.

Issued with the approval of Chief Wildlife Warden, Government of J&K.


(Dr. Kumar, MK) IFS
Regional Wildlife Warden
Jammu.

No: RVLWJ/2021/ 4457-70 Dated: 3-02/2021

1. Copy submitted to Chairman Standing Committee (CWLW) for his kind information.
2. Copy to all Committee members for information.



Department of Wildlife Protection
Office of the Regional Wildlife Warden Jammu
 Manda Hills Jammu Near Hotel Ashok Phone : 0191-2544575 Fax: 2520948
 email: ccfwildlifejammu@gmail.com



Subject: Minutes of the meeting of Standing Committee on draft Management Plan of PA's of Jammu Region.

To discuss the draft Management Plans of Protected Areas of Jammu Region, meeting of the Standing Committee constituted vide Order No. 13 of 2020 dated: 28-01-2020 was held on 13th February, 2021 in the Information Centre of Manda Zoo at 11.00 AM.

List of Standing Committee members and special invitees' who took part in the meeting is listed in ANNEXURE "A" to this MoM.

At the outset Member Secretary welcomed Chairman, members and other special invitees and briefed the Committee regarding decision of the previous meeting w.r.t draft Management Plan prepared by Management Plan Officers (MPO) and WWF team lead by Dr Rohit Rattan, Associate Coordinator, WWF India in respect of draft Management Plan KHANP.

Following were the decision taken, Protected Area (PA) wise after detailed deliberation.

(I) Surinsar-Mansar and Jasrota Wildlife Sanctuary:

Wildlife Warden, Kathua Wildlife Division presented the draft Management Plan of Jasrota Wildlife Sanctuary. The Standing Committee after hearing detailed account on draft revision viz a viz decisions taken by the SC at its previous meetings took following decisions after detailed discussion.

a) In Chapter 2:

1. Details/description of main animals including morphology and scientific nomenclature should be as per latest norms. Main animal list should also reflect IUCN status in addition to status as in Wildlife protection Act 1972 and CITES classification.

b) In Chapter 5:

1. Management Plan **vision** should be written as "wildlife management with special emphasis on conservation of biodiversity and watershed management".
2. Management plan **objective 2** shall include "management of challenges posed by nilgai, wildboar, porcupine and monkey"
3. Management plan **objective 3** should also include capacity building for locals and other resource persons as part of eco-tourism promotion initiative.

4. Provision for Nature Interpretation Centre (NIC) is kept as enabling for future such consideration.
 5. To articulate and include crop loss/damage due to wild animals under Pradhan Mantri Fasal Bima Yojana (PMFBY) for compensation as per admissibility.
- c) Chapter 6:** relating to habitat management/improvement shall *inter alia* to mention about following aspects:
1. Watershed based soil-moisture conservation approach with the mention of micro-watershed nomenclature.
 2. Other means of animal monitoring like camera trap, thermal recorders, bird call/sound recorder, infra-red camera etc.
 3. Planting/ Sowing of local legume species should be made part of fodder augmentation.
- d)** Action points related to Management Effectiveness Evaluation (MEE) should be incorporated in the draft.
- e)** Eco-tourism related activities should be restricted to buffer zone and notified trekking route along with connected details should be enclosed in appropriate chapter.
- f)** Details of Protected Area (PA) diversion are made part of the draft in the form annexure for the purpose of record, reference and decision support.

(II) Ramnagar Wildlife Sanctuary:

Wildlife Warden, Jammu Wildlife Division presented the draft Management Plan of Ramnagar Wildlife Sanctuary. After giving a brief account on draft revision *viz a viz* previous decision taken by the SC, WLW Jammu elaborated sanctuary area reconciliation with GIS data and “Land Use Land Cover” change over 10 years time. Following were the various decisions taken after detailed discussion.

- a)** Details/description of main animals including morphology and scientific nomenclature should be as per latest norms.
- b)** Main animal list should also reflect IUCN status in addition to status as in Wildlife protection Act 1972 and CITES classification.
- c)** Management Plan to have **vision** and **objectives** (similar to Jasrota Wildlife Sanctuary).
- d)** Management plan shall include “management of challenges posed by nilgai, wildboar, porcupine and monkey”
- e)** Management plan should also include capacity building for locals and other resource persons as part of eco-tourism promotion initiative.
- f)** To articulate and include crop loss/damage due to wild animals under PMFBY for compensation.
- g)** Action points related to Management Effectiveness Evaluation (MEE) should be incorporated in the draft.

