

H.P. FOREST DEPARTMENT (WILDLIFE WING)

# MANAGEMENT PLAN



## BANDLI WILDLIFE SANCTUARY

(WILDLIFE DIVISION KULLU)

(2021-22 TO 2030-31)

By :

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No.WLM/Management Plan/Vol-III/ 589 Dated 14-01-2022

To:

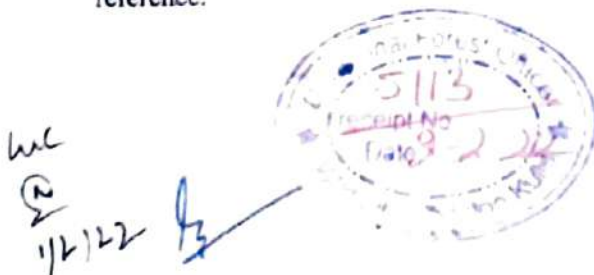
DFO (Wildlife) Kullu.

**Subject: Submission of Draft Management Plan of Bandli Wildlife Sanctuary-  
approval thereof.**

**Memo.**

Please refer to CF GHNP Shamshi office memo. No. 4769 dated 02-11-2021  
& your office e-mail dated 14-01-2022 on the subject cited above.

2. The Management Plan of Bandli Wildlife Sanctuary for the period of ten years  
w.e.f. 2021-22 to 2030-31 has been approved by the undersigned. Please send five more  
copies of the same so that approved authenticated copies be sent to you for record and  
reference.



Principal Chief Conservator of Forests,  
(Wildlife) & CWLW, H.P., Shimla

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## Preface

The 26 wildlife sanctuaries and 5 National Parks in Himachal Pradesh constitutes state's Protected Area network. Bandli Wildlife sanctuary is one of the seven sanctuaries under Kullu wildlife Division. The previous management plan was from 2011-12 to 2020-21. The present Management Plan has been prepared for the period of 10 years (2021-22 to 2030-31).

For writing Part-I, existing information of previous management plans and other published literature for the area has been used. During plan preparation, a survey was also conducted to collect information related to socio-economic conditions of local communities living in and around Bandli WLS. In addition, data related to human wildlife conflict and dependence of local people on PA resources was also collected and this data have been included in the relevant chapters of the plan.

For writing of Management Plan guidelines prepared by Vishwas B. Sawarkar and issued by Wildlife Institute of India for planning of wildlife management in protected areas and managed landscapes have been followed.

For the management of any mountain PA, three issues are important – Protection, Local people's participation in management of PA and regular monitoring to assess the effectiveness of management. Therefore, in this management plan, major emphasis has been given to above issues.

Management of PAs is a dynamic process and due to change in local environment, State policies continuous review is required to adapt various strategies to achieve the desired objectives. In view of this, chapter 12 incorporates annual review and a strategic review after five year of this plan has been suggested.



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## ABBREVIATIONS

ACF	Assistant Conservator of Forest
AMSL	Above Mean Sea Level
APOs	Annual Plan operations
CAMPA	Compensatory Afforestation fund Management and Planning Authority
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CSS	Centrally Sponsored Schemes
DCF	Deputy Conservator of Forest
DFO	Divisional Forest Officer
DSLR	Digital Single Lens Reflex
ESZ	Eco Sensitive Zone
GHNP	Great Himalayan National Park
GHNPCA	Great Himalayan National Park Conservation Area
GoHP	Government of Himachal Pradesh
GPS	Global Positioning System
HQ	Head Quarters
HWC	Human Wildlife Conflict
IFS	Indian Forest Service
IRS	Indian Remote Sensing
IUCN	International Union for Conservation of Nature
LCC	Land Capability Classification/ Local Control Cubicle
LED	Light Emitting Diode
LPG	Liquefied Petroleum Gas
MEE	Management Effectiveness Evaluation
MoEF& CC.	Ministry of Environment and Forests & Climate Change
NGOs	Non-Governmental Organization
NTFP	Non timber Forest Products
NWP	Non Wood Products
PA	Protected areas
Pr. C.C.F.	Principal Chief Conservator of Forests
PRA	Participatory Rural Appraisal
RHRS	Regional Horticultural Research Station
SOI	Survey of India
TD	Timber Distribution
UPFs	Un-Protected Forests
UTM	Universal Transverse Mercator
WII	Wildlife Institute of India
WLS	Wildlife Sanctuary
WWF	World Wildlife Fund
YHAI	Youth Hostels Association of India
ZI	Zone of Influence
ZIP	Zone Information Protocol



# **PART – I**

## **The Protected Area: Existing Situation**

## CHAPTER-1

### INTRODUCTION TO THE AREA

#### 1.1 Name Location and constitution and Extent

The tract dealt with under the management plan is known as Bandli Wild Life Sanctuary. Situated in Mandi District, Sunder Nagar Tehsil. The sanctuary is bounded on the south by Seri Khad, a tributary of Satluj which joins Satluj near Slapper. On the East are (though not forming exact boundry) Bhardrolu nala of Beas catchment and Thirish Khad of Satluj catchment. On West in the Bobri Khad and on North the boundary runs along and cutting across nalas and ridges.

The tract dealt with lies in between

**Longitudes**      760-52'-4" E to 76-56'-54"E

**Latitudes**      310-25'-21" N to 31-29'-2"N

#### Constitution and Extent

The Sanctuary has 21included cultivations and the area is as under:

**Table 1: Break up of geographical area**

Total area	=3219.91 ha
Other area	=34.83 ha

In fact, for the purpose of management, the "Chalks" have to be excluded and thus the area of the sanctuary is just 3176.37 hectares.

At present whole of this DPF forms one management unit and it has not been divided into compartments or sub- compartments or any specific forestry management technique provided for any particular chunk.





Source: mapsofindia.com

**Figure 1- Location map of Bandli WL Sanctuary**

## 1.2 Approach and Access

This sanctuary lies near Sunder Nagar and is easily approachable from Slapper and Sunder Nagar. From Slapper a road bifurcates from N.H. 21 and passing through Power House Colony runs along lower part of Southern boundary of sanctuary for about 2 Kms. It then crosses to other bank of Seri Khad.

From Sunder Nagar one can reach Maloh or Nalni which are at a distance of 7-9 kms from Sunder Nagar. It is a kutchha Motorable road. From here one enters the sanctuary from its Northern Boundary.

The office of the range Officer I/C of this sanctuary is located at Sunder Nagar.

### Distances from Sundernagar:

From	Distance
Delhi	438 km
Manali	140 km
Shimla	105 km

Chandigarh                      175 km

**Air:** The nearest airport is Bhuntar, near Kullu which is about 82- km.

**Rail:** Nearest Broad Gauge Railway Station is Una which is about 100 km. Another broad gauge railhead is at Pathankot, a distance of 210 km. From Una and Pathankot the narrow gauge railway connects Joginder Nagar which is 80 Km from Sundernagar.

**Road:** Frequent bus services are available from Chandigarh, Delhi, Shimla & Jammu for Sundernagar. 25 km from Mandi is well connected by road to other places. The main bus stand is just above an open playing field, where the national highway-21 continues along the left bank of river to Pandoh.

### 1.3 Statement of Significances

The area i.e. Bandli Forest is isolated and having denuded precipitous slopes, grasslands and nalas having good vegetation of species like Ban Oak. The terrain and vegetation has made the area as a typical home for cheer pheasant, an endangered species and among ungulates for Goral. Due to abrupt slopes, the area is prone to erosion, hence, its preservation warranted intensive management, and as such, the area has been notified as a sanctuary, a protected area. It forms home to a variety of species of flora and fauna that includes threatened spp like common leopard (*Panthera pardus*) and black bear (*Ursus arctose*). In addition to large mammals, Bandli WLS provides habitat for four species of pheasants out of which total seven species of pheasants are found in Himachal Pradesh. It has been recognized as an important Bird Area for Cheer Pheasant (*Catreus wallichii*), an endemic vulnerable species restricted to the Himalayan regions in India. Due to its specialized habitat requirement, the cheer pheasant shows a patchy distribution usually between 1200 to 3250m altitude in the Himalayan Range. In India most population are now restricted to Himachal Pradesh and it is known to occur in at least 12 PAs of the state. The main threat to the species are from hunting, collection of eggs and loss of habitat due to farming as grasslands are converted to terraced fields for cultivation. Bandli WLS thus holds significance for the conservation of cheer Pheasant as it provides the habitat features such as precipitous rocky terrain with grass, scrub and scattered trees required by the vulnerable spp. It has got many educational and interpretational values

attached to it with its rich gene pool and variety of ecosystem functions and processes to provide ample research opportunities.

## **CHAPTER-2**

### **Background information & Attributes**

#### **2.1 Boundaries**

The boundary of the sanctuary is the same as the boundary of the DPF Bandli from BP-1 to BP-165. It has twenty one included cultivations. The boundary does not follow natural features and over big distance are just straight lines from B.Pillars to B. Pillars not well demarcated. The existing boundaries are:

North: Boundary Pillar No 61 to 80 of Bandli DPF

South: Boundary Pillar No 80 to 94 of Bandli DPF

East: Boundary Pillar No 94 to 95 of Bandli DPF along Sawal Khad

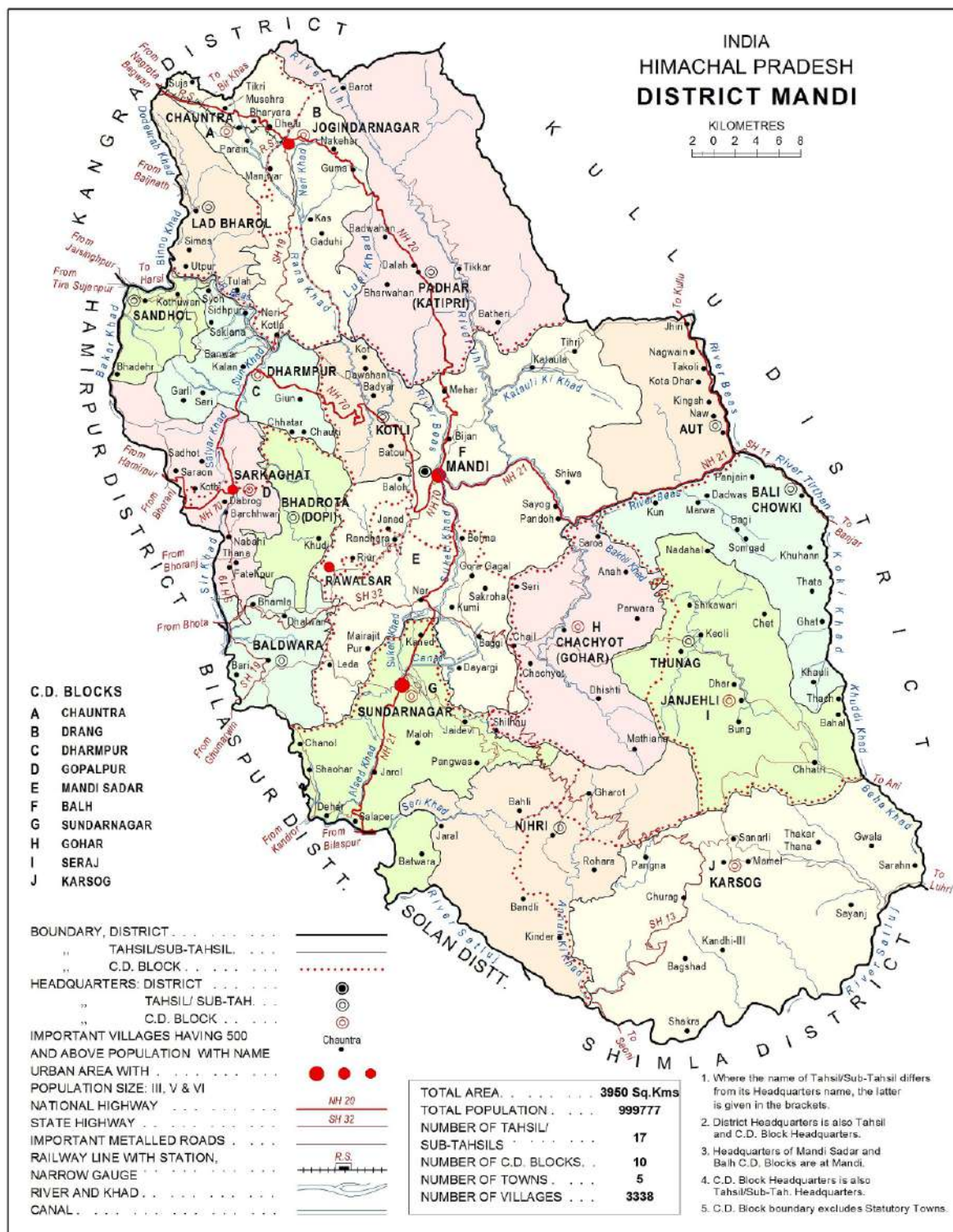
West: Boundary Pillar No. 95 to 162 and 1 to 61 of Bandli DPF exclusive of cultivation.

#### **2.2 Geography Rock and Soil**

The rock predominantly is calcite limestone within a few shale bands, grey coloured dolomites limestone within quartzite vein's. The base rock has resulted in shallow textured soils, which on whole are very well drained. In open areas with heavy pressure of grazing, the soil is shallow and in many places, especially close to habitations and cattle paths even rocky outcrops are not uncommon. The soil is poor in organic matter due to repeated burning which makes it friable and thus vulnerable to erosion.

#### **2.3 Terrain**

The land is highly undulating, slopes generally being precipitous. numerous nalas draining the area have made the tract arduous. The area rises from 600 Mtrs to 2162 meters quite abruptly.



Location, General geomorphology and the various climatic zones of the Mandi Valley

Figure 2- Geomorphology of the Mandi Valley



**Table 2: Temperature and Rainfall Data of Bandli WLS****1. Monthly rainfall data (2015-2019)**

	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>Total</b>
<b>January</b>	93.30	13.8	169.1	11.5	60.2	347.9
<b>February</b>	97.20	40.2	45.5	45.9	192.8	421.6
<b>March</b>	138.20	81.2	37.8	27.3	77.0	361.5
<b>April</b>	89.5	17.6	88.2	62.5	31.5	289.3
<b>May</b>	20.25	209.4	72.4	19.9	23.1	345.05
<b>June</b>	60.5	270.2	138.9	152.8	99.1	721.5
<b>July</b>	377.5	274.7	312.1	398.3	339.7	1702.3
<b>August</b>	124.25	388.0	255.1	413.5	415.1	1595.95
<b>September</b>	34.5	168.2	105.8	275.3	73.4	657.2
<b>October</b>	11.75	8.3	0	10.6	14.39	45.04
<b>November</b>	7.25	0	1.8	31.6	20.0	60.65
<b>December</b>	48.2	0.4	46.2	2.2	33.7	130.7
<b>Total</b>	<b>1102.4</b>	<b>1472</b>	<b>1272.9</b>	<b>1451.4</b>	<b>1379.99</b>	

Avg:-**1335.73****2. Monthly Maximum Temperature (2015-2019)**

	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
<b>January</b>	17.50	19.3	16.7	20.5	16.1
<b>February</b>	22.60	22.3	22.2	22.5	17.6
<b>March</b>	23.60	26.0	25.2	27.5	23.3
<b>April</b>	28.16	32.7	31.6	30.7	31.2
<b>May</b>	34.12	34.3	34.2	35.1	33.9
<b>June</b>	33.08	33.7	32.3	33.1	<b>36.6</b>
<b>July</b>	31.18	31.6	21.4	30.8	30.7
<b>August</b>	31.31	30.7	31.1	30.2	30.9
<b>September</b>	31.1	31.3	30.8	29.5	30.8
<b>October</b>	29.7	30.2	30.4	28.7	27.6

<b>November</b>	27.8	25.9	23.6	23.4	22.7
<b>December</b>	19.4	21.3	20.7	19.6	19.2

### 3. Monthly Minimum Temperature (2015-2019)

	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
<b>January</b>	3.1	2.6	3.8	1.1	2.9
<b>February</b>	6.10	5.9	7.0	5.6	5.5
<b>March</b>	8.60	9.8	8.1	8.8	8.1
<b>April</b>	13.04	13.9	13.3	12.8	13.9
<b>May</b>	15.98	17.5	16.7	16.1	15.8
<b>June</b>	18.91	20.9	19.3	20.3	19.5
<b>July</b>	22.12	22.3	22.3	21.5	21.7
<b>August</b>	21.94	21.6	21.7	21.5	21.8
<b>September</b>	18.2	19.7	18.8	18.4	20.6
<b>October</b>	12.7	12.4	12.0	9.5	12.7
<b>November</b>	6.2	5.3	5.6	6.1	8.8
<b>December</b>	3.1	2.3	3.6	1.2	1.7

**2.4 Climate** The climate is generally equable and moderate in the sanctuary. The dry, the wet and cold seasons are markedly notices. The cold season commences in December and lasts up to March.

Hot season starts from April and last up to June. July to mid-September is wet season and this is followed by dry season from October to November or mid December.

#### 2-4-1 Temperature

The record of temperature for sanctuary area particularly has not been maintained. However, the highest temperature is 36.6 °C and the lowest is 1.1 °C.

#### 2-4-2 Rainfall and Humidity

Pre-monsoon showers commence from June end and the monsoon lasts till mid September. Average rainfall in the area is around 1500 mm. Average humidity range between 54% to 100% averaging 77 %.

#### **2-4-3 Snowfall**

The highest reaches of sanctuary practically every year have mild snowfall generally snow lasts for maximum about a week.

#### **2-4-4 Frost**

Frost is not common in the sanctuary. Ground frost during winter is common.

**2-4-5 Fog**-Fog occurs only in monsoon but is not severe and does not last for long durations.

#### **2-4-6 Wind**

There is no record of any high velocity winds or storms. The velocity of wind is not very high except at the hilltops.

#### **2-4-7 Altitude**

Bandli Tiba (Eastern) is the highest point of the sanctuary and has an altitude of 2162 mtrs. The lowest point is along Seri Khad near BP No 95 and has an altitude of 600 mtrs.

#### **2-5 Water Sources-**

The sanctuary is overall deficient in water. The sources predominantly are seasonal. The upper half of the sanctuary has no water sources. The nalas which are very common have some water in the lower half only which is a perennial source. The following nalas have regular water in portions as indicated in the map.

1. Neri-Nerad Nallah
2. Nihari Nallah
3. Serum Nallah
4. Bohra Nallah.

**2.6 Range of Wild Life Distribution & Status of vegetation-** The area is mainly covered by extensive grass lands. The following types of forest however found in pockets:-

**2-6-1-1 Northern Dry Mixed Deciduous Forests 5B/c2**

This type is found on the Southern and partly Western slopes. These are confined from lowest point of Sanctuary to about 1300m. Canopy is irregular, the trees having poor growth and relatively shorter boles rarely exceeding 10 mtr in height. The important species are:

Phyllanthus emblica, Acacia catechu, Cassia fistula, Dalbergia sissoo, Bauhinia racemosa, Terninalia belerica, Syzygium cumminii.

The other associated commonly met with are:

Lanea coromandelica, Mallotus philippinensis.

The shrubs commonly occurring are:

Carissa spinarum, Dodonea viscosa, Woodfordia floribunda, Adhatoda vasica, Murraya loengii, Zizyhus species, Euphorbia rayleana occurs on rocky outcrops and on overgrazed sites.

Climbers commonly met with are:

Bauhunia vahlii, Fueraria tubersoa, Caesalpinia species etc.

**2-6-1-2 Northern Dry Deciduous Scrub Forests 5B/DSI-**

It is a degraded stage of Northern tropical dry deciduous forests brought about by lopping and misuse of these forests. It is characterized by abruptly broken soil cover of shrubs which are either thorny like Carrissa, Randia or distasteful to cattle like Dodeneia, Holarrhena etc.

1. Space
2. Food
3. Cover

4. Presence of other animals
5. Climate/drought, rocky drain

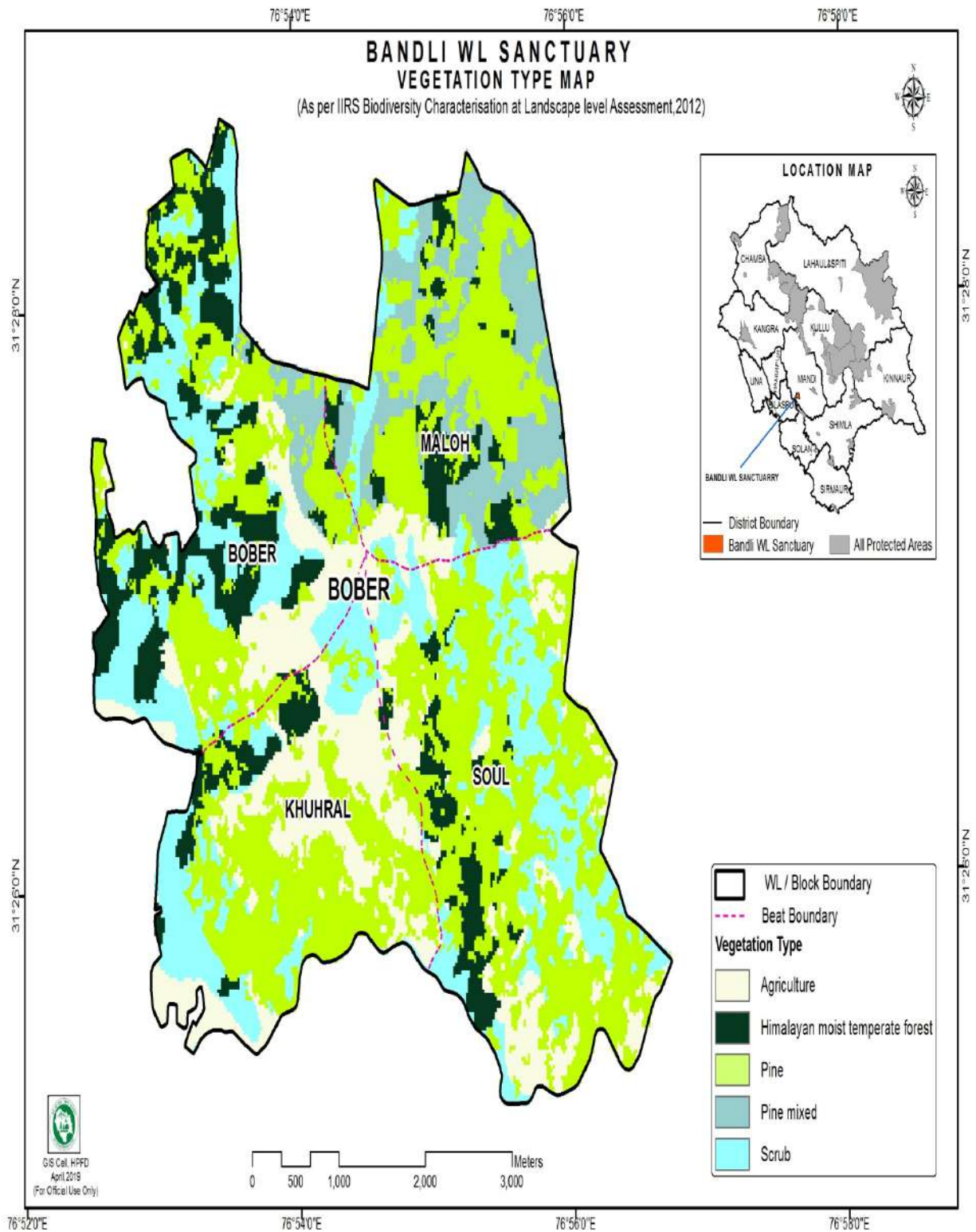


Figure 3- Vegetation Type Map of Bandli WLS

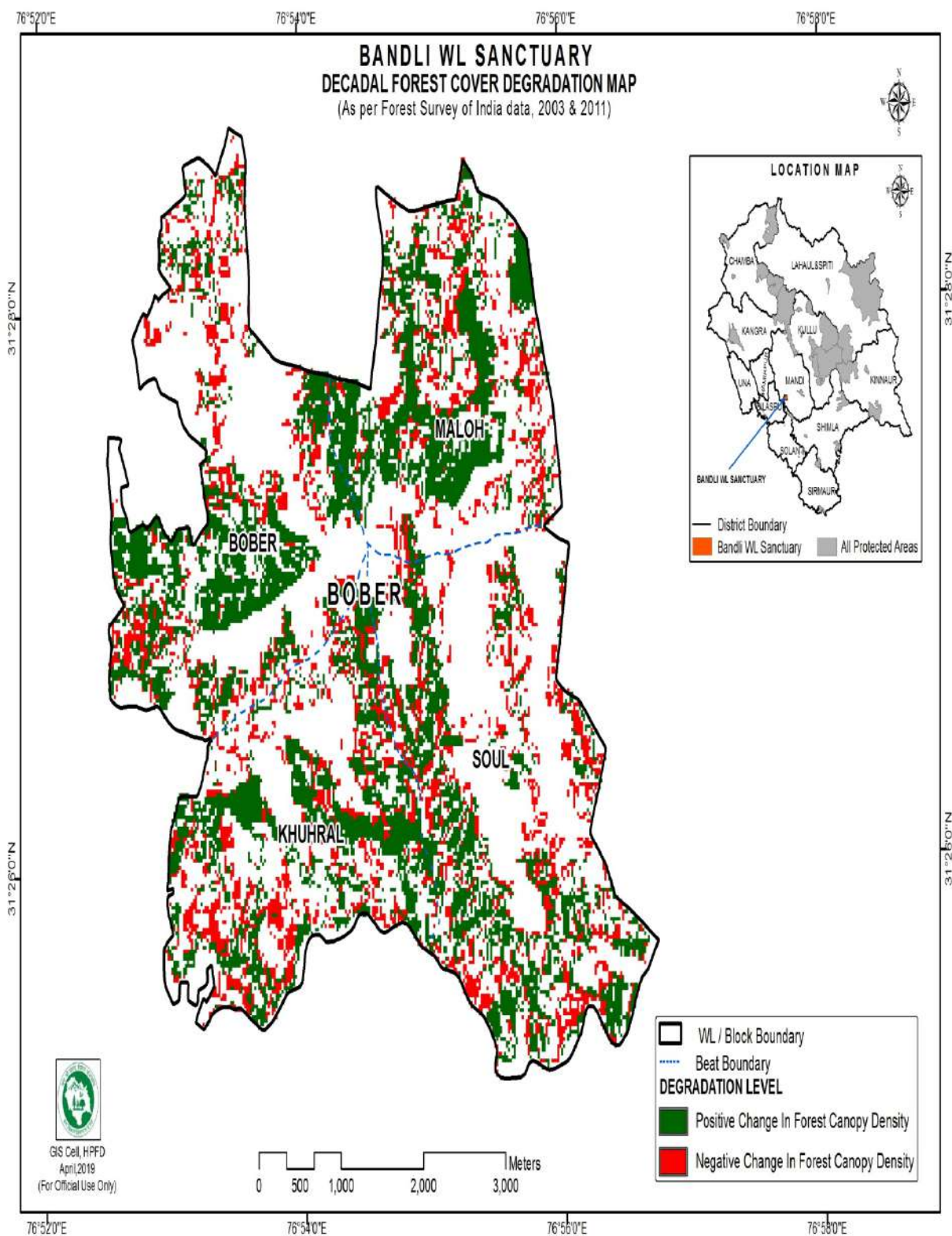


Figure 4- Decadal Forest Cover Degradation Map of Bandli WLS



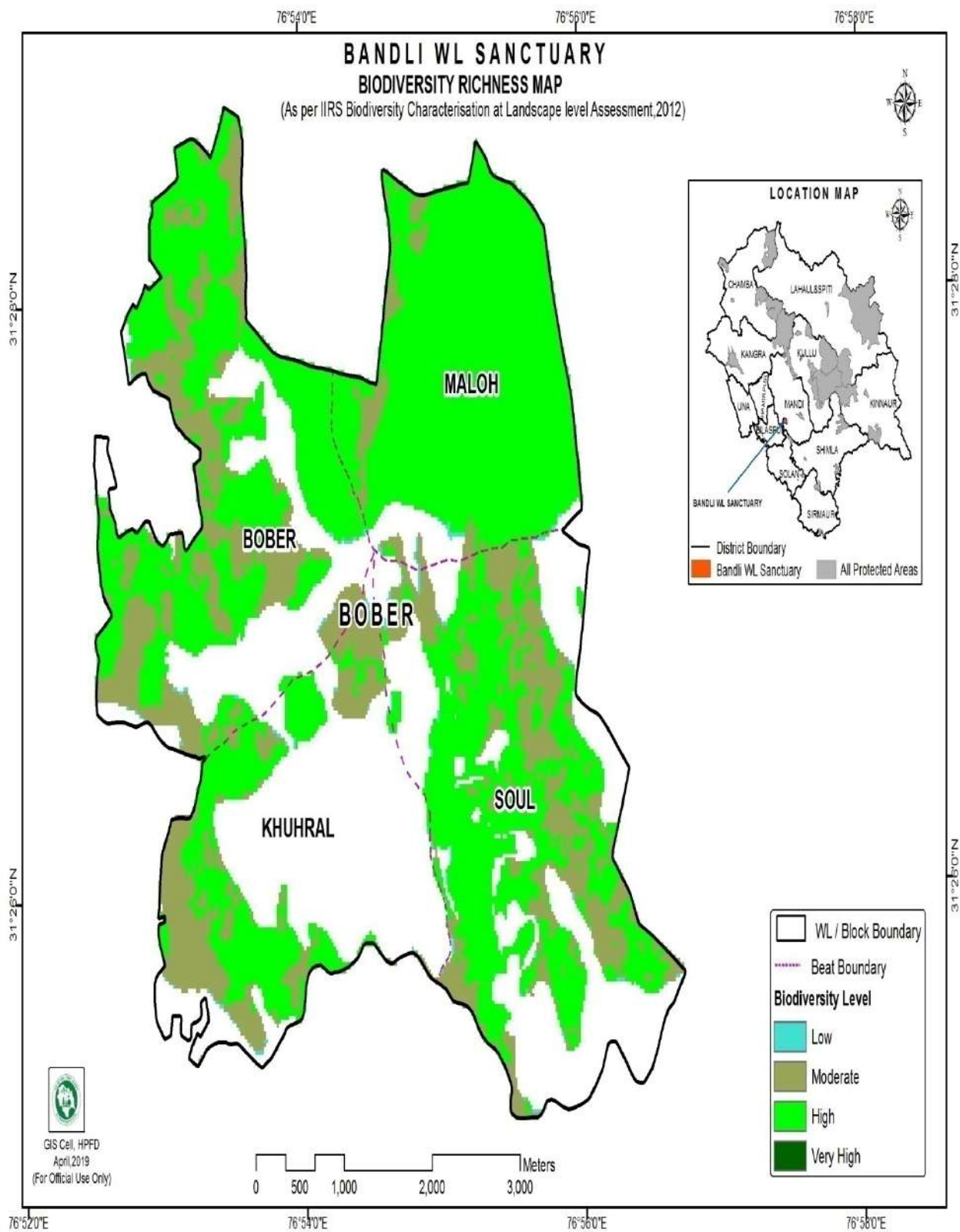


Figure 5- Biodiversity Richness Map of Bandli WLS

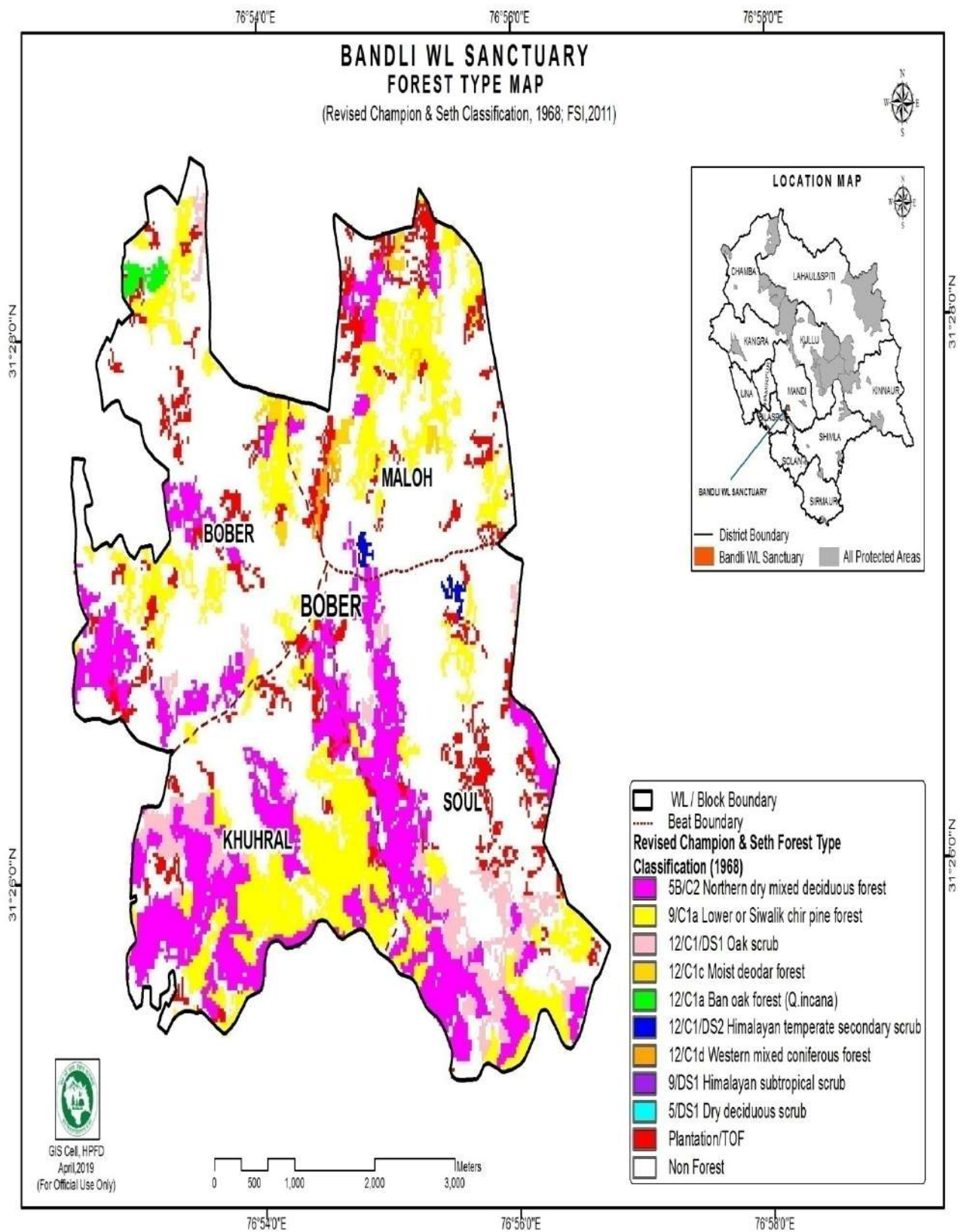


Figure 6- Forest Type Map of Bandli WLS



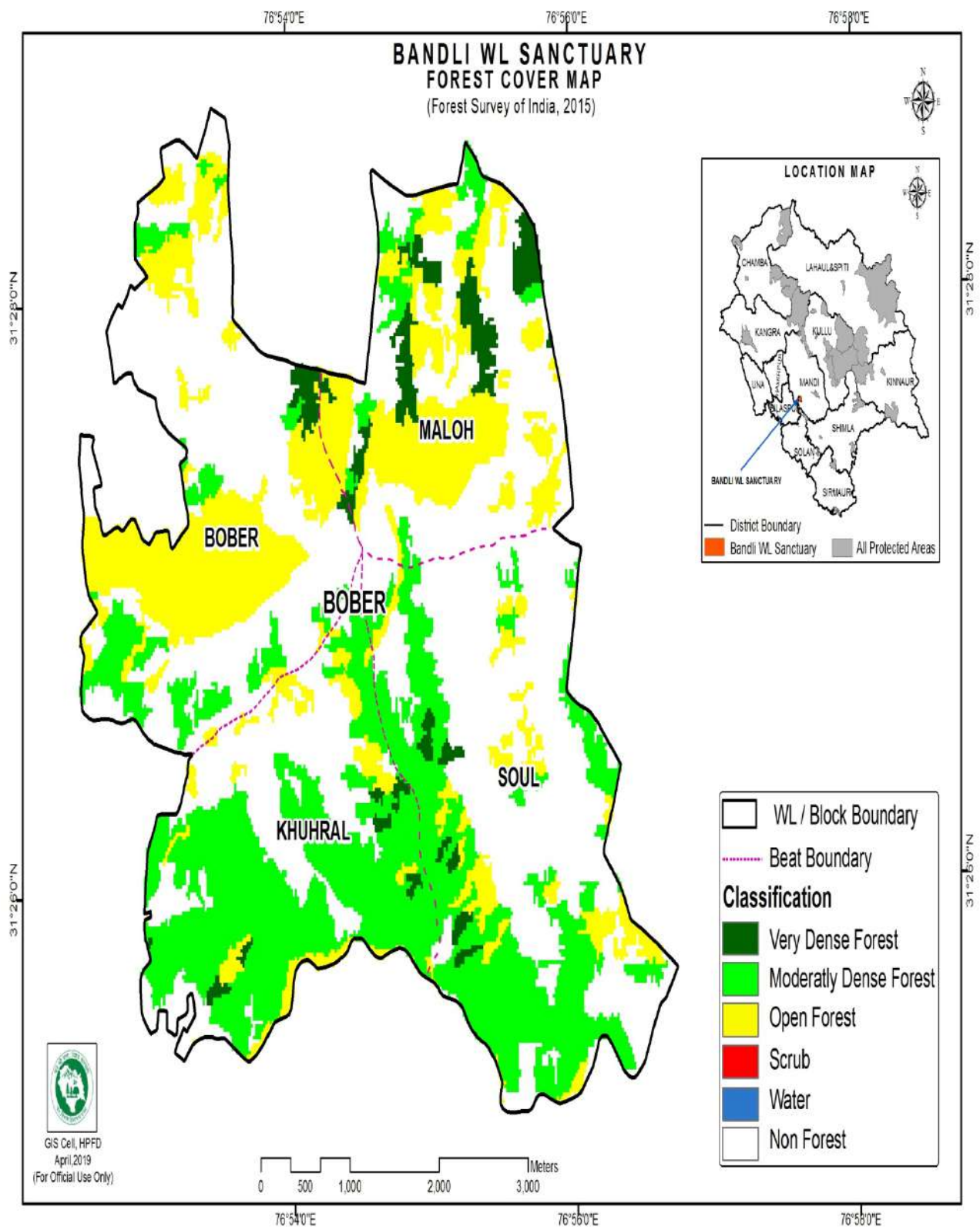


Figure 7- Forest Cover Map of Bandli WLS

**Table 3: Monkey Population Estimation of Bandli Wildlife Sanctuary w.e.f. 29.06.2015 to 02.07.2015**

<b>S N</b>	<b>Name of Beat</b>	<b>Trail</b>	<b>Distance of Trail</b>	<b>No. of Monkey</b>
1	Soul	Neri to Kasout	6 Km	95
2	Khurahhal	Khural to Baganala	6 Km	50
3	Bobber	Bobar to Kandar via Bhumkanala	6 Km	95
4	Maloh	Sariun to Bhuranala	6 Km	119
			<b>Total</b>	<b>359</b>