- h) Eco-tourism related activities should be restricted to buffer zone and notified trekking route along with connected details should be enclosed in appropriate chapter.
- i) Details of Protected Area (PA) diversion are made part of the draft in the form annexure for the purpose of record, reference and decision support.
- j) Watershed based soil-moisture conservation approach with the mention of micro-watershed nomenclature.
- k) Other means of animal monitoring like camera trap, thermal recorders, bird call/sound recorder, infra-red camera etc.
- l) Planting/ Sowing of local legume species should be made part of fodder augmentation.
- m) Very little scope for zonation because of smaller sanctuary size.
- n) Provision for chain link fencing of boundary especially area adjoining National Highway or settlement.
- o) All trek route to be geo-tagged and detailed in the draft management plan.
- p) Pending issue of settlement of local rights is to be mentioned.
- q) To reflect optimum staff strength requirement and likely impact of inadequate staffing.
- r) Budgetary provision mentioned in the draft management plan to be rationalised.

(III) Kishtwar High Altitude National Park (KHANP):

Observations of the Standing Committee at its meeting dated 28th November, 2020 and relevant record note issued vide No: RWLWJ/2021/4457-70 dated 03-02-2021 were reiterated. Accordingly, WWF team lead by Dr. Rohit Rattan after doing the needful and after incorporating other relevant observation as was decided by the SC w.r.t to other NP/S will present their draft to the SC at its next meeting.

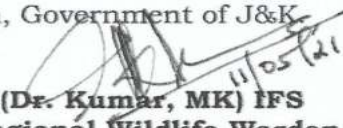
(IV) Tatakuti Wildlife Sanctuary (TWS):

Detailed power point presentation on draft management plan of tatakuti wildlife sanctuary was given by Sh. Amit Sharma. Following were the observations of the Standing Committee with respect to draft management plan of TWS.

- a) To carryout ground truthing of change deducted in land use pattern and incorporate appropriate management proposal as per Management Plan objectives.
- b) To consider buffer zone as 500m and redraw core zone accordingly.
- c) To delineate and consolidate boundaries on fringe areas, especially near habitation, accordingly, keeping provisions for Boundary Pillar (BP) installation.
- d) Man Animal conflict to be dealt (species, period, damage, intervention, cost, etc.) in a separate chapter.
- e) Management Plan draft to have executive summary at the beginning.

- f) Major animals description containing morphology, zoological name, WLPAs 1972, IUCN status, CITES status, etc.
- g) Management Plan to have **vision** and **objectives**. (Similar to Jasrota Wildlife Sanctuary).
- h) Management plan shall include "management of challenges posed by nilgai, wildboar, porcupine and monkey"
- i) Management plan should also include capacity building for locals and other resource persons as part of eco-tourism promotion initiative.
- j) To articulate and include crop loss/damage due to wild animals under PMFBY for compensation.
- k) Action points related to Management Effectiveness Evaluation (MEE) should be incorporated in the draft.
- l) Eco-tourism related activities should be restricted to buffer zone and notified trekking route along with connected details should be enclosed in appropriate chapter.
- m) Details of Protected Area (PA) diversion, if any, are made part of the draft in the form annexure for the purpose of record, reference and decision support.
- n) Watershed based soil-moisture conservation approach with the mention of micro-watershed nomenclature.
- o) Other means of animal monitoring like camera trap, thermal recorders, bird call/sound recorder, infra-red camera etc.
- p) Meteorological data of last five years and their interpretation.
- q) Provision for Nature Interpretation Centre (NIC)/Rescue Centre are kept as enabling for future such consideration.
- r) Draft Management plan to mention details about funding under different schemes during the past five years, budgetary proposal for next five years, various reporting formats, key species conservation/recovery plan, micro-biodiversity hotspots, etc.
- s) Detailing of settlement/ pending status of forest rights.
- t) Wherever feasible draft management plan to have provision for different management circle like afforestation, improvement, soil moisture conservation, etc.

Issues with the approval of Chief Wildlife Warden, Government of J&K


(Dr. Kumar, MK) IFS
Regional Wildlife Warden
Jammu

No: RWLWJ/2021/ 814-20

Dated: 11-05-2021

1. Copy submitted to Chairman Standing Committee (CWLW) for his kind information.
2. Copy to all Committee members for information.



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Subject: Minutes of the meeting of Standing Committee on draft Management Plan of Jasrota and Surinsar-Mansar Wildlife Sanctuaries.

To discuss the draft Management Plans of Jasrota and Surinsar-Mansar Wildlife Sanctuaries, meeting of the Standing Committee constituted vide Order No. 13 of 2020 dated: 28-01-2020 was held on 24th May, 2021 through video conference at 11.00 AM.