**w.e.f. 04.12.19 to 06.12.19**

<b>SN</b>	<b>Name of Beat</b>	<b>Trail</b>	<b>Distance of Trail</b>	<b>No. of Monkey</b>
1	Soul	Nared to Kasot	4Km	24
2	Khurahhal	Khurahhal to Bhag Nala	4 Km	17
3	Bobber	Bobar to Kandar via Bhontla	4 Km	50
4	Maloh	Sariun to Bhaura Nala	4 Km	0
			<b>Total</b>	<b>91</b>

**Table 4: Bird count during Endemic Bird Day-04 May, 2019 celebration in Bandli WLS**

SN	Name of Team Member	Name of Bird Species	No. of Bird
1	Smt. Sumitra FG, Smt. Geeta Thakur FG, Sh. Rajinder Singh FG, Sh. Naryan Singh FG	Common Mena	2
2		House sparrow	4
3		Blue Whistling thrush	2
4		Gray Tit	4
5		White Capped water red start	3
6		Gray wagtail	2
7		White throated king fisher	2
8		Jangle Babbler	3
9		Yellow billed blur Magpie	2
10		Himalayan Bulbul	2
11		Spotted Dove	3
12		Indian Peafowl	1
13		Kalij Pheasant	2
14		Red jungle Fowl	4
15		Great Barbet	2
16		Grey headed wood packer	2
17		Black kite	1
18		Plum headed pera keet	4
		Total	45

**Table 5: Bird count during celebration of Wild Bird Day-19 October, 2019 in Bandli WLS**

SN	Name of Team Member	Name of Bird Species	No. of Bird
1	Sh. Rajinder Singh FG, Sh. Naryan Singh FG, Smt. Sumitra FG, Smt. Geeta Thakur FG	Indian Peafowl	1
2		Red jungle Fowl	2
3		Kalij Pheasant	2
4		Himalayan griffon	3
5		House Sparrow	3
6		Common Kingfisher	1
7		Great Barbet	1
8		Gray wagtail	1
9		White browed wagtail	2

10		Rock bunting	2
11		Black Drongo	4
12		Yellow billed blue Magpie	5
13		Gray Tree Pie	3
14		House Crow	3
15		Large billed crow	1
16		Coal tit Black kite	2
17		Himalayan bulbul	3
18		Black throated tit	3
19		Jungle Babbler	5
20		Common Mayan	2
21		Blue Whistling thrush	2
22		White Capped redstart	1
23		Grey Busdchat	2
		Total	54

## 2.7 Space

For wild life to live the basic requirement is space. Space is multidimensional. It has length, breadth and thickness. Length and breadth give the magnitude of area whereas thickness gives idea of layers which are used by various thickness gives idea of layers which are used by various wild life species, the quality and quantity of each of these dimensions contributes to the well being or sustenance or W.L. There may be sufficient space in an area up it requires to be seen as to what part is available for the use of W.L. in general or a particular W.L. species. The space in turn is affected by many factors due to biotic interference or accessibility.

In Bandli W.L. Sanctuary which has an area of 3219.91 hectares. following rough distribution as per status of growth can be done:-

1. Land having tree cover and buses 30%
2. Land having bushes 15%
3. Precipitous rocks 15%
4. Grass lands 40%

The area predominantly is devoid of tree growth. We have more area under grasses and bushes. Cheer pheasant, Red Jungle Fowl, Chukor and animals like Goral, Kakkar, Hare .Porcupine and among carnivore, the leopard and other lesser cats like the area.

Animals do not distribute themselves randomly or regularly over the land. They usually tend to cluster. An important component of the spatial sub-system of Wildlife habitat besides area and layers, is edge, edge may be a factor for some animals. To define edge, edge is the boundary where one kind of landuse starts and another ends. This boundary is not a clear cut line, but is rather a transition zone. The transition zone had depth but is narrower than the adjoining common areas themselves. This edge zone has the ability to support larger and more diverse wild life populations.

Due to varied type of habitats in Bandli sanctuary, these edges are well represented though the change is abrupt.

Adjacency of two or more habitats needs by a species is often desirable for animals to minimize energy losses where habitats are very similar; it

appears unlikely that edge often occurs. Dissimilar habitats if arranged properly, e.g. food adjacent to hiding cover, resting cover adjacent to brood feeding areas, tend to support and produce large numbers of wildlife. Plenty of such areas are available in the sanctuary where proximity of different habitat units is available.

It is tempting to think of habitat in terms of fixed locations. However, an animal population inhabitation today may migrate to another area tomorrow. The habitat has not changed; the animals have selected an alternative. Though this is hazardous for animals both in energy and safety yet by this, long term water and energy balance is achieved.

The area of Bandli sanctuary does not provide many such alternatives. If food is available water is not good; pasture have not got good covers in their proximity.

Seasonal differences in habitat are well known Animals have different seasonal needs owing to the seasonal nature of lactation, reproduction, etc. A habitat is a seasonal entity.

The sanctuary has spread out resources at various altitudes, which can cater to the needs of animals during various seasons. As no study has been done on the various needs of animals during various periods such as reproduction, lactation, etc. so with respect to these needs nothing can be said about availability of habitat.

Food: Food is the primary need of any living being and for analysis; it can be discussed under following heads:

1. Presence
2. Quality and quantity
3. Availability

#### **2.7.1 Presence**

Abundant quantity of food for both animals as well as birds is available in the sanctuary. The area has good forage grass species with berries and other edible seeds.

#### **2.7.2 Quantity and quality**

The food source in shape of grass and other biomass is present in sufficient quantity for the populations of animals existing.

Only in case of carnivore, this cannot be said. The population of prey species cannot be said to be optimum. This is represented again by killing of domestic animals by leopards in and around sanctuary area.

The quality of food available cannot be commented about, as nothing is known about preferences of various herbivores under different circumstances. Quantity can safely be said sufficient but the quality is anybody's guess. Study is required to be done.

#### **2.7.2 Availability:**

Even sufficient food present may not be available for the W.L. species. This can be due to various factors which attract or repel the W.L. The height of trees or bushes becomes limiting factor. In case the area remains under snow for long duration, even the resource present may not be available. Disturbed places are of no use to W.L.

In the present case the areas are by all standards disturbed. People exercise grass cutting and fuel wood collection rights. The graziers penetrate deep inside the area, thus scaring and squeezing the wild life to smaller zones. The disturbance takes place all the year round.

#### **2.7.4 Cover**

The term cover usually implies hiding places shelter, and protection from weather and factors. Types of cover include escape, nesting play travel lanes and climatic cover. Distance itself is a type of cover separating predator and prey, providing ample flight response time.

For W.L. in any area this factor is very important. There may be all other elements present but in case cover is missing the W.L. cannot inhabit the area.

In case of Bandli Sanctuary cover does not appear to the optimum. Wherever open grasslands are extensive and thus the wild life therein cannot remain undisturbed. Even where cover is possible biotic interference is excessive.

#### **3 Caves, Burrows, hollows/ unique wildlife habitats**

The unique wildlife habitat like caves formed by protruding rocks, burrows and hollows are very common which form ideal habitat for porcupines and panthers. These are fairly spread over the sanctuary area.

#### **2.7.5 Conclusion**

By critically appreciation of the habitat, following points are highlighted:-

1. The area can support a healthy variety of W.L. including endangered species like cheer pheasant with minor habitat manipulation:
2. The area has biotic interference.
3. The area is deficient in water resources
4. The area is fire prone.

#### **2.8 Important Species of W.L. in sanctuary**

A survey of W.L. status was conducted during past and the evidences of following species were observed:-

##### **2.8.1 Ungulates:**

Various ungulates like Goral, Barking deer and Sambar (occasionally) are found in the sanctuary. Their habitats inside the sanctuary (hotspots) have been shown on the map.

1. Goral (*Nemorhaedus goral*)

This species is the main species available in Bandli sanctuary. The species in general is found in Shivalik hills as well as mid Himalayas. It favours all zones from 900 mtrs to 2750 mtrs but it has been observed even at 4250 mtrs. This animal generally associates in small groups of 4 to 8. But in Bandli sanctuary groups of not more than 3 animals have been observed.

2. Barking Deer (*Muntiacus muntjak*)

This species is also available in the sanctuary along nullahs which have water and bush cover. It likes thickly wooded areas and alt. from 1500-2450 meters. These are seen singly or in pairs or in small family parties. They keep to more or less thick jungle and come out to graze in the outskirts of forest or in open clearings. They are diurnal in habit. They appear to breed on all seasons. Though mainly takes place in the cold weather, the young are born in the beginning of rains.

3. Sambar (*Cervus unicolor*)

One animal was caught by local inhabitants in the sanctuary and was sent to Rewalsar zoo as it was badly injured. It might be a chance visitor coming over from areas along the Sutlej River banks, which support a good population of this species. Its absence from Bandli wild life sanctuary can be attributed to scarcity of water and proper cover.

It is the largest Indian deer and carries the grandest horns. The general colour is brown with a yellowish or grayish tinge. The under parts are paler, Old stages tend to become very dark almost black.

## **2.8.2 Carnivorous**

1. Common Leopard (*Panthera Pardus*)

It is very agile member of the cat family, It has been sighted in the sanctuary area also lot of indirect evidences were found in the shape of cat, pug marks and killing of domestic animals within and around the sanctuary. It is known to cause damage to



domestic cattle. It has adopted itself to forest as well as open country and among rocks and shrubs. It is found throughout the sanctuary.

## 2. Leopard cat (*Felis bengalensis*)

It is of the size of domestic cat but with larger legs. Its colour and marking give it the aspect of miniature panther/leopard. This cat is found in Bandli Sanctuary.

## 3. Jungle cat (*Felis chaus*)

Its evidence is found in open grassland.

With its long legs and short tail, it has a very distinctive appearance. Its tail has black up.

## 4. Jackal (*Canis aureus*)

These are found in plenty in the sanctuary and they seem to favour areas near habitations.

## 5. Fox (*Vulpes vulpes*)

The evidence was found in drier parts of the sanctuary more so where burrows are present.

## 6. Mongoose (*Herpestes edwardsi*)

These animals were spotted many times in the sanctuary, but near to villages and habitations.

## 7. Himalayan yellow throated Marten

This animal is also present in the sanctuary. It predated on pheasants, birds and their eggs.

## 8. Himalayan Palm Civet:

Very common in sanctuary, Nocturnal in habit, inhabits areas near habitations.

### 2.8.3 Primates:-

#### 1. Monkey-Rhesus macaque (*Macaca mulata*)

This occurs in plenty in the sanctuary and many times, it does lot of damage to agriculture fields and plantations.

#### 2. Langur (*Presbytis entellus*)

This species also is met with in the sanctuary. It generally keeps to Ban areas.

### 2.8.4 Rodents.

#### 1. Indian Porcupine(*Hystrix indica*)

Found in abundance in sanctuary area. The quills are met with quite often. It keeps to areas which have burrows.

#### 2. Flying Squirrel

This squirrel has power of sailing or gliding through the air. It is commonly met which in misc forest area of the sanctuary.

#### 3. Hares and Rabbits

##### 1. Indian hare (*Lepus nigricollis*)

It is common species of grasslands in the sanctuary. More common in areas near cultivations.

### 2.8.5. Pheasants and partridges

The Sanctuary has some pheasant species also. This class has its importance because one of the declared endangered species Cheer Pheasant is found in this area.

#### 1. Cheer Pheasant (*Calreus wallichii*)

This is pheasant of grassland. At least 5 sites were identified as Cheer Pheasant sites. Locally it is known as “Chayer”.

#### 2. White Crested Kali (*Lophura leucomelana*)

This pheasant is locally known as “Kalesha”. It is common in the sanctuary area.

#### 3.Red Jungle Fowl:

It is locally known as “Jungli Murga” It is found in the bushy areas and in the lower Southern parts of the sanctuary. At Nerad one can hear the calls of this species in the morning and can also see them.

#### 4. Pea Fowl

It is a bird of Pheasant’s family and is the National Bird. This bird had become extinct to Bandli Wild life sanctuary before year 1988-89 with effective control over poaching now the Nerad area and Nihari Nal area have now small populations of them. Gradually this beautiful pheasant will establish itself in this sanctuary fully.

#### 5. Chakor:

This bird is very common in the sanctuary. It is mainly found on dry slopes which tend to be precipitous.

#### 6. Black and Grey Partridge:

Both partridges are very common in the sanctuary near cultivation and dry areas.

### 2.8.6 Other Birds

White backed vulture and many other smaller birds like kestrel, Pigeon, Dove, Parakeets etc are also commonly met with in the sanctuary.

### 2.8.7 Reptiles

#### 1. Snakes

Kraits and rat snake are suspected to be present though their direct evidence has not been found anywhere.

#### 2. Monitor Lizard:

Locally known as “Goh” This animal is found very commonly in the sanctuary area.

## **CHAPTER – 3**

### **HISTORY OF MANAGEMENT & PRESENT PRACTICES**

#### **3.1 General**

This area not being a potential forest has no note-worthy past history. The data available in compartment history file starting from 1948-49 when the forest was known as 116 (W) does not speak of any major operations or treatment. The first W.P. was by Mr. J. Singh it was followed by W. Plans by Mr. Sewal and then by Shri S. Pandey and H.C. Sharma period from 1957-70 was covered by AP

##### **3-1-1 J. Singh's W.P.- Upto 1936**

In this working Plan treatment prescribed was felling under coppice with standards system. However the record shows that no such fellings were carried out and only very very small number of trees were given to R.H. which were mainly of Misc.B.L.spp. The trees were of maximum 11 B class.

##### **3-1-2 Sewal's W.P. 1937-56**

In this W.P. the allotment was changed to fuel wood working circle. During this W.P. period too less than 50 trees were marked to R. holders and included other sale. During this period however some Chir trees were also marked rest were all B.L. misc species. 7.B pillars were also repaired during this period.

##### **3-1-3 Pandey & Sharma's W.P. 1971-1986**

The allotment here was changed to Protection W.C. the period was marked by forest fires and the area was control burnt too. During later period of the plan some chil and Robinia planting was undertaken and an inspection path was also constructed. Repair of 11 BPs was also done. As this area did not come under any intensive forestry operations. Some plantations, works under RVP have been carried out in the past. The area was transferred to the W.L. wing in July, 1987

#### **3.1.4 Public rights**

There are extensive rights of people in the sanctuary area. Those are for grazing, grass cutting, fuel wood collections, timber etc. A list of such rights and that of villages is tabulated in Annexure----

## **3.2. Timber operations including Bamboo and firewood harvest**

### **3-2-1 Silviculture and tending operations**

The area has been allotted to protection working circle and as it is now being intensively managed as W.L. sanctuary after coming under the W.L. protection Act. Commercial extractions of Forest produce is not permitted.

### **3-2-2 System**

As the area is under Protection Working Circle hence, no silviculture system is applied.

### **3-2-3 Bamboo working**

Part of the sanctuary does contain “Nirgal” Bamboo but the same is not exploited commercially. There is no evidence demanding remark of collection of this Bamboo but for local bonafide domestic use by right holders.

### **3.2.4 Fire Wood**

Though in past the system of coppice with standards was prescribed and also the area allotted to fuel wood working circle but nothing was extracted but for grant of a few trees to local right holders.

The fuel wood however from dry fallen plants is collected by local right holders. No green felling is permitted. Fuel wood collection is a general feature but is restricted to areas near the habitations. No intensive work has been done to assess the magnitude of this collection

**Table 6: Estimated Fuel Wood Consumption**

SN	Name of Village	Consumption of fuel wood (qtl.)		Total Consumption (qtl.)
		Summers	Winter	
1	Phagla	100	190	290
2	Ladhrera	80	120	200
3	Bobber	60	180	240
4	Dhar	100	220	320

5	Jarol	50	100	<b>150</b>
6	Saroni	90	100	<b>190</b>
7	Bhuntla	100	300	<b>400</b>
8	Kandhar	80	160	<b>240</b>
9	Khurahal	80	150	<b>230</b>
10	Siyuh	70	170	<b>240</b>
11	Basahu	90	120	<b>210</b>
12	Kharni	50	500	<b>550</b>
13	Hiyun	10	100	<b>110</b>
14	Badu	30	200	<b>230</b>
15	Jaral, Saul	10	100	<b>110</b>
16	Dharli	30	60	<b>90</b>
17	DPF Bandli dhar (Neri Nerad Kaphari)	20	50	<b>70</b>
18	Sariun	30	70	<b>100</b>
19	Maloh	70	120	<b>190</b>
20	Bagain	30	50	<b>80</b>
21	Nalini	60	110	<b>170</b>
22	Badhrolu	30	40	<b>70</b>
23	Lag Rang	40	30	<b>70</b>
	<b>Total</b>	<b>1310</b>	<b>3240</b>	<b>4550</b>

### 3.3 Non wood Forest Produce

FP in shape of collection of phoenix leaves and the leaves of Bauhinia is very common. The first is used for manufacture of mats and the second for preparing “Pattals” which are used as leaf plates during various functions and have good seasonal market.

There is no evidence of collection of any medicinal plants from the area although plants like Artimesia, Adhatoda, Berberies etc. are available.

### **3-4 Lopping**

The right holders and even migratory graziers indulge in lopping. Pheonix spp. Is also lopped. The lopped material is also used for making mats.

### **3-5 Other programmes and activities**

The general society around the sanctuary and the people living in it are agrarian. Their basic occupation is agriculture and for this, they keep number of cattle, sheep and goat. Many of the cattle are useless and predominantly the cattle sheep reared are of local breeds. Along with cutting grass for domestic animals, the grass is sold also, particularly during cattle fairs, which are annual features at many places in the vicinity of the sanctuary. The major agriculture crops of the area are wheat and maize , along with some cereals.

One major factor which has direct bearing on the sanctuary is the cattle population in an around the sanctuary, also the number of sheep and goat of migratory graziers. These details are tabulated in Annexure-9

Up to the time the B.S.L. Project works were in full swing the employment opportunity were abundant but with completion of the Project the unemployment has increased. The society now around the sanctuary has large number of unemployed people. Their unemployment goes year around.

## **3.6 Forest Protection**

### **3-6-1 Legal Status**

The area has been notified as sanctuary vide H.P. Government Notification No. 5-11/VC-SC dated 27.02.1974







### **3-6-2 Hunting**

No hunting is permitted. Even for scientific reasons, no animal has been hunted so far as per records available.

### **3-6-3 Poaching and other illegal activities**

#### **3-6-3-1 Poaching**

Due to posting of staff within the sanctuary area and also due to intensive patrolling the evil of poaching has been considerably removed. In past some cases of poaching were caught in or around sanctuary and the culprit brought to book. A list of gun holders within ten kms of Sanctuary is given in Annexure---

#### **3-6-3-2 Illegal cutting of trees encroachment**

The evidence of large scale illicit felling has never occurred however, right holders some time cut trees without permission to meet their bonafide domestic requirements. No case of encroachment has been detected.

**Table 7: Illicit felling/Forest offence Cases during last 7 Years**

<b>Year</b>	<b>Soul Beat</b>			<b>Khurahal Beat</b>			<b>Bobber Beat</b>			<b>Maloh Beat</b>			<b>Total</b>
	<b>Illicit Felling</b>	<b>Illicit Lopping</b>	<b>Illicit Grazing</b>	<b>Illicit Felling</b>	<b>Illicit Lopping</b>	<b>Illicit Grazing</b>	<b>Illicit Felling</b>	<b>Illicit Lopping</b>	<b>Illicit Grazing</b>	<b>Illicit Felling</b>	<b>Illicit Lopping</b>	<b>Illicit Grazing</b>	
<b>2013-14</b>	0	10	0	0	0	0	0	0	0	0	0	0	<b>10</b>
<b>2014-15</b>	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
<b>2015-16</b>	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
<b>2016-17</b>	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
<b>2017-18</b>	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
<b>2018-19</b>	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
<b>2019-20</b>	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
<b>Total</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>10</b>

### 3-6-3-3 Illegal removal of Non wood Products

No such case has been reported or even detected in the area. The people extract N.W.P. for their use as per rights existing, which however are extensive.

### 3-6-4 Domestic Live-stock grazing

The area is heavily grazed by domestic cattle of villagers in and immediately around the sanctuary. There are many migratory graziers as well, who graze their sheep and goat during winter months. The migratory graziers graze the area from 15 November to 31 March and they pose lot of competition for fodder to wild life this being otherwise period of scarcity.

### 3-6-5 Fire

Bandli area has regular fires which are generally man made. The inflammable material availability in open grass lands offers even an accidental spark the chance to cause an extensive conflagration. Local people commonly burn the grasslands.

**Fire Season:-** The fire season extends from March-June and again from Sept-Dec any fire occurring in breeding season has a devastating effect on WL population. This factor needs control as its overall impact on the habitat in present case is deleterious.

**Table 8: Forest Fire record of Bandli Wild Life Sanctuary, from 2011-12 to 2020-21**

Years	No. of cases	Area affected					Estimated loss (Rs.)	Beat	Remarks
		Natural area (in ha)	Planting area (in ha)	Regen. area (in ha)	Others area (in ha)	Total area (in ha)			
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
2011-12	-	-	-	-	-	-	-	-	
2012-13	4	-	12.5	-	13.5	8	67,000/-	Bobbar, Khurahhal	Fire in Summer
2013-14	-	-	-	-	-	-	-	-	-
2014-15	3	30	-	-	-	30	-	Bobbar, Khurahhal, Soul	Fire in Summer
2015-16	-	-	-	-	-	-	-	-	-
2016-17	2	-	3.25	-	20	23.25	55,000/-	Bobbar	Fire in Summer
2017-18	2	47	5	-	-	52	1,18,800/-	Bobbar, Maloh,	Fire in Summer,

								Soul	Winter
2018-19	1	54	3	-	33	90	50,000/-	Bobbar, Khurahhal, Soul	Fire in Summer
2019-20	1	10	-	-	-	10	-	Maloh	Fire in Summer
2020-21	1	46	5	-	-	51	49,000/-	Bobbar, Maloh, Soul	Fire in Winter
Total	14	177	28.75	-	66.5	264.25	3,39,800/ -		

### **3-6-6 Insect Attack and Pathological Problems**

No record is available and no evidence is visible which may point towards any note worthy insect or pathological attack on the species available.

### **3-7 Tourism**

The area has not been popularized for tourism. In fact, no infrastructure facilities are available and hence no emphasis on tourism has been given. The area has great scenic beauty and offers a very good trek in varied vegetation, which could be of interest. There are stalactite and stalagmite formations near the sanctuary, which are added tourist attraction.

### **3.8 Wildlife Conservation strategies and their evaluation**

#### **3-8-1 Protection**

At present, the emphasis has only been laid on protection. The area is intensively patrolled to check poaching.

#### **3-8-2 Improvement of habitat**

Some works in the shape of pasture improvement and plantations under RVP scheme have been done which ultimately is an improvement of the available habitat.

#### **3-8-3 Improvement of water sources**

To provide more water one water harvesting structure has been raised and also some water ponds have been constructed.

#### **3-8-4 Fire Protection**

Steps are taken to protect the area from fires. As these fires are so to say a feature of the area, immediate steps are taken to control them.

With all the above operations and with also some control on fresh fires, the evidence of wild life encounter has increased. There appears to be a rise in cheer pheasant populations as well. Still this all needs a close study.

#### **3.9 Administrative set up.**

The sanctuary is a small area. The rules and regulations followed here are as prescribed by the state Government. The Sanctuary is under the administrative control of the Forest Department Wild Life wing of H.P. Government.

The Chief Wild Life Warden stationed at Shimla exercise technical and administrative control over the DFO WL Kullu under whose jurisdiction this sanctuary falls. He exercises his control through Range Officer W.L. at Sundernagar for all operations such as Wild Life management, Forest management and research.

Along with DFO W.L. and ACF WL stationed at Kullu. The following staff at functional level looks after the sanctuary.

FR =1

DR =1

Fgds =4

At present, the FR is stationed at Sundernagar. The DR has been assigned functional control over the whole of Sanctuary. The block has four beats known as Maloh beat, Bobber beat, Soul beat and Khural beat.

The required camping equipment is made available to the staff. This includes tents, sleeping bags, cooking utensils etc. and for field observations infrastructure has not been developed and also the staff quarters are inadequate.

#### **3.10 Buildings:**

The existing accommodation is tabulated in Annexure-IV

### **3.11 Communication:**

The system of communication exclusively for the sanctuary has not been developed. There is no telephone and even the Range Hqr has not been provided with the facility.

### **3.12 Summary of threats to Wild life**

This can be discussed under two broad heads, i.e. Decimating factors and limiting factors.

#### **3.12.1 Decimating factors**

##### **1.Poaching**

This has been reduced considerably due to intensive protection by the department, however still there are stray incidents of Goral poaching and poaching of pheasants.

##### **2.Predating**

Lesser cats and the leopard are the predators in the area and they still ungulates and pheasants predating has not been noticed to be exercised.

##### **3.Diseases**

There is no record of any disease in the animals or mass death.

##### **4.Snow**

The area sometimes receives snow and this snow kills many smaller birds.

##### **5.Fires**

Fires, especially occurring during breeding season do lot of damage.

#### **3.12.2 Limiting factors**

##### **1.Water Availability**

Water availability is the main limiting factor of the sanctuary. Though there are numerous nals but they are only seasonal except a very few.

## 2.Grazing

The area as already said is heavily grazed by migratory graziers as well as local right holders. This poses competition to wild life and reduces food availability particularly during scarcity period.

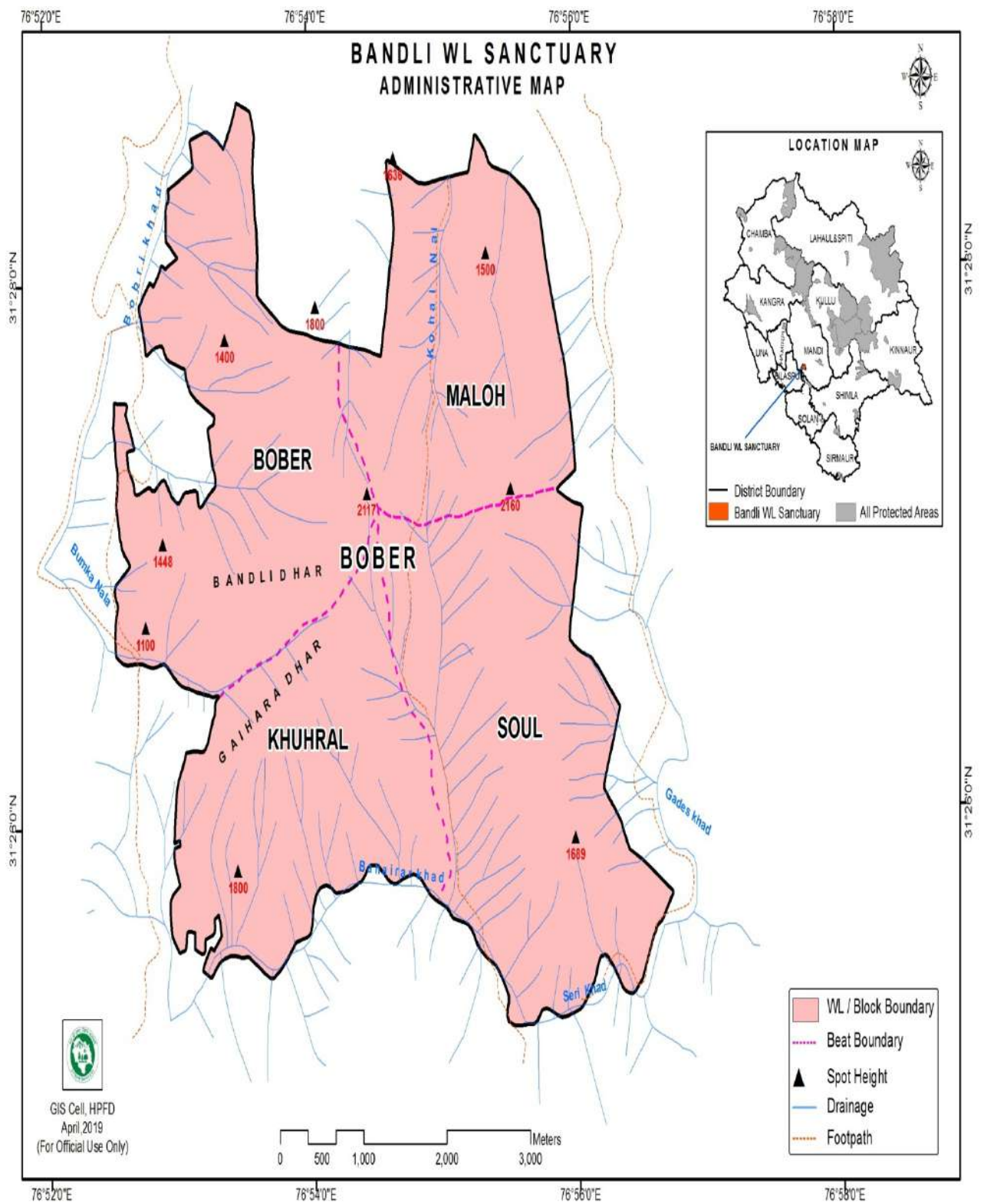


Figure 9- Administrative Map of Bandli WLS



## **CHAPTER-4**

### **THE PROTECTED AREA AND THE INTERFACE LAND USE SITUATION**

#### **4.1. The existing situation in the zone of influence**

The Bandli sanctuary is situated from 29 to 54 km from Mandi town. The total area of the sanctuary is 3219.91 hectares. Out of this 34.83 hectares is the cultivation or the area occupied by the included habitations. The precipitous slopes with scant vegetation occupy 20% area and 40% area is under grass lands approximately. The nalas and banks, which have forest cover of various deciduous and evergreen species account for 40% area approximately. The area is surrounded by villages from all the sides which have rights in the Bandli forest. Only the Southern boundary due to presence of Seri, Bharari Khad is protected and the entrance from the side is restricted.

The inhabitants around the sanctuary are primarily agriculturists. They practise subsistence agriculture. The people have well terraced agricultural fields and no deteriorations taking place in the lands. In case of grasslands as the plantations are being raised the land use is changing. Frequent and man made fires particularly in upper portion on Southern aspect in grasslands is keeping the area under grasses only where as on Northern aspect bushes have started coming up even in grasslands. These people depend on sanctuary for meeting with the demand of fuel, fodder and timber. Local people have got many rights over the forest products. However, Wildlife protection act 1972 bans the use of usufructs from National Parks and sanctuaries. Dwindling population of wild animals has considerably increased since imposition of ban on hunting. The intensification of agriculture coupled with increased human interference in hitherto undisturbed areas had led to human-wildlife conflict.

#### **4.2 Villages inside the PA, ethnic identities, traditions, custom:**

There are 23 villages in the eco-development zone. Out of 2343 household 463 are from Scheduled caste category, 46 are Scheduled tribe and 1834 are from general category. The detail of population, caste structure and livestock population in these villages is given in table-9:- Most of the people are dependent on forests of Bandli sanctuary for their life subsistence by collecting fuel wood, grass NTEP etc. Rajputs, the dominant community has

comparatively large landholdings and are agrarians. Agriculture is rainfed and the Kharif and Rabi crops are grown mainly for subsistence. They strictly observe caste structure. They also rear sheep and goats. Scheduled castes have comparatively smaller landholdings and they also practice agriculture. They are generally poor and deprived lot. Besides agriculture, they also undertake other activities like basket making, pattal and mat making, black smithy etc. The main occupation of these people is agriculture and all other occupations are subsidiary to it. Gujjars, the scheduled tribe are found in Kharni, Bhadrolu villages. They have permanently settled in these villages and are agrarians.

**Table 9: Human population in the villages adjoining Bandli Sanctuary**

SN	Name of Village	No. of Families					SC		ST		OBC		Gen		Total Population		
		Gen	SC	ST	OBC	Total	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	G. Total Population
1	Phagla	115	-	-	-	115	-	-	-	-	-	-	224	225	224	225	449
2	Ladhrera	3	-	-	-	3	-	-	-	-	-	-	4	9	4	9	13
3	Bobber	124	70	-	-	194	160	167	-	-	-	-	209	204	369	371	740
4	Dhar	8	-	-	-	8	-	-	-	-	-	-	14	21	14	21	35
5	Jarol	174	25	-	-	199	57	54	-	-	-	-	307	267	364	321	685
6	Saroni	115	46	-	-	161	70	89	-	-	-	-	130	281	200	370	570
7	Bhuntla	12	-	-	-	12	-	-	-	-	-	-	17	12	17	12	29
8	Kandhar	217	33	-	-	250	65	54	-	-	-	-	367	354	432	408	840
9	Khurahal	212	1	-	-	213	3	4	-	-	-	-	237	214	240	218	458
10	Siyuh	171	70	-	-	241	87	47	-	-	-	-	190	176	277	223	500
11	Basahu	12	4	-	-	16	10	7	-	-	-	-	34	27	44	34	78
12	Kharni	-	-	11	-	11	-	-	25	30	-	-	-	-	25	30	55
13	Hiyun	4	-	8	-	12	-	-	7	9	-	-	4	4	11	13	24
14	Badu	2	-	-	-	2	-	-	-	-	-	-	5	2	5	2	7
15	Jaral, Saul	90	50	-	-	140	63	74	-	-	-	-	207	171	270	245	515
16	Dharli	47	8	-	-	55	13	9	-	-	-	-	97	86	110	95	205

17	DPF Bandli dhar (Neri Nerad Kaphari)	34	-	-	-	34	-	-	-	-	-	-	70	71	70	71	141
18	Sariun	91	-	-	-	91	-	-	-	-	-	-	188	174	188	174	362
19	Maloh	107	52	27	-	186	91	85	63	58	-	-	183	168	337	311	648
20	Bagain	78	-	-	-	78	-	-	-	-	-	-	181	189	181	189	370
21	Nalini	113	52	-	-	165	49	59	-	-	-	-	109	150	158	209	367
22	Badhrolu	3	52	-	-	55	99	101	-	-	-	-	7	4	106	105	211
23	Lag Rang	102	-	-	-	102	-	-	-	-	-	-	181	189	181	189	370
	Total	1834	463	46		2343	767	750	95	97	-	-	2965	2998	3827	3845	7642

Source: Secretary, Gram Panchayat

#### **4.3 The state of people's economy, use of forest and non-forest based natural resources by people and seasonal patterns:**

Generally speaking people of the area are not economically sound. Landholdings of the people on an average are small. Most of the farmers are small and marginal . The people generally practise subsistence agriculture. There are no commercial crops as such. Their basic occupation is agriculture and for this, they keep number of cattle, sheep and goat. Many of the cattle are useless and predominantly the cattle sheep reared are of local breeds. Alongwith cutting grass for domestic animals the grass is sold also, particularly during cattle fairs, which are annual features at many places surrounding the vicinity of the sanctuary. The major agricultural crops of the area are wheat and maize, along with some cereals. Up to the time the B.S.L Project works were in full swing the employment opportunity were abundant but with completion of the Project the unemployment has increased. The society now around the sanctuary has large number of unemployed people. Their unemployment goes year around.

People get wage employment in seasonal activities of PA. Very few people have government jobs. The other activities supplementing their income are:

1. Sheep and goat rearing
2. Wage earning in the PA and outside
3. Livestock rearing
4. Pattal making
5. Mat making
6. Basket making

#### **Use of Forest based natural resources:**

Local people in and around the sanctuary are dependent on forests for livestock, grazing, fuel wood collection, timber for house construction, medicinal plants and other NTFPs.

Use of fuel sources such as cooking gas (LPG) is relatively low and the energy needs of the village population for cooking are largely met from fuelwood. The pressure of grazing for the high density cattle population around the sanctuary is significant. In addition to cattle other small livestock such as sheep and goat also graze in the sanctuary. Bandli sanctuary provides a rich source of grass which is collected by the villagers to meet their fodder demand.

**Table 10: Land use Pattern**

SN	Name of Village	Name of Patwar Circle	Horticultural Land (Bighas)	Agricultural Land (Bighas)	Total Area (Bighas)
1	Phagla, Dhar	Banwar	356-10-01	674-00-00	1030-00-00
2	Bobber, Ladhra	Jarol	755-08-17	2646-11-02	3401-19-19
3	Jarol	Jarol	Nil	1950-00-00	1950-00-00
4	Saroni, Bhuntla	Jarol	Nil	2300-00-00	2300-00-00
5	Kandhar	Jarol	607-01-05	2446-15-07	3053-16-12
6	Khurahal, Siyuh	Khurahal	48-00-00	736-00-00	784-00-00
7	DPF Bandli dhar 2/35 Saul beat (Jaral) Saul, Dharli Neri, Nerad, Kaphari, Basahu, Kharni, Hiyun Badu	Khurahal	0	227-00-00	227-00-00
8	Sariun	Maloh	05-10-05	389-02-05	394-12-10
9	Maloh	Maloh	14-11-12	783-01-15	797-12-10
10	Bagain	Maloh	18-14-00	783-01-15	797-13-07
11	Nalini	Maloh	36-01-17	420-09-06	456-11-03
12	Badhrolu	Maloh	01-17-15	170-12-15	172-10-10

In addition to the resource dependency of villages in and around Bandli WLS, the sanctuary also provides resources to livestock herds of migratory graziers. The Gaddis migrate to Bandli Sanctuary mainly from Kangra district of HP and remain in the sanctuary for three to four months during the winters. During this period every year on an average between three to four thousand gaddi livestock utilize the resource of Bandli for grazing. Timber resources for construction of houses and cowsheds and for construction of agri implements such as ploughs are extracted from the sanctuary. Villagers also extract non-timber forest produce mainly nirgal for preparation of baskets, leave of baubhinia for pattal making and phoenix leaves for making mats. Though no study has been made, the villagers get marginal earnings out of the use of natural resources of the sanctuary. The situation becomes more complicated when we look at the role of communities living in and around the protected area. Most of the livestock is of local breed. The cattle from the adjoining villages sometimes graze inside the protected area throughout the year. Gujjars (migrant grazier) too bring their cattle to the adjoining pastures during summers when milk products are in high demand. No impact study has been

conduct in this regard in the protected area. The people have started rearing improved breed of cows recently which are stall fed thus, reducing pressure on the protected on the protected area. The livestock population in the adjoining villages is tabulated as under:

**Table 11: Live Stock population of the village adjoining Bandli Sanctuary**

Sr. No.	Name of Village	Jersey Cow	Local Cow	Bull	Sheep	Goat	Horses	Buffalo	Total
1	Phagla	25	-	40	10	70	-	75	220
2	Ladhrera	2	1	-	-	3	-	-	6
3	Bobber	20	-	60	15	150	5	70	320
4	Dhar	8	-	20	3	45	-	18	94
5	Jarol	35	-	50	10	75	-	40	210
6	Saroni	15	-	20	3	60	-	35	133
7	Bhuntla	2	-	10	5	30	-	15	62
8	Kandhar	65	3	20	150	500	15	85	838
9	Khurahhal	15	20	20	24	40	-	25	144
10	Siyuh	20	10	25	15	35	3	40	148
11	Basahu	79	-	-	5	147	7	50	288
12	Kharni	-	5	10	-	45	-	8	68
13	Hiyun	25	5	10	20	50	-	15	125
14	Badu	-	1	2	-	70	-	3	76
15	Jaral, Saul	535	-	-	90	709	34	208	1576
16	Dharli	199	-	-	32	244	4	56	535
17	DPF Bandli dhar (Neri Nerad Kaphari)	30	4	8	26	80	-	26	174
18	Sariun	75	-	10	10	150	-	40	285
19	Maloh	80	-	3	-	130	-	65	278
20	Bagain	70	-	10	-	54	-	30	164
21	Nalini	55	-	6	10	200	6	80	357
22	Badhrolu	10	-	20	6	80	-	90	206
23	Lag Rang	90	-	4	-	60	-	60	214
	Total	1455	49	348	434	3027	74	1134	6521

#### **Seasonal activities:**

The table below shows the seasonal pattern of use vis-à-vis the primary activities in which the people are occupied throughout the year.

**Table 12: Seasonal Activity calendar**

Month	Agriculture	Forestry operations	NTEP Collection
January	Fuelwood collection	Forest protection, Plantation, census and anti-poaching activities	Fuelwood and dry leaves collection
February	Do	Forest protection, Plantation, census and anti-poaching activities	Fuelwood collection
March	Do	Forest protection	Fuelwood collection
April	Harvesting of Wheat	Forest protection, Fire protection	Collection of Phoenix leaves and Bauhinia vahlii leaves
May	Harvesting of wheat and sowing of Maize	Forest Protection, Fire protection, Nursery work	Collection of Phoenix Leaves and Bauhinia Vahlia leaves
June	Sowing of maize, Mash and soyabean	Forest protection, Fire protection	Collection of Phoenix Leaves and Bauhinia Vahlia leaves
July	Weeding and hoeing of maize fields and sowing of paddy	Forest protection, Plantation, Nursery work	Collection of Phoenix Leaves and Bauhinia Vahlia leaves
August	Sowing of paddy	Forest protection Plantation	Grass, fodder and Bauhinia leaves collection
September	Collection of grass and Harvesting of maize	Forest protection, Soil conservation	Grass, fodder and Bauhinia leaves collection
October	Harvesting of maize	-	Grass, fodder and Bauhinia leaves collection
November	Preparing the fields for Sowing of wheat and sowing of wheat	Forest protection	Fuelwood collection
December	Sowing of wheat	Forest protection, Census, Anti-poaching	Grass, fuelwood collection



#### **4.4 Implication of the land use and resource dependency for the conservation of the PA**

People traditionally have been using the natural resources of the sanctuary for their health care needs, timber, fuelwood, grazing, fibre etc. The rights of the people are still unsettled. In addition to the implication on biodiversity for the area there is legal implication w.r.t villages and resource use inside the sanctuary.

Following impacts of livestock grazing, grass, timber, fuelwood and other NTEP collection can be seen.

Soil erosion: The selection of same trails for livestock grazing and vegetation removal leads to soil erosion.

Soil compaction: Soil compaction in intensive grazing zones in ghasnis and village surrounds have been seen.

Reduced Soil fertility: Overgrazing and biomass removal causes preponderance of nitrophilous plants thus causing a reduction in soil fertility.

Disturbance to wild animals: The constant availability and movement of livestock, shepherds and dogs prohibit habitat use by wild animals. Phoenix and Bauhinia leaves collection during the breeding period of wild animals also cause disturbance.

Harvest of grass in Ghasnis: Harvest of grass from Ghasnis leads to degradation and disturbance to grass dependent animal species.

Lopping and girdling of trees: Collection of fodder, livestock bedding material and fuelwood collection degrades habitat quality.

Fire: People burn ghasnis in order to facilitate new flush of green shoots which negatively impact on ground dwelling organisms and birds.

Disease communication: The unvaccinated cattle, sheep and goats are a threat to the wild ungulates for spread of diseases.

#### **4.5 Forest/ PA management practices and their implications for the people**

Wildlife protection act 1972 prohibits the use of natural resources for the sanctuary except for controlled grazing with permission of CWLW. In the past local people were left out of the conservation planning process. As a result their aspirations, fears and rights have not been understood or catered to adequately. This is why wildlife conservation planning projects have received so little support from the people who lives in and around protected area. Though there are many villages inside the sanctuary crop depredation, damage to property, cattle and human casualties due to wild animals in the surrounds are almost insignificant. Damage to crop is done by the monkeys in some pockets. Black bear and porcupine also damage the crops but the damage is not much. Killing of sheep, goats and mules by the leopard has been noticed and adequate compensation has been paid.

#### **4.6 The development Programmes and conservation issues**

At present there are no big development projects in the areas as most of the developmental project agencies hesitate to initiate the proposals due to all area being wildlife sanctuary. So people in the PA are devoid of many developmental activities. This has resulted into a feeling of resentment, when they see their adjoining are outside PA getting various developmental projects. Habitants around the sanctuary are unaware of the importance of wildlife. Therefore, they are not interested in conservation and preservation of Wildlife. Awareness is lacking among the people residing in or around the sanctuary. Special awareness programmes are to be continued to educate people about the importance of Wildlife protection and preservation, as such attempts in the past have shown some results but there is lot more to be. Up to the time the B.S.L Project works were in full swing the employment opportunity were abundant but with completion of the Project the unemployment has increased. The society now around the sanctuary has large number of unemployed people. Their unemployment goes year around. One cement plant is also being planned to set up near Bandli sanctuary. The Cement plant is proposed to be located at Chambli and mining lease for limestone covers an area of 726 ha situated between Trambri DPF to the north and Bandli Sanctuary to the south. It is at a distance of around 5 KM's from the boundary of the Bandli Sanctuary. Environment Impact Assessment of the Cement plant and Captive Limestone mine has been done by Wildlife Institute of India and they have submitted a detailed report in January 2005. Bandli WLS is separated from the mine lease area by a natural barrier of a

hillock and by intervening valley occupied by human habitations in villages. The impacts of mining are, therefore, not directly threatening the integrity of the PA. Based on the available mine plan and the mine sections provided by the project authorities, the mining would be restricted to defined limits of existing Bagain village and the specified face on the hill slopes overlooking Bandli WLS. Any attempt towards progressing mining beyond the specified limits within the mine lease area may reduce the protection and barrier function of the intervening hillock and the valley area. Landscape around Bandli is surrounded by a large number of villages posing a major challenge to the conservation. A human population of 8000 people living in forty villages in buffer zone of the sanctuary and nearly 7000 livestock depend on the resources of Bandli Sanctuary for biodiversity resources for sustenance. It is feared that Bandli WLS may become a receptora of additional impact of resource demand from Oustees of the mine lease area and from influx of work force for mining activities. The increasing human intervention in and around sanctuary may further restrict habitat use by animals particularly for species with specialized habitat requirements and higher sensitivity to disturbance.

# **PART-II**

## **The Proposed Management**

## **Chapter-5**

### **Objectives of management**

#### **5.1 Objectives of management**

Future planning and management of the sanctuary will be based on the following objectives of management:

1. To conserve and protect biodiversity in Bandli Sanctuary with all the ecological processes, functions and the gene pool.
2. To provide specific measures aiming at habitat improvement.
3. To conserve and maintain the viable population and gene pool of endangered and rare species of plants and animals with special focus on Cheer Pheasant and common Leopard.
4. To reduce the impact of People on PA and vice versa through eco-development.
5. To promote ecotourism and enhance educational, recreational and wilderness experience for eliciting public support for conservation.
6. To promote research and monitoring programmes for strengthening management effectiveness.
7. To improve PA management through various capacity building programmes and providing staff amenities.

#### **5.2 Problems in achieving the objectives**

Bandli Sanctuary is having varied ecosystems and considerable community interface. From the field visits, inventory reports and discussion with staff and problems faced or likely to be faced in achieving management objectives were determined for each objective separately. The problems are:

##### **5.2.1 Problems in achieving objective 1**

1. Inadequate buffer and unsettled rights of the people in and around Bandli sanctuary.
2. Repeated fires in the grasslands and ghasnis is also a weak point which ultimately has lot of negative implications on the conservation of representative biodiversity.

3. Inadequate protection network is also a hurdle.
4. Livestock grazing and disease outbreak is also a hurdle in achieving the objective.
5. Overburdened staff is also one of the problems.
6. Enclave villages and resource dependency of people in and around Bandli sanctuary is also a challenge.
7. Proposed cement plant and mining lease area around Bandli sanctuary.
8. Lack of adequate research and baseline data on various area and endangered species is also a problem.
9. Inadequate and untimely flow of funds also hampers realization of the objective.

#### **5.2.2 Problem in achieving objective-2**

1. Enclave villages and resource dependency of people in and around Bandli Sanctuary is also a challenge.
2. Repeated fires in the grasslands and ghasnis is also a weak point which ultimately has lot of negative implications on habitat improvement.
3. Inadequate protection network is also a hurdle.
4. Overburdened staff is also one of the problems.
5. Lack of adequate research and baseline data on habitat management is also an issue.
6. Inadequate and untimely flow of funds also hampers realization of the objective.
7. Lack of public support to achieve the goal of wildlife management is also a hindrance in achieving the above objectives.
8. Proposed cement plant and mining lease area around Bandli sanctuary.

#### **5.2.3. Problems in achieving objective 3**

1. Inadequate research in various aspects related to rare and endangered species of flora and fauna.

2. Lack of adequate baseline data on rare and endangered spp of flora and fauna is a problem.
3. Proposed cement plant and mining lease area around Bandli sanctuary is also a potential threat.
3. Fund flow is not in time and oftenly it is inadequate.
4. Appropriate awareness programmes wrt various rare and endangered floral and faunal spp for various target groups are lacking.
5. Resource dependency of local people on the PA for various NTFPs further degrades the habitat for these animals.
6. Repeated fires is also a big problem as many rare and endangered spp get destroyed during fires.
7. Lack of adequate trained staff is also a big hurdle.

#### **5.2.4 Problems in achieving objective 4**

#### **5.2.5 Problem in achieving objective 5**

1. Legal implications as given in WL(P) Act, 1972 can seriously affect this objectives as according to the new amendments in the Act, no habitation can be inside Sanctuary and National Park and no resource extraction is allowed.
2. Lack of EDCs and site-specific micro plans.
3. Lack of trained and motivated staff is yet another drawback, which makes it difficult to realize the objective.
4. Untimely and inadequate fund flow is also affecting this objective.
5. Lack of proper coordination between various line departments also affects this objective negatively.
6. Ever increasing population also impacts the resources and further worsen the situation.
7. Lack of sufficient awareness among the local people about the concept of eco development and its objectives.

8. Non-internalization of eco-development concept within the forest department resulting in inadequate support from within the department.

9. Inadequate institutional mechanism for growth of programme. It all depends on the individual.

10. Preoccupation of staff with familiar works. HRD, Education, Awareness, Research and monitoring are not given due attention.

11. Lack of staff and untimely transfers of implementing officers.

12. Administrative delays due to official procedure hamper the objective.

#### **5.2.6 Problem in achieving objective 6**

1) Lack of involvement of local people in tourism.

2) Steps for regulating tourist pressure have not been chalked out properly.

3) Research, monitoring and evaluation in various aspects of eco-tourism is lacking.

4) Absence of trained Tourist Guides

5) Lack of basic facilities

6) Lack of well chalked out interpretive programme.

7) Lack of adequate marketing and promotion

8) Proposed cement plant and mining lease area around Bandli sanctuary.

#### **5.2.7 Problem in achieving objective 7**

1. Management is unclear with the approach for research and monitoring that what is to be prioritized and studied first.

2. Lack of adequate and untimely funding support for research and monitoring hampers the objective.

3. Difficult conditions like remoteness of areas, lack of adequate road network, difficult terrain etc also makes the realization of this objectives difficult.



### **5.2.8 Problem in achieving objective 8**

1. Lack of training on various aspects of management and participatory management of resources.
2. Lack of adequate budget for realizing this objective.
3. Overburdened staff at PTR also make this objective difficult.

## **Chapter-6**

### **THE STRATEGIES**

Strategies play a very important role in management plan as annual budget is based on proposals made as well as objectives framed can be achieved by chalking out an appropriate strategy.

#### **6.1 Proposed zonation:**

At present there are no separate zones in Bandli Sanctuary. However, following zones are proposed for future management of the sanctuary:

##### **1. Core zone:**

It is having an area of 22.84 sq km. There is one small village inside the core zone. It has crucial elements of PA values. It needs to be maintained as sanctum sanctorum.

##### **2. Buffer zone/ Eco-development:**

It covers an area of 43.69 sq km and surrounds the core zone. There are forty villages in this zone. It consists of Soul bear of Bandli sanctuary and area up to one Km from the boundary of sanctuary. Most of the area of buffer zone is under the control of DFO Suket.

##### **3. Tourism zone:**

To encourage tourism a special zone has been identified and already described. This zone has been kept keeping in view the requirement that least disturbance is caused to the habitat and wildlife. The zone is along the trekking path from Maloh to Saul. It has varied amount of vegetation and covers all the habitats that are found in the sanctuary. Permitting limited tourism on this route will not cause disturbance to animal life. It covers an area of 0.81 sq km.

#### **6.2 Zone Plans:**

Different zones have been created to meet different management objectives. These are:

##### **6.2.1 Core zone:**

Core zone of Bandli sanctuary consists of 22.94 sq km. It needs to be protected as it has crucial elements of PA values. It has a present and future potential of habitat of many rare, threatened spp of flora and fauna like Cheer pheasant. It is a fragile and sensitive zone.

### **Objectives:**

To keep it free from biotic pressure of all sorts and allows it to grow with full protection and a little management intervention in terms of habitat manipulation as and when required.

### **Constraints**

1. Core zone is surrounded by large number of villages.
2. It is porous and subject to poaching. NTFP and firewood collection etc.
3. Rights of people are not settled.
4. Migratory graziers visit some areas inside the core during summer season.
5. It is subject to large amount of grass collection by the local people.

### **Prescriptions:**

1. Protection would be the top most priority and various strategies would be adopted for protection it fully from exploitative human use and external influences. The strategies for protection have been discussed in detail in Theme plan.
2. Management practices aimed at habitat improvement would be kept to the minimum. Operations like maintenance of roads and paths for patrolling and monitoring, maintenance of existing fire lines, desilting of waterholes, creation of water sources in areas where perennial source of water is far off, maintenance of existing water resources, creation and maintenance of edges, patrolling camps etc would be taken up in a planned way so as to cause minimum disturbance to habitat and wildlife.
3. Tourist pressure would be kept to bare minimum.
4. Research oriented activities may be restricted to some management oriented and important baseline data which can serve as a bench mark.
5. Detailed survey and records of flora and fauna would be maintained.
6. Various wildlife health care and surveillance activities will be done as described under theme plan for wildlife health.
7. Captive bred cheer pheasant of Conservation breeding centre Chail may be rehabilitated in this zone.

### **6.2.2 Buffer zone**

Buffer zone comprises of an area of 43.69 sq km. Various management interventions will be done intensively. This will also serve the purpose of buffer to the core zone of Bandli sanctuary. Various Eco-development activities will also be carried out in this zone.

#### **Objectives:**

1. To protect and manage the area using active management interventions.
2. To minimize the negative impact of villages.

#### **Constraints:**

1. Heavy Biotic pressure from the villages.
2. Lack of adequate soil and moisture conservation activities.
3. Weeds are also a problem in degraded and exposed area degrading the habitat further.
4. Fire in the forests is a problem.

#### **Prescriptions:**

1. Protection of the zone against illegal activities, fire, and resource extraction will be given top priority here also. The prescriptions have been discussed in detail in various theme plans like Protection, Fire management etc.
2. Various habitat improvement activities like maintenance of roads and paths for patrolling and monitoring maintenance of existing fire lines, desilting of waterholes, creation of water sources in areas where perennial source of water is far off, maintenance of existing water resources, creation and maintenance of salt licks, construction of patrolling camps etc will be done intensively.
3. Control burning may be discouraged in view of its negative impacts on quality and catchment capabilities and efforts to encourage grass cutting by local people may be made after taking permission from CWLW from sanctuary area. Burning may be kept to a minimum level possible.
4. Weed eradication will be done actively taking 10-20 hac of area per year, in a phased manner as all the weeds do not vanish in one go. Theme plan of weed eradication discusses various methods in details.
5. Various wildlife health care activities will be done as described in theme plan.

6. Various watershed management activities will be done intensively to improve the catchment capability of the area. Detailed prescriptions have been given under theme plan for watershed management.
7. Various eco-development activities will be carried out in this zone to win the support from people.

### **6.2.3 Tourism Zone**

To encourage tourism a special zone has been identified and already described .This zone has been kept keeping in view the requirement that least disturbance is caused to the habitat and wildlife. The zone is along the trekking path from Maloh to Saul. It has varied amount of vegetation and covers all the habitats that are found in the sanctuary. Permitting limited tourism on this route will not cause disturbance to animal life. A separate chapter on Eco- tourism and interpretation has been written.

Strategies play a very important role in management plan as annual budget is based on proposals made as well as objectives framed can be achieved by chalking out an appropriate strategy.

## **6.3 Theme Plans**

Some of the management strategies are not confined to a particular zone but they are applied to all the zones. These are basically the theme plans or a zonal plan. Various theme plans have been developed for taking care of some of the important aspects of management. These are:

6.3.1 Protection

6.3.2 Fire management

6.3.3 Watershed management

6.3.4 Wildlife health care

6.3.5 Habitat improvement

6.3.6 Man-animal conflict

**6.3.1 Protection:** Protection of the sanctuary is very important for effective management and conservation of valuable flora and fauna. Biodiversity hot spots identified and shown in the maps need to be protected on priority basis.

**Prescriptions:**

The following prescriptions have been put forth keeping in mind the constraints discussed above:

**1. Boundary demarcation:**

The boundary demarcation is very important from protection point of view especially to control encroachments. Boundary pillars would be serially numbered. Inspection would be done every year and every encroachment/ damage of pillars would be reported and it would be checked by position of pillars on the map. Mapping of boundary pillars on 1:50,000 map would keep the idea clear about the area under possession and in court of law also it can be presented as an evidence in case of encroachment. The issue of encroachment needs attention in areas falling near villages. There is a need for clear demarcation of boundaries and regular verification/ inspection.

**2. Group Patrolling:**

- 1 By dividing whole of Bandli WLS into units an exercise of sensitive zone analysis would be carried out and these will be mapped from time to time based on occurrence of offences.
- 2 Ration will also be provided to the patrolling parties to lessen the burden on them. This will increase their efficiency.
- 3 All the camps will remain in constant touch with their respective headquarter.
- 4 All areas should be covered regularly but sensitive areas will be covered more frequently.
- 5 Patrolling parties will be changed from time to time and routes will also be changed to make patrolling more effective.
- 6 Report will be submitted on the given format.

**3. Efficient Intelligence Network:**

1. Reliable locals would be made a part of this intelligence gathering.

2. A list of informers would be maintained and kept secretively with officers.
3. It would be developed on the lines of police and custom department.

#### **4.Capacity building;**

It would be done for frontline staff and locals by organizing training modules/ workshops so that it would help in curbing the forest offences.

#### **5.A System of Rewards/ citations/ certificates:**

It would definitely boost up the morale of people and reduction in forest offences would certainly take place. This would be in accordance with provisions of WL (P) Act, 1972 and funds would be raised for it, even NGOs can help.

#### **6.Inter-departmental coordination:**

Effective inter-departmental coordination with line department like Police, Revenue, Judiciary etc would be established. Sharing of intelligence with other line departments and other divisions should be promoted.

#### **6.3.2.Fire management**

Protection from fire is one of the most difficult tasks for the managers. In grasslands fire is a big problem. The last five years data indicate the occurrence of forest fires at Bandli WLS in different locations. All these fires invariably occurred during summer season, fire sensitive areas have been identified and mapped. More attention towards these areas will be given.

#### **Sources of Fire in Bandli WLS:**

1. Higher temperature during April to May also creates a conducive atmosphere for forest fires.
2. Considerable amount of dry grasses in the grasslands also poses a hazard.
3. In retaliation to enforcement measures taken by the staff.----

#### **Impact of fire:**

The incidences of fires seriously affected the several herbal species, micro flora and fauna, apart from decrease in biodiversity value, exposure of soil and degradation of habitat

etc. The fires accelerated the soil erosion and silting of watershed apart from accumulation of a large amount of debris in the streams. Biodiversity hot spots identified and shown in the maps may be protected against fire on priority basis.

Fire Control Measures:-

### **Prescriptions-**

#### **1.Maintenance of fire lines:**

It is very effective and essential for controlling fires.

1. The cutting and cleaning of existing fire lines would be done between mid December to mid February.
2. Fire lines would be maintained all along the border and track paths.

#### **2.Cutting of grasses**

As standing tall grasses poses a serious fire hazard in Bandli WLS, people may be allowed to cut the grasses from the grasslands. This will reduce the fire hazard and goodwill of local people will also be gained.

#### **3.Moral boosting of the staff:**

By introducing a system for rewards for efficient fire fighting, a moral boosting of staff would be done by imparting them various incentives

#### **4.Training:**

During fire season every month some small training capsules would be organized for fire fighting.

#### **5.People's participation:**

JFMCs would be asked to help in fire fighting and more importantly its prevention during fire season. Monetary benefit may also be given to the JFMCs as reward for protecting the area from fire.

#### **6.Awareness generation:**



By producing some pamphlets, creating signboards and by conducting workshop etc awareness would be generated on fire. It causes, effects, prevention and fire fighting. People will be motivated by staff not to lit fires and to collect NTFPs .

### **7.Strict punishments:**

Cost of damage due to fires may be recovered from the offenders and they would be put behind bars under strong legal provisions of WL(P) Act, 1972.

### **6.3.3 Watershed management**

Bandli WLS forms catchment of various rivers and rivulets. Water is not a great problem except for pinch period during summer. It is very important to maintain the watershed as it will reduce the siltation of rivers.

### **Prescriptions:**

1. Due to perennial sources of water availability Bandli WLS does not pass through a true pinch period but there are some areas where due to less proximity to nearby water source, it becomes a limiting factor as food is available in good quantities. These areas would be identified and mapped. A description would be made attached to it so that even successors can go for analyzing the situation and work accordingly.
2. These marked areas will be compensated by making waterholes. In future water holes should be constructed only after proper planning.
3. All existing waterholes will be desilted annually after rainy season.
4. Weeds will be removed from all the existing waterholes.
5. All waterholes would be preserved and maintained so as to fulfil the requirement of water of wildlife.
6. All water points would be monitored regularly by the staff.
7. Looking at the terrain different methods may be visualized and its feasibility to construct water bodies may be worked out.

8. In watershed areas some check dams and anicuts must be constructed so that ground water recharging gets enhanced and soil erosion be checked.

9. In the areas of check dams and gully plugging some native grass spp would be grown as they would work as fodder for food as well as bind the soil from getting washed away during monsoon.

**6.3.4 Wildlife health:** The regular monitoring of wildlife health can provide a manager valuable information about the habitat condition and susceptibility of wild animals for epidemics.

**Prescriptions:**

1. Regular monitoring of health condition will be done from animal body condition. This activity will be assigned mainly to Veterinary officer.
2. Periodic health investigation once or twice in a year for representative sample of population of all spp would be done. The parasitological examination may be done every year but detailed investigation of infectious diseases can be done every 2 or 3 years, Help of Institutes like WII may be sought.
3. Various samples will be collected from dead livestock from the vicinity to find out the possibility of spread of diseases to wild animals.
4. Efforts would be made to locate dead animals at the earliest and postmortem examination would be conducted by a trained veterinarian as early as possible. The suspected material will be collected as prescribed manner and would be sent to any suspected material will be collected as prescribed manner and would be sent to any disease diagnostic centre as early as possible for the confirmation of the disease.
5. Efforts to establish the cause of death of wild animals must be made so that proper preventive measures may be taken up accordingly.
6. In the peripheral villages at buffer, vaccination would be done for various diseases like T.B., Anthrax, FMD, Rinderpest, H.S. etc.
7. Separate waterholes may be provided to livestock outside the reserve area so as to minimize the chances of contact of disease from domestic animals and stall feeding would be encouraged.

8. An awareness programme will be generated for villagers and staff on animal health care.
9. Regular training to field staff may be given by the veterinary officer.
10. Regular contact and coordination with veterinary department and various institutions related to wildlife health matters to be maintained.
11. Regular health camps will be organized.

### **6.3.5 Habitat Management:**

#### **Objectives:**

To do an overall improvement of habitat in terms of availability of food, cover and water to wild animals by some management interventions or habitat manipulation works.

#### **Prescriptions:**

##### **1. Plantation of fruit bearing trees:**

Plantation activities inside the sanctuary should be minimized and whatever plantation is done more and more emphasis on fruit and fodder trees should be given. Grafting of fruit bearing trees will also be done to increase the food base.

##### **2. Management of grasslands:**

Repeated burning of grasslands to avoid fire hazard should be discouraged as it increases erosion, decreases availability of palatable grasses and various forbs. Excessive burning of grasslands is a big threat to Cheer pheasant. Cutting of grass by local people will be allowed to a limited extent to ensure availability of good habitat for cheer pheasant.

##### **3. Weed eradication:**

Many weed spp are found in Bandli WLS. Weeds compete with the native vegetation and deteriorate the habitat. If the causal factors like disturbance are removed the weeds will vanish in some time. But it will take time so few interventions may be done to manage the weeds.

1. From previous records and by surveying the area, weed infested areas may be marked on the map and accordingly on priority basis it would be removed firstly from those areas where it had become very dense.
2. The removal would be done manually during the rainy season so that it is easy to uproot, better if started before seeding.
3. Some of the weed eradicated areas may be planted with fast growing spp like Bamboos. It has been found to be most effective strategy against Lantana.
4. Efforts should be made to remove all disturbances from weed infested area.

#### **Maintenance of water sources and salt licks:**

Bandli WLS forms catchment to a large number of rivers and rivulets. Thus there is no dearth of water except during summer in some high slopes. A satellite imagery would be procured to get the real picture of distribution of water resources and then by plotting the actually existing water bodies on map it would be cross checked and in areas where the perennial sources are far off, some new waterholes may be created. New salt licks will be formed at places selected considering the incidences of Wild Life and presence of perennial water sources. Monolith salt blocks may be used. These will be embedded just about ground level considering the hygiene. Shallow water bodies will be created as these will provide and attract suitable habitat for water birds. These will also help in wallowing and act as a source of water during summer.

#### **5. Protection and maintenance of physical attributes and dead trees:**

1. All the physical attributes like caves, dens, cliffs, talus etc would be fully protected and kept maintained as it can be a habitat of any animal after survey of the area.
2. Dead trees and snags would be protected as it may be a resting, perching or boarding place for small mammals, birds and insects etc.

#### **6. Protections and development of riparian vegetation and cover**

Riparian vegetation provides food, water and cover to the wild animals and avifauna. Shade and proper cover for tiger is as important as food and water. Riparian forests are used as corridors by the animals and birds. It is prescribed to keep the biotic pressure away

from riparian areas and protect it against fire. The stretch of vegetation along these should be identified and delineated. Weed eradication works would also be done.

## **7. Protection**

Protection is the most important strategy to prevent habitat degradation and restore animal population. Protection strategies would be same as described earlier.

### **6.3.6 Man- animal Conflict:**

Man-animal conflict is not a very serious problem at present in Bandli WLS but this aspect needs attention as lot of villages are located on the periphery. There are various reports of damage to crops by porcupines, monkey and black bear. Killing of cattle dogs and mules by Leopard is also a problem. The majority of people in the sanctuary are dependent on the resources of the sanctuary. There is an immediate need to provide adequate compensation for the poor families living close to the park and getting adversely affected by the wildlife damage. State forest department has a provision of providing compensation for human death or injury and for killing of cattle, mules, sheep, goat etc. However, no compensation is paid for damage to agriculture and horticulture crops. Often the locals are not aware of the schemes of department. The lengthy and cumbersome procedure of getting compensation is also a hindrance.

Prescriptions:

1. Cattle killings and human injury and death would also be inquired first quickly and then appropriate compensation be paid.
2. Fodder plots of local grasses would be developed outside the park and stall feeding would be motivated to be increased rather than grazing.
3. Awareness would be raised and people may be motivated to go for centralized cropping and growing of unpalatable grasses on periphery towards forests to prevent crop raiding.
4. Stakeholders will be identified and involved in mitigating the man wildlife conflict.
5. Some proactive measures such as identification of rogue animals, their tracking and if needed their elimination may be undertaken.
6. Feasibility of radio collaring of problem animals can be explored.

7. Deterrents such as making sounds at night, beating drums, lighting fire etc may be of some use.
8. Crop insurance has also a lot of promise to solve the issue of man animal conflict. Possibility of paying a portion of the insurance premium by the management for poor villagers can be explored.
9. Chemical and physical restraint may be used to solve this problem. It is recommended that the management should be well equipped for chemical restraint which may be needed for straying or trapped wild animals in village or habitations.

## **Chapter-7**

### **Tourism, Interpretation and Environment Education**

#### **7.1 General**

Tourism in PA's acquires immense significance from the point of view of enhancing people's receptiveness and appreciation of the importance of nature and wildlife conservation. Eco-tourism is defined as responsible travel to natural areas that conserve the environment and sustains the well being of the local people. This type of tourism is dependent on conservation of wild land resources. The wildlife sanctuary provides a very good opportunity to the enthusiast to enjoy and experience the wilderness of the area. Although wildlife sanctuaries play an important role in the development of tourism and thereby serve to create awareness among the people, their first and foremost objective is to serve as a safe and suitable habitat for wildlife. Only regulated and controlled tourism will be allowed in the sanctuary.

The area has not been popularized for tourism. In fact, no infrastructure facilities are available and hence no emphasis on tourism has been given. The area has great scenic beauty and offers a very good trek in varied vegetation which could be of interest. There are stalactite and stalagmite formations near the sanctuary which are added tourist attraction.

#### **7.2 Other tourism attractions nearby:**

Rewalsar lake is located near to the sanctuary. Thousands of tourists and Pilgrims visit Rewalsar lake every years. The famous hill stations of Karsog and Janjehli which are nearby also make the tourists come to Bandli sanctuary.

#### **7.3 The facilities available in and around Bandli sanctuary**

1. Transport facility from various places with good road condition.
2. Communication facilities in terms of network coverage of mobile, STD and ISD are also available.
3. Accommodation facilities of Forest Rest House, Inspection huts, private owners, Resort owners, tented accommodation etc is available in and around Bandli Sanctuary.

#### **7.4 Objectives: The Eco-tourism objectives of Bandli Sanctuary are as follows.**

- 1) To positively contribute in conserving nature, natural and cultural resources by stimulating private conservation efforts.
- 2) To increase environmental awareness of visitors by enabling them to view a small section of PA values so that it can result into a clean and green environment.
- 3) To generate livelihood support for local communities.
- 4) To provide visitors with a personal satisfaction and quality of nature and culture are ways that lead to greater understanding and appreciation.

#### **7.5 Problems:**

1. Lack of involvement of local people.
2. Steps for regulating tourist pressure have not been chalked out properly.
3. Research, monitoring and evaluation in various aspects of eco-tourism is lacking.
4. Absence of trained Tourist Guides
5. Lack of basic facilities
6. Lack of well chalked out interpretive programme.

#### **7.6 Proposals:**

The exercise of what is working or supporting the concept in Bandli Sanctuary and what are the gaps in the information will spell out the market demands and to address various issues related to product development, regulatory framework, Research and monitoring and awareness and capacity building.

Whether various components of eco-tourism package are being taken up seriously or not need to be studied before putting proposals for eco-tourism in Bandli Sanctuary

	What is working	Gaps in Information
Institutional /finance policy	State Govt. promotes tourism through its policy throughout the year. Management of Bandli Sanctuary. Eco tourism society( Eco-soc) in	1.Development plan for Promoting and developing Eco tourism is lacking. 2.No involvement of local People in tourism activities.



	which revenue generated from various eco-Tourism initiatives is deposited and Ploughed back.	
Market	Diverse network of Forest Rest Houses and private lodges in and around the Tourism zone. Nearness to Sundernagar town. Cheer pheasant.	1.Inadequate marketing and advertisement 2.Research relating to Market demand is lacking.
Nature/Culture	Rich Avifauna Easy sighting of wild animals and Pheasants Rich local culture	1.Impact of hooligonism by tourists on wild animals
Skill/ Technology	Management is managing habitat well, Thus maintaining good populations of Wildlife.	1.Local skills and handicraft etc have not been made a part of tourism promotion strategy. 2.Trained local eco-guides Having good knowledge of Forests and wild life are Lacking.

Following are the proposals made in accordance with broad and specific objectives:

#### 7.6.1 Tourism Zone:

To encourage tourism a special zone has been identified and already described. This zone has been kept keeping in view the requirement that least disturbance is caused to the habitat and wildlife. The zone is proposed to be created along the trekking path from Maloh to Saul. It covers area of 50m on both sides of the path. Thus the total area of tourism zone is 1 ha. It has varied amount of vegetation and covers all the habitats that are found in the sanctuary. Permitting limited tourism on this route will not cause disturbance to animal life.

#### 7.6.2 Infrastructural development

To provide basic amenities to the tourists Tenting site at Neri may be developed. Inspection hut will be constructed at Neri. Nature club is present at Village Neri which needs maintenance. These facilities shall be utilized by the researchers also alongwith our staff.

### **7.6.3 Tourism regulations:**

Present rules and regulations of tourism are functioning well but due to change in certain prescriptions and creation of new tourism zones, it requires new set of rules and regulation. These are given below:

1. EDC/ user groups of local people will be made to carry out eco-tourism in tourism zone of Bandli sanctuary. Proper training on various aspects of managing eco-tourism will be given to these people.
2. Some educated unemployed youth from the buffer zone may be registered and trained as Tourist guides.'
3. Regular training and monitoring of the tourist guides need to be carried out.
4. Interpretation zone may be created near Maloh where visitors will be made aware of the conservation ethics, do's and don'ts etc.
5. Seating arrangements for people may be made at different points on interpretation zone.
6. Special arrangement may be made for children.
7. More interpretation signages need to be put in place and existing administrative signages also need to be improved to make them more attractive, informative and durable.
8. Detailed analysis and monitoring of different kinds of pollution in the sanctuary needs to be carried out on regular basis.
9. Garbage bins to segregate the waste may be placed at suitable intervals.
10. Visitor centre needs to be equipped with brochures, database on Bandli sanctuary and audio-visual and orientation package.
11. Separate entertainment facilities for children needed to be provided.
12. Guides should maintain diary and log book for effective monitoring.
13. Nature clubs have already been constructed at Maloh and Bobbar which are non-functional at present. These can be further improved to create nature awareness.

### **7.7 Interpretation**

Interpretation and tourism can not be separated. Tourism cannot go without a well chalked out interpretive programme and for creating awareness among masses too, good

interpretive services are required. Objective of permitting tourism in protected areas is to generate visitor's awareness, understanding and appreciation of areas as well as make it more enjoyable and satisfying and thereby to elicit support for conservation. Interpretation and environment education is a cost effective mean of realizing the goal of environment protection in the long run. Unless and until education and communication at all level is suitably modified to enable people to understand the fundamental inter relationship between human and their environment, one cannot hope to find solution to environmental problems. Interpretive services are lacking in Bandli Sanctuary.

Bandli Sanctuary lacks in providing a good interpretive facility to the visitors as it does not:

1. Have a good, well planned and well developed visitor centre/interpretation centre.
2. Have good publications available free of cost or on low cost to the visitors.
3. Have a nature shop with all the informative and interpretive stuff at reasonable price.
4. Have good, well placed and well distributed signages educating public about Bandli Sanctuary.

#### **7.7.1 Strategies**

A small exercise of SWOT( Strength, weakness, opportunities, threat) can be carried out in Bandli Sanctuary to find out in terms of conservation significance what are the strength, weakness, opportunities and threats available in Bandli Sanctuary. A message media matrix exercise may be carried out to find out what media can be used to deal with strengths, weakness, opportunities and threats.

An interpretive programme like Message-Media matrix is able to translate opportunities and threats into strength.

#### **7.7.2 SWOT analysis for Bandli Sanctuary**

##### **STRENGTH:**

1. Pheasants
2. Rich avifauna

3. Scenic spots
4. Rich local culture
5. Accessibility
6. Nearness to other tourist spots
7. Wilderness value

### **WEAKNESS**

1. Insufficient staff
2. Interpretive programme is not well planned
3. Regular monitoring and evaluation missing
4. Lack of local people involvement

### **OPPORTUNITIES**

1. Existing rich cultural heritage
2. Research
3. Proximity to other tourist spots
4. Trust building activities
5. Nature education and awareness

### **THREATS**

1. Increase in tourist influx
2. Heavy biotic pressure
3. Enclave villages

#### **7.7.3 ALLOCATION OF THEMES FOR SWOT ANALYSIS:**

Based on the SWOT analysis following potential themes have been identified for developing interpretive programme:

#### **Administrative:**

1. Zonation Map
2. Management issues
3. Infrastructure
4. Trust building activities
5. Govt. policies

6. Why Bandli Sanctuary is a sanctuary
7. Laws/ rules/ punishments for violation of rules
8. Things to remember

**Natural:**

1. Mammals
2. Pheasants
3. Rich avifauna
4. Endemic and endangered plants
5. Ethno-botanical values
6. Forest types
7. Butterflies

**Cultural and historical:**

1. Local cultural heritage
2. Local handicraft
3. Festivals of local people

**7.7.3.1 Visitor Centre:**

A visitor centre to orient visitors to park and area resources, services and attractions may be made at Maloh. Big photographs of some spectacular flora, fauna and other important values with very little of text, dos and don'ts (expected behavior) places to see around etc may be shown in the visitor centre. A display board or notice board showing important news and happenings of the sanctuary may be displayed.

**7.7.3.2 Souvenir shop:**

There is no souvenir shop existing in Bandli sanctuary. Souvenir shop will be made near Visitor centre. Existing building of nature club which is non functional at present may be utilized for this purpose. Local handicrafts needs to be kept for display and sale in the souvenir. Books and other publications for different target groups related to wildlife and nature can be kept for sale in souvenir shops. Attractive post cards, stickers, tattoos, cards, posters, calendars, bookmarks, diaries, masks related to wild life and other values may be kept for sale. Local people may be employed in the souvenir shop.

### **7.7.3.3 Nature trail:**

Nature trail interpreting various values will be made in Tourism zone near Maloh. Loop shaped trail around 1 km in length with 12-15 stops will be laid. Some interesting name may be given to the trail to make it catchy. A welcome and thanks note will be given at the start and end of the trail. Small signboards merging with the surroundings will be used to interpret various values. Provocative titles may be used at each station and concise and exciting inscription may be written for each stop. Map of the trail will be put at the entrance of the trail.

### **7.7.3.4 Publications:**

Following modifications and improvements have been suggested:

1. Brochures, pamphlets, posters, calendars may be produced on good quality paper in Hindi and English.
2. These may be made multicolored, multifold, handy, bilingual, simple, legible and glossy to increase their souvenir value.
3. Posters, post cards, greeting cards, calendars, stickers etc may be designed and published as a publicity material.
4. Publications may be kept for sale in souvenir shop.
5. Pamphlets with basic information map and regulations may be supplied free of cost to all the visitors on regular basis.
6. Publication like checklists and field guides to animals, plants, butterflies, birds, medicinal plants may be brought out and kept for sale.
7. Care should be taken to maintain the continuity of the publication and make them available to all the visitors.
8. Lot of handbills may be printed and supplied as per demand as these are quite cost effective.
9. Publications may be printed for different target groups with varying level of needed details.

### **7.7.3.5 Signages:**

1. Good quality, durable signages may be put after weather testing as due to High rainfall, temp. and high humidity it is difficult to maintain them.
2. Likewise some interpretive signages may be put at places where people congregate.

3. Signages need to be in different languages so that foreigners and other local people don't have any problem in reading them.
4. Instead of putting one signage with lot of text on it, small signage with less of text can be put.
5. Inputs on designing and material used are needed to make them attractive, interesting and catchy.
6. Signages need to be maintained regularly.
7. Spelling mistakes needs to be taken care of.
8. Departmental logos may be produced and put on all the signages.
9. Signages welcoming people to the reserve may be put on important approach routes.
10. Instructions need to be written in a polite manner explaining the reason why such behavior is expected from visitors.

## **7.8 Environment education**

There are large number of villages in and around Bandli Sanctuary. There is heavy biotic pressure on the natural resources of sanctuary. Lack of awareness among the local people is a big hurdle in achieving various objectives of management. If people were made aware of the values of their environment then they would rally to the cause of conservation. Through environment education (EE) programme designed for different target groups this objective can be realized effectively.

EE has to be planned for specific target groups and to address prominent problems. Accordingly the following objectives for EE are set forth:

1. Ensure that target groups realize that in the short run as well as in the long run it is in their interest that forests are properly conserved.
2. Advocate that target groups have to play a role in keeping environment intake.
3. To inform each Target group appropriately that every benefit that they derive from nature has a price tag. If they accept and play a role in conserving these it will be rewarding.
4. Establish that the Forest Department and other Target groups understand each other's strengths, limitations and conservation processes in a positive spirit.

### **7.8.1 Target Groups:**

Following target groups are identified:

1. Communities living in and around Bandli Sanctuary.
2. School children in and around Bandli Sanctuary.
3. College and university students.
4. Line Departments.
5. Public leaders in and around Bandli Sanctuary.

### **7.8.2 Strategy for each target group**

#### **1. Communities living in and around Bandli Sanctuary:**

These form a major stakeholder group in the forests, as the forest ecosystem is very much a part of their routine and traditional lifestyle. The major occupation of villagers is agriculture and animal husbandry.

#### **Approach for EE:**

1. EE programmes will be in short duration units. These units may be one in a fortnight.
2. Lean season with evening hours would be the best time to communicate and educate them.
3. Groups are to be made of a variety of classes i.e. males, females, occupations etc.

#### **Messages/ Themes:**

1. Relationship between forests and people's livelihood opportunities
2. Role of forest in soil and water conservation. How forests can reduce the impact of natural calamities.
3. What is biological diversity? What is the role of forests in conserving biodiversity?
4. Why is PA created? PA's in HP, its legal and policy aspects.
5. Threats to environment and forests.
6. Ecologically friendly practices, its uses, experiences and other benefits.
7. Man animal conflict. Wild animals are not to be seen as problematic animals. Highlight the role they are playing in maintaining the eco-system.
8. What is sustainable livelihood? Their occupations and practices in environmental context.



9. Importance of water conservation/ keeping water sources clean.

**Media:**

In order to convey above messages following media may be used:

1. Visitor centre cum information centre will be established in Tourism zones. These centers can be appropriately named in local language. These will have reading material in the form of booklets, photo text panels, leaflets etc and a small exhibition with lots of interactive models and Environmental education games.

These centers can also become a forum for:

1. Regular Forest Department people interaction.
2. For reaching out to carry EE Programme with communities in and around PA's.
3. Inter-village interactions with a view to share information on wildlife forest and its conservation.
2. Day in a village programme on the theme of "Van Bachao, Gaun Bachao" will be organized in the month of October. This programme can have local villagers rally accompanied by frontline staff, teachers and school children through a village with appropriate slogans, placards and messages. After completion of rally a meeting can be organized by RFO and sometimes officers of the rank of DCF.
3. All the designated days relating to environment and forests should be celebrated in all the villages with a view to create an understanding of creation of such days worldwide in order to conserve environment and natural resources. Leaflets developed on significance of each day may be distributed to public, rallies and meetings may be conducted.

The list of those days are given below:

1. World Wetlands Day-2 February
2. World Forestry Day-21 March
3. World Day for Water-22 March
4. International day for Biological Diversity-22 May
5. World Environment Day- 5 June
6. Van Mahotsava-July/Aug each year

7. Wildlife week-2-8 October

4. A reader friendly booklet based on Forest, Environment, Ecological concepts to be developed in local language. This should not be more than 30 pages, with simple language and lots of pictures.

5. A very attractive calendar in local language with photographs of wildlife, mountains, landscapes etc with short conservation message of the month to be developed.

6. Film shows:

Film shows may be organized on various occasions to create awareness.

7. Nukkad Natak:

Nukkad Natak is also an effective method of raising awareness. They may do the dramas in local languages. Kala Jathas may be involved in this.

8. Frequent Pro Environment articles in local news paper may be ensured.

## **2.School children**

There is a need to have a dedicated state scheme for creation of nature awareness in the schools (both rural and urban areas.) This may be designed after discussion with Department of Education and even some selected schools in rural and urban areas. However, following strategy may be adapted for raising awareness in school children in and around Bandli Sanctuary.

**Schools in Rural areas** The children studying in rural schools form a very important target group since they are to be tomorrow's most important stakeholders in nature conservation. They need to be greened for two main reasons: one to cater the future population of the village which will impact Forest ecology, two, they could be an effective carrier of nature conservation messages to their older relatives, specially their parents. Though the facilities in local rural schools are of average standard there is a great potential in doing various Environment Education activities in schools. The teachers in them are a key target group and can be oriented and trained in carrying out EE

programmes with students on regular basis. In the absence of proper EE, children in their impressionable age grow up with their adult attitude towards forest and wildlife.

**Approach:**

1. The EE programme should be activity oriented rather than conventional teaching type. The programmes should have a lot of fun element in them. Teachers may be trained by various agencies like WWF India, Zoo outreach Programme, CEE etc. Some of the activities which can be carried out are given in the annexure-1.
2. The teachers should play a role of facilitators and help children to explore and learn through experience.
3. EE programmes should be linked to syllabus wherever possible.
4. An attempt will be made to promote children to parents learning approach.

**Themes:**

1. Importance and value of forest to surrounding areas.
2. Environmental concepts such as food chain, interdependence, carrying capacity, wildlife management and so on.
3. Importance of various environment related days.
4. What is Protected area and why is it created?
5. Role and structure of Forest Department.
6. Management and conservation efforts in PA's.
7. Rights and responsibilities of people towards Forests and wildlife.
8. What is climate change? How will it affect us? What can be done at their level to reduce its impact.

**Media:**

1. Study tour for children to the PA accompanied by trained interpreters/ nature guides.
2. Exposure visits to various zoos for school children. Every child should get a chance to participate at least once during their schooling.
3. Writing pro-conservation slogans on classroom walls
4. Formation of eco-clubs in each school

5. At least five day training programme for the school children on EE. Each programme to have at least two teachers from each school. The total number of participants to be restricted to 25. At a later stage regular refresher trainings can also be organized.
6. Paintings on forest and wildlife can be developed by school children and can be permanently displayed in schools.
7. A manual for teachers on EE activities may be developed.
8. A medicinal plant garden may be established in each school displaying the name, uses etc of the plant.
9. Name plates may be put on Flora growing in the school campus
10. All environment related days may be celebrated.

### **3.College and university students:**

College and University students are also an important target group. Involving youth in nature awareness will definitely pay for conservation. The energy and enthusiasm of young people will result in better conservation action. There are many colleges like Govt. Degree College Sundernagar, Govt. Polytechnic college Sundernagar, IIT Sundernagar etc near Bandli Sanctuary. Awareness among the students of these colleges and other private colleges and institutes will be raised.

### **Message/ Theme:**

1. What is biological diversity? Why is it important? What is the role of forests in conserving biodiversity?
2. Various ecological concepts like food chain, interdependence, carrying capacity, wildlife management, animal behavior and so on.
3. What is global warming and climate change? How they can contribute to reduce impact of climate change?
4. Threats to environment and forests.
5. Role and structure of Forest Department
6. Why is PA created? PA's in the HP, its legal and policy aspects
7. Solid waste management
8. Conserving water

**Media:**

1. Involving students of college/ existing youth clubs in Plantation activities and wildlife census activities and giving certificates for the same.
2. Cleanliness activities in and around college campus may be organized from time to time by college students to raise awareness.
3. Rallies may be organized on various days relating to nature and environment (list already mentioned earlier)
4. Trekking cum exposure activities may be organized for them in various PAs.
5. Special lectures may be organized from time to time on various environment conservation topics.
6. Leaflets containing conservation message may be distributed to the students.
7. Conservation messages may be written on the walls of the college/hostel buildings in the campus.
8. Arboretum/ Medicinal plant gardens may be established/ developed in the campus.
9. Name plates may be put on flora growing inside the campus.

**4. Line departments:**

Line departments needs to be sensitized towards nature conservation issues. This will definitely help in developing better interdepartmental working atmosphere and networking.

**Message/Theme:**

1. What is biological diversity? Why it is important? What is the role of forests in conserving biodiversity?
2. What is global warming and climate change? How they can contribute to reduce impact of climate change?
3. Establish that the Forest Department and other Departments understand each other's strengths, limitations and conservation processes in a positive spirit.

**Media:**

1. Divisional level/ range level workshops may be organized in every year and various issues relating to nature conservation may be discussed there.

2. Exposure visit may be organized to the sanctuary.

### **5.Village leaders:**

Village leaders can influence and raise further awareness among general public if they themselves are clear and convinced with the whole issue. It would be good to win their support first to have more people supporting conservation later.

### **Message/Theme:**

1. Relationship between forests and people's livelihood opportunities.
2. Role of forest in soil and water conservation. How forests can reduce the impact of natural calamities.
3. What is biological diversity? What is the role of forests in conserving biodiversity ?
4. Why is PA created? PA's in Himachal Pradesh, its legal and policy aspects.
5. Threats to environment and forests.
6. Ecologically friendly practices, its uses, experiences and other benefits.
7. Man animal conflict. Wild animals are not to be seen as problematic animals. Highlight the role they are playing in maintaining the eco- system.
8. What is sustainable livelihood? Their occupations and practices
9. Rights and responsibilities of people towards nature conservation.
10. Solid waste management
11. Water conservation/ keeping water sources clean

### **Media**

1. Exposure visits to the sanctuary.
2. Workshop on environmental issues.

### **7.8.3 Execution of different activities:**

As far execution of above listed activities for different target groups is concerned properly trained manpower is an essential prerequisite. Field level staff is already overburdened with various activities. So in such a scenario it would be pertinent to identify the agencies who will carry out these activities.

Following agencies may be involved after being trained properly through agencies like Center for environment Education, Ahmedabad, Zoo Outreach Organisation, WWF India:

1. Interpreters or Nature Guides may be trained for each of the identified Eco-Treks. Educated Unemployed Local youth may be trained in carrying out various awareness activities. During tourist season they can do their work with Tourist and in the lean season they may be involved with Nature awareness activities in general public. This will not only ensure nature awareness but will also provide livelihood for a longer period.
2. Kala Jatha- a group of few young people may be trained to give conservation message by carrying out Dramas/ Folk songs in the form of Nukkad Natak. One such group exist in GHNP. These people may be involved to carry out their activities in local language in different villages round the year. This will not only ensure nature awareness but will also provide livelihood to these people for a longer period.
3. Enthusiastic School/ Collage teachers may be trained and involved with these activities.
4. Volunteers/ Retd Forest officers, if any, may also be involved.

#### **7.8.4 Monitoring and evaluation:**

At present there is no effective monitoring and evaluation of various tourism and interpretation facilities. Monitoring is very important for any programme as it not only tells how far we have succeeded but also helps in making timely corrections and improvements. Following steps may be taken to make it in place:

1. Feedback forms may be distributed to the tourists at the time of their entry in the sanctuary and may be collected when they leave. This feedback form may ask them about various interpretation programme and any suggestions to be added.
2. Visitor center may have a visitor feedback register to comment which will help in monitoring and evaluation.
3. Nature guides may be monitored and evaluated randomly from time to time.
4. Diaries may be made available to all the nature guides and its monitoring may be done regularly by one of the staff.
5. Visitor behavior will be monitored inside the park by nature guides.

6. Feedback box of good quality may be installed in the visitor centre.
7. Timely action may be taken on the basis of relevant feedback.



## **Chapter-8**

### **Eco- development**

#### **8.1 Introduction**

Eco-development may be defined as a site specific package of measures promoting sustainable use of land and other resources, as well as on farm and off farm income generation activities which are not deleterious to PA values ( Panwar.1991)

In this chapter an indicative plan is being given which will work as a guideline for the management for further comprehensive eco-development plan.

#### **8.2 Eco- development zone and population structure:**

The buffer zone is overlapping with eco-development zone. It consist of Soul beat and part of Khurahal beat around Dora village and a strip of around one km around the boundary of the sanctuary. Thus the area of eco development zone is -----sq km. There are 41 villages in the eco-development zone. Out of 1081 household 209 are from Scheduled caste category, 60 are Scheduled tribe and 819 are from general category. The detail of population, caste structure and livestock population in these villages is given in annexure.-----

#### **8.3 Occupation and forest dependency:**

Most of the people in eco-development zone are dependent on forests of Bandli sanctuary for their life subsistence by collecting fuel wood, grass, NTFP etc.

Their basic occupation is agriculture and for this they keep number of cattle, sheep and goat. Many of the cattle are useless and predominantly the cattle sheep reared are of local breeds. Along with cutting grass for domestic animals the grass is sold also, particularly during cattle fairs which are annual features at many places in the vicinity of the sanctuary. The major agricultural crops of the area are wheat and maize, along with some cereals. Up to the time the B.S.L. project works were in full swing the employment opportunity were abundant but with completion of the project the unemployment has increased. The society now around the sanctuary has large number of unemployed people. Their unemployment goes year around.

The economic base of people residing around the protected area can be broadly categorized as people who are heavily based on natural resources, small scale & marginal farmers and unskilled labourers. The people from villages depend upon the forest for the collection of firewood and grass. Some people from these village occasionally go to the interior for NTFPs. Bamboo is collected for basket making by the locals and Phoenix leaves are collected for making mats, brooms etc. Leaves of Bauhinia vahli are collected for making pattals.

The table below shows the seasonal pattern of use vis-à-vis the primary activities in which the people are occupied throughout the year:

Month	Agriculture	Forestry operations	NTFP Collection
January	Fuel wood collection	Forest protection, Plantation, census and Anti-poaching activities	Fuel wood and dry Leaves collection
February	Do	Forest protection, Plantation, census and Anti-poaching activities	Fuel wood collection
March	Do	Forest protection	Fuel wood collection
April	Harvesting of Wheat	Forest protection, Fire protection	Collection of Phoenix Leaves and Bauhinia Vahli leaves
May	Harvesting of wheat And sowing of maize	Forest protection, Fire protection, Nursery work	Collection of Phoenix Leaves and Bauhinia Vahli leaves
June	Sowing of Maize, Mash and soyabean	Forest protection, Fire protection	Collection of Phoenix Leaves and Bauhinia Vahli leaves
July	Weeding and hoeing Of maize fields and Sowing of paddy	Forest protection, Plantation	Collection of Phoenix Leaves and Bauhinia Vahli leaves
August	Sowing of paddy	Forest protection, Plantation	Grass, fodder and bauhinia leaves collection
September	Collection of grass And harvesting of maize	Forest protection, Soil conservation	Grass, fodder and bauhinia leaves collection
October	Harvesting of maize	-	Grass, fodder and bauhinia leaves collection
November	Preparing the fields For sowing of wheat and sowing of wheat	Forest protection	Fuel wood collection

December	Sowing of wheat	Forest protection, Census, Anti-poaching	Grass, fuel wood collection
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#### **8.4 Past and current Eco-development activities:**

In the past very less attention has been given towards the Eco-development in Bandli sanctuary. There is absence of Eco- development plan in Bandli sanctuary. No Eco- development committees have been formed in the past years hence there are no site specific micro-plans for eco-development. Though there is large population inside buffer zone and adjoining areas scanty amount has been spent on eco-development activities in the past years.

Activities of eco-development have been carried out as per the funds allotted in the Centrally sponsored schemes.

The reasons for poor attention towards eco-development may be due to

1. Non- internalization of eco- development concept within the forest department resulting in inadequate support from within the department.
2. Lack of EDCs.
3. Lack of sufficient awareness among the local people about the concept of eco-development and its objectives.
4. Absence of mechanism to link the programmes with Distt. Administration and lack of awareness among distt. Administration and political groups about eco-development programme.
5. Lack of site specific microplans.
6. Preoccupation of staff with familiar works.
7. Irregular and erratic fund flow.
8. Ad hoc mechanism at all levels of implementation.

#### **8.5 Proposed eco-development**

**8.5.1 Goal:** The long term goal of the plan is to minimize the park-people interface conflicts in Bandli Sanctuary and ensure the preservation of the bio-diversity

and other natural resources of Bandli sanctuary through the participation of local people.

**8.5.2 Issues:** Various issues which affect the goal may be grouped into four main categories. These are -

1. Large number of villages inside and on the periphery of Bandli sanctuary.
2. Collection of fuel wood and grass by the villagers.
3. Unsustainable tourism in Bandli Sanctuary.
4. Human wildlife conflict

**8.5.3 Objectives:**

1. To reduce dependency of people on Bandli Sanctuary for fuel wood and grazing.
2. To promote and ensure sustainable tourism in Bandli sanctuary.
3. To conclusively settle the issue of enclave villages as per the provisions of the law
4. To settle the human wildlife conflict.

Each of these broad objectives can be broken up into clear cut objectives further.

First objective can be broken in to three clear cut objectives. These are:

1. To provide alternative job/ work to dependent community.
2. To provide alternative to fuel wood and grazing.
3. To create EDCs in eco-development zone.

Second objective can be seen further as:

1. To develop better coordination between various agencies.
2. To promote local culture and values.
3. To ensure maximum visitor satisfaction.
4. To ensure proper dissemination of information.

Third objective can also be seen as:

1. To declare the part of sanctuary with villages as buffer zone/eco-development zone at the earliest.
2. To carry out various eco development activities as per micro plan
3. To educate the staff and management on recent acts and policies
4. To involve and inform locals and their representatives in the process

Fourth objective can also be seen as:

1. To reduce the impact of PA on people and vice- versa
2. To provide the compensation to the affected villagers immediately
3. To raise awareness among the locals
4. To solicit cooperation of other stakeholders

#### **8.5.4 Broad Strategies:**

##### **8.5.4.1 Broad strategies to reduce dependency for fuel wood and grazing are:**

1. Alternative sources of livelihood may be explored. Machines for making dried pattals may be distributed.
2. Trainings for capacity building of the local people will be organized Training may be given on dried pattal making, making different products from Bamboo and Phoneix leaves.
3. Subsidized LPG connections will be distributed to the people to reduce their dependency on Bandli sanctuary.
4. Fuel wood production by raising fast growing spp will be done through EDCs.
5. Appropriate awareness programmes will be organized for different target groups.
6. People may be encouraged to grow various commercial medicinal plants on their land.
7. Seminars/ workshops/ meetings with concerned departments like agriculture, veterinary and rural development will be organized to ensure proper coordination.
8. Stall feeding will be encouraged.
9. New EDC's and user groups will be formed to encourage institution building for conservation of resources of Bandli sanctuary

##### **8.5.4.2 Broad Strategies for managing eco Tourism in sustainable manner**

##### **8.5.4.3 Broad Stratigies to settle the issue of human wildlife conflict:**

1. By involving local people in eco-tourism
2. Adequate trainings will be provided to nature guides and host community for managing eco-tourism activities

3. Essential infrastructure will be put in place to provide the basic facilities to the tourists
4. Rules and responsibilities will be specified clearly to different stakeholders.
5. By studying and exploring different activities for all class of visitors to increase visitor satisfaction.
6. By developing existing interpretive facilities to maximize their use by the visitors
7. By providing information vouchers to the visitors to ensure proper dissemination of the information.

#### **8.5.4.4 Broad strategies to settle the issue of enclave villages:**

1. Dialogue will be conducted with communities for declaring it as a buffer zone/ eco-development zone.
2. Various eco-development committees will be formed and micro plans formed eco-development activities will be carried out as specified in the micro- plans
3. Training and workshops on new acts, recent amendments and polices will be organized to increase the awareness.
4. Meetings and interactions with people and representatives will be done regularly organized to have a constant dialogue with people to win their confidence and make their doubts clear.
5. Alternative source of livelihood with conservation linkages will be provided to win their goodwill and reduce dependency on resources of Bandli Sanctuary.

**8.5.5 Monitoring and evaluation** Constant monitoring and timely evaluation helps the management in assessing the success and failure of a particular strategy or set of strategies. Timely modifications in the strategies may be made accordingly. The monitoring and evaluation can be done in house or by external agencies.

#### **8.5.5.1 Achievement of annual physical and financial targets:**

Monitoring of achievement of physical and financial targets will be done yearly by staff implementing the activities and will be supervised by officer of the rank of ACF. Yearwise information will be recorded in proforma given below and reason will be

discussed and amicable solution for that will be sorted out at DFO and CF level and will be implemented in the next year.

#### **8.5.5.2 Stakeholder mapping:**

Stakeholder mapping will be an effective monitoring tool. It will be done time to time to find out the change in the relationship of various stakeholders with Bandli sanctuary as a result of various management initiatives.

Stakeholder mapping for Bandli sanctuary at present was done. It will act as a baseline with which the situation from time to time may be compared and strategies be formed accordingly.

#### **Stakeholders identified are:**

1. Local villages
2. Forest Department
3. PRIs
4. Media
5. Politicians
6. Veterinary Department
7. Scientific Community
8. Tourists

It is clear from the analysis that we have to work closely with stakeholders having high and medium stakes and low power like local villages, tourists etc. Stakeholders with low power and high stakes like Politicians and media etc need to be kept informed to satisfy their egos. The stakeholders with high power and high stakes also need to be monitored though not much intensive efforts are required in that case.

The relationship of different stakeholders is depicted in the stakeholders map. It is clear from the map that veterinary department and scientific community is having good positive relationship with Bandli sanctuary. Media, politicians, hoteliers, Pilgrims, tourists etc are having love and hate relationship which needs to be made positive only. Efforts are needed to reduce their negative impacts. Local villagers are

also having some negative impact on Bandli sanctuary which may be turned to positive with some management interventions like alternate livelihood opportunities, creation and strengthening of EDCs, awareness creation etc.

#### **8.6 Responsibilities of various participating agencies and groups:**

To carry out any activity successfully all partners should take the responsibility of place of task of that activity. The responsibilities are given below:

##### **Responsibility of PA staff:**

1. To provide budget in time
2. To provide technical knowhow
3. Carryout all activities as per schedule
4. Understand the problems of villagers

##### **Responsibilities of villagers:**

1. Participate actively in all the activities
2. Provide appropriate site for EDC meeting and attend all the meetings regularly
3. Help park authorities in extinguishing fire
4. To help park authority in prevention of any type of forest offence



## **Chapter-9**

### **Research, Monitoring and Training**

#### **9.1 Research and monitoring**

##### **9.1.1 Research**

Research and monitoring are among the weakest areas in wildlife management. Research, monitoring and training are integral part of modern and scientific management of PAs. But these activities have not been given the due consideration they deserve due to a variety of reasons. PA Management requires knowledge and sound understanding of the species, habitats as well as ecosystem dynamics. The specie-habitat relationship are invariably complex and their sound understanding is essential for developing appropriate strategies for management. The understanding can be developed through scientifically researched, reliable information. PA mangers are increasingly becoming aware of the significance of a well conceived research programme, implemented either through their own resources or coordinated by them with active participation from outside researchers.

##### **9.1.1.2 What is lacking in the field of Research in Bandli Wildlife Sanctuary;**

Research on grasslands, effect of tourism on wildlife, and population dynamics of various rare and endangered spp, research on lower invertebrates ( status, distribution and threats etc.) and the carrying capacity of wild animals, carrying capacity of tourists and various important wild animal spp etc are lacking in Bandli wildlife sanctuary.

##### **9.1.1.3 Important research activities proposed for Bandli Wildlife Sanctuary**

###### **A) Research activities by involving the park staff itself**

1. Study on unique habitats through daily general observations
2. Study on special habitats based on daily observation
3. Study on weeds and their spread
4. Study on general behavior of prey and predator
5. Study on trend of forest offences
6. Study on population trend of spp from department data.

## **B) Research projects by involving Agencies like WII( Long term studies)**

There are various research projects which can be only done by some professional agency like WII. These would be

1. Research project on grassland burning and its impact on various spp of flora and fauna especially on Cheer pheasant.
2. Research on rehabilitation of weed infested grassland.
3. Carrying capacity of reserve to hold a viable population of important and endangered species like Cheer pheasant, common leopard etc.
4. Research project on wildlife health surveillance and solution for maintaining a healthy population of wildlife species.
5. Long term study to look into the impacts of tourism on Bandli Wildlife Sanctuary.
6. Study on endangered species in Bandli Wildlife Sanctuary.
7. Habitat suitability study for re-introduction of Cheer Pheasant bred in captivity.
8. Study on carrying capacity of tourists.
9. Study on financial sustainability of village institutions
10. There is a potential scope of scientific study and research on the lower animal groups specially invertebrates in Bandli Wildlife Sanctuary.

### **9.1.1.4 Establishments required to be created in Bandli Wildlife Sanctuary**

#### **Herbarium**

Bandli Wildlife Sanctuary is very rich in flora. In Bandli Wildlife Sanctuary one herbarium showing all the preserved material of various floral and medicinally important spp should be set up

#### **Visitor cum information Centre:**

A small information centre providing information on various aspects of conservation and flora and fauna of Bandli Wildlife Sanctuary should be constructed at Maloh.

### **9.1.1.5 Institution for conducting research**

BSI, ZSI, GBPIHD and relevant universities and Institutes (WII) etc may be utilized to do the relevant researches.

#### **9.1.1.6 Funding of research activities**

Funding of research activities may be done from funds from the centre. Collaborative works with other recognized research institutions like WII, FRI, BNHS, ZSI, BSI and universities can be done. IUCN, WWF and other national and international agencies can also provide funds for research work, if need arises. Books and journals should be kept in the Range Library.

#### **9.1.1.7 Establishment of computerized data storage and retrieval system**

Data storage system is most essential to keep the records of research work. All the information from day to day monitoring of animals vegetation study, bio-diversity study, habitat utilization, death and poaching cases, offence cases, socio-economic data, etc should be stored in computer. It makes analysis and retrieval prompt.

#### **9.1.1.8 Dissemination**

Dissemination is the most neglected aspect of any study. This is often due to academic nature of the study. Need is for management driven studies. Contracted researchers will be encouraged to adopt a collaborative approach in their work programme. After acceptance of the final report of each consultancy, the salient findings will be translated in the local language also. This will be circulated among staff of Bandli Wildlife Sanctuary, neighboring PA's, interested academics, institutions, NGOs and concerned stakeholders. The consultants shall be required to present their findings in a workshop to all those persons who may seek clarification on particular aspects of output.

#### **9.1.1.9 Utilization**

Any useful output from the research projects will be incorporated in the management plan. The plan will be for 10 years with provisions for review at the 3<sup>rd</sup> and 7<sup>th</sup> year. Research findings of Bandli Wildlife Sanctuary will have relevance for neighboring PAs and other forest areas due to regional connectivity. Thus these research results can be usefully utilized by these neighboring Pas and other forest areas.

## **9.2 Monitoring**

### **9.2.2 Monitoring proposed in Bandli wildlife sanctuary**

#### **9.2.2.1 Monitoring wildlife populations**

Various methods being used presently for wildlife monitoring will be continued in future. Call count method will be used for Cheer Pheasant and for other pheasants line transect method will be used. For Goral scanning method and for primates head count method will be used. For carnivores pug mark method may be used. Monitoring protocol for main wild animals is given in annexure which may be followed every year.

#### **9.2.2.2 Monitoring of vegetation**

Change in vegetation causes change in fauna and its distribution. Permanent vegetation monitoring plots may be marked on the ground and data may be collected regularly for long term Ecological monitoring. Various aspects may be monitored by staff like:

1. Phyto-sociological studies
2. Invasion of weeds
3. Invasion of woody spp in grasslands
4. Erosion of soil at certain sites due to regular burning of grasslands
5. Change in grass and forby spp composition due to regular burning of grassland.
6. With the help of satellite imagery change in vegetation cover may also be monitored

#### **9.2.2.3 Daily observations**

In a given format daily observations would be recorded by field staff. The data collected would be periodically analyzed by park managers with the help of Biologists, if necessary. As this data does not load the staff with any work, it makes patrolling more interesting. Analysis of data recorded daily would provide seasonal patterns in the following parameters pertaining to various species:

1. Spp occurring in the park
2. Population structure
3. Distribution of different spp

4. Diurnal activity patterns
5. Spp diversity in each section
6. Relative abundance of different spp in different parts of the reserve
7. Habitat use and diurnal patterns in habitat use

Diary would be in local language so that Guards etc can fill it up easily. Generally the tendency is to record so much of data which is not analyzed properly and used for management but in Bandli Wildlife Sanctuary special emphasis on analysis will be done.

#### **9.2.2.4 Monitoring of wildlife health**

Wildlife health monitoring is one of the important aspects which governs management strategies Monitoring of following aspects may be done:-

1. Identification and monitoring of diseases in domestic cattle in surrounds of Bandli Wildlife Sanctuary.
2. Identification and monitoring of diseases in wild animals and plants
3. Monitoring of the health status of wild animals
4. Monitoring of relevant samples from carcasses

#### **9.2.2.5 Monitoring of Tourism**

Feedback registers may be kept at interpretation centre to get feedback from visitors. Monitoring of the behavior of the tourists may be done by guides. Monitoring of the impacts of tourism may also be done periodically.

#### **9.2.2.6 Monitoring of other aspects**

Various other aspects of management may also be monitored in addition to above. Some of these may be

1. Monitoring of trends in visitor statistics
2. Trends in expenditure
3. Trends in revenue earned
4. Effectiveness of new protection strategy etc.

#### **9.2.3 Photography as a monitoring tool**

One digital still camera and one handcam would be purchased to collect evidence and monitor changes, if not purchased earlier. Photographs at various seasons and for various sites would be clicked on same day and from same position every year. This would work as a cheap and great tool to monitor what seasonal and yearly changes are happening in habitat so as to do appropriate management interventions.

### **9.3 Training**

Protected area management is a highly technical science bringing together the theory of quite diverse disciplines. It has become increasingly apparent that development of these abilities requires specialized training courses. Training is indispensable in all levels and necessarily involves a wide range of training interests. It can be a formal course oriented or study tour oriented as well as on the job training. Like research and monitoring training is also a neglected area, though it is critical in maintaining management capability. To be effective, training and deployment of trained staff needs to be decided.

#### **9.3.1 On the job training**

##### **9.3.1.1 Training on Collection of wildlife evidences**

Staff would be trained to

- a. Identify various direct and indirect evidences like scent marking, dung, pellets, scats, marking
- b. Correctly interpret those evidences which gives the correct picture to what is required to be given as management input.

##### **9.3.1.2 Training on protection**

- a. Discussions about some success and failures should be done with staff, at least once a year.
- b. Training by senior officials or may be by calling some NGOs would be imparted on how
  - a. To collect correct evidences

- b. To write POP ( Preliminary offence report)
- c. To collect sample for investigation
- d. To compound
- e. To make seizure report
- f. To take the offender on remand
- g. To investigate
- h. To interrogate
- i. To make the case so strong that it does not fail in the court of law because of loopholes
- j. One lawyer would be called periodically to update the knowledge of staff on fundamental of

law and legal procedures. Knowledge about IPC, CrPC, IEA and other allied acts would be provided alongwith Wild Life Protection Act, 1972.

#### **9.3.1.3 Training on Wildlife health assessment**

Staff would be trained to

1. Identify common disease of domestic cattle grazing all around.
2. Identify common diseases of wild animals
3. Identify spread of some of the infections and communicable diseases.
4. Assess the wildlife health
5. Initiate some precautionary measures to check the spread of disease in wild
6. How to deal with carasses
7. Collection of samples from vital organs and other parts for investigation of some of the common diseases.
8. Precautions to be taken while attending or attempting postmortem of wild animals.
9. Disposal of the carcass properly and safely in case of diseases like Anthrax

#### **9.3.1.4 Animal census training**

Staff would be trained

1. To fill the daily observation data and monthly transect data
2. For carnivores pug mark method and fixing camera traps etc.
3. To use compass and read maps
4. In general for various techniques of census like block count technique dung survey etc. for herbivores.

#### **9.3.1.5 Various trainings related to Ecotourism and Eco development**

Staff would be trained to know the concept of ecotourism and eco-development and basic guidelines of what to do and what not, would be supplied to them. Staff would also be trained to monitor and evaluate the eco- development programme. For ecotourism, staff would be trained for regulation of visitors, maintenance of tourist records, recording of impact of tourism, enforcing of law and regulation against vandalism and implementation of interpretive programmes etc.



## **Chapter- 10**

### **Organization and administration**

#### **10.1 Structure and responsibilities**

The administration of a sanctuary is a specialized and a highly technical job. It requires well trained and dedicated personnel. Uninterested persons should not be posted since it is detrimental to the further development of the sanctuary. Young enthusiasts and dedicated officers with an aptitude for outdoor work and an inherent love of nature should be posted. All the selected management personnel of the sanctuary should be given proper field training in wildlife specially the officers in charge should be sent to other Pas of the country to study wildlife management and conservation methods.

To manage the sanctuary under the present conditions it is felt that only two beats will be sufficient instead of four beats. Soul and Khurahal beat should be merged and named Soul beat. Maloh and Bobber beat should be merged and named Maloh beat. Patrolling of an area by a single man is an outdated concept in today's circumstances. We have to resort of Chowkki system and group patrolling has to be done.

#### **10.2 Staff amenities**

For proper and effective functioning and to get the best out of the staff, certain basic amenities are a must and are provided for under this management plan. These amenities should be provided on priority basis.

##### **10.2.1 Housing**

- 1) Old quarters would be repaired at once and annual inspection of all buildings will be done.
- 2) New quarters would be constructed properly in phased manner.
- 3) All the quarters would be provided with basic amenities like toilet, power, water etc.
- 4) Colour of all the buildings would be same and matching with the surroundings.

##### **10.2.2 Safety and Improvement of staff compound**

Staff locations should be fenced by barbed wire. The compounds should be cleaned 3-4 times/ year. Roads connecting staff location should be repaired and improved.

### **10.2.3 Uniforms and field equipments**

1. Uniforms would be made available to field staff regularly.
2. Field equipments like field diary, kukri, various forms, measuring tape, compass, GPS and water bottle binoculars etc should be provided to the field staff.

### **10.2.4 Communication**

1. One motor bike will be provided for speedy disposal of work and patrolling.
2. All the staff up to forest guards will be provided with mobile cell phones and allowance

### **10.2.5 Incentive and Awards**

1. Incentives and awards would be distributed amongst staff committed towards protection.
2. Following rewards should be considered for introduction.
  - a. Best work for Wildlife protection
  - b. Best plantation
  - c. Best worker for Eco-development prog implementation
  - d. Best worker against wildlife depredation

Park authority can award the prizes locally on various occasions like wildlife week/ Independence day/ Republic day etc; or names could be sent to state level awards. Govt. of India also seeks nominations for outstanding jobs. Advertisement in all the leading newspaper carries the format and procedure for nomination. The management should find out the exact process of awards and inform the staff in time and get the nominations sent to appropriate authority.

Under Wildlife Act, 1972 there is a provision to reward persons under section 60a. This should be adequately utilized for the purpose.

Free ration should be supplied to the patrolling staff.

Adequate medical facilities and first aid kit should be provided to the staff.

## **Chapter-11**

### **The Budget**

#### **11.1 General**

The central and state government are taking keen interest in protection of wildlife and the forests because many forests plants species and wild animals have gone extinct. The state and central government are providing good budgetary support for protection and conservation of the rare and endangered species of plant and animal. It is the duty of the protected area managers to take keen interest and make sincere effort, for fulfillment of the objectives of this management plan.

#### **11.2 Period of the Management Plan**

The period of this draft management plan shall be 10 years i.e. with effect from the year 2021-22 to 2030-31.

#### **11.3 Components**

The components and activities proposed to achieve objective