List of Standing Committee members and special invitees' who took part in the meeting is listed in ANNEXURE "A" to this MoM.

At the outset Member Secretary welcomed Chairman, members and other special invitees and briefed the Committee regarding decision of the previous meeting which was held on 13th February, 2021 w.r.t draft Management Plan prepared by Management Plan Officer (MPO) in respect of Jasrota and Surinsar-Mansar Wildlife Sanctuaries.

In continuation with the last meeting of the Standing Committee's decision i.e. the in principle approval of the draft submitted by Wildlife Warden Kathua in respect of Jasrota and Surinsar-Mansar Wildlife Sanctuaries, the final draft was checked and proof read for it's factual correctness, grammatical error etc. by Wildlife Warden Kathua, Dr. Neeraj Sharma and Regional Wildlife Warden Jammu.

Wildlife Warden Kathua in his presentation briefed about observation of the Standing Committee in the past 4 meetings held on 7th August, 2020, 21st August, 2021, 28th November, 2020 and 13th February, 2021 viz-a viz incorporation of such observations in the final draft Management Plan of Jasrota and Surinsar-Mansar Wildlife Sanctuaries. Followed by his ramrks, Regional Wildlife Warden Jammu informed the members of the Standing Committee about the completeness of the final draft, minor modifications and document comprehensiveness.

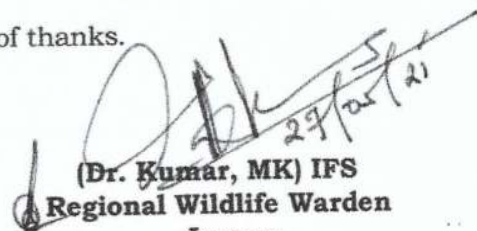
Following were the decision taken about final draft of Jasrota and Surinsar-Mansar Wildlife Sanctuaries after detailed deliberation.

1. To carryout corrections/modifications pointed out by members of the Standing Committee in the final draft submitted by the Wildlife Warden Kathua.
2. Addition/ improvement of the Rare, Endangered and Threatened species mentioned in the document.
3. In case of Jasrota Wildlife Sanctuary to incorporate the recommendations of the management effectiveness evaluation report of Surinsar-Mansar Sanctuary because of its near similar ecosystem, biotic pressure, administrative setup etc.

4. The Capex budget, Man-Power deployment and infrastructure existence viz-a-viz their requirement should be Sanctuary specific.
5. A team of members of the Standing Committee namely Dr. Neeraj Sharma, Management Plan Officer (MPO) concerned and Regional Wildlife Warden, Jammu to carry-out the proof reading of draft Management Plan.
6. The list of the formats included as Annexure to the draft Management Plan to include the details of fire wood collections and grass/fodder collections within the protected area.
7. The zone of influence of mega fauna for man-animal interaction to be worked-out and mentioned as per the eco-sensitive zone range.
8. Listing of local species such as Lannea, Albizia, Glyricidia, Mulberry, Mringa as species for fodder augmentation in addition to local legume species; and also as species for soil binding/slope stabilization by vegetative means. Similarly, inclusion of local species like Rosa, Rubex and Euphorbia etc. as bio-fencing species wherever if required.
9. To make a mention of mean average temperature in degree Celsius and mean average rainfall in millimeter alongwith source of temperature and rainfall data in their respective tables and also carry-out the rechecking as suggested about minimum, maximum average temperature and to complete the 5 months left out temperature and rainfall data for the year, 2020.
10. Wildlife Warden shall include portrait images (at least 10 images) of important flora & fauna in the Management Plan document.

With the above observations and after satisfying that the earlier observations of the Standing Committee have been incorporated in the draft Management Plan; the Standing Committee has unanimously approved the draft Management Plan presented by the Wildlife Warden Kathua. Further, advised him to circulate the final corrected draft of the Management Plan of Jasrota and Surinsar-Mansar Wildlife Sanctuaries after incorporating the suggestions of the Standing Committee dated: 24.05.2021 to the Standing Committee members for the comments, if any, and to submit it formally to the Chief Wildlife Warden through Regional Wildlife Warden for formal accord of approval.

Finally, meeting ended with the vote of thanks.


 (Dr. Kumar, MK) IFS
 Regional Wildlife Warden
 Jammu

No: RWLWJ/2021/1068-76 Dated: 27-05-2021

1. Copy submitted to Chairman Standing Committee (CWLW) for his kind information.
2. Copy to all Committee members for information.

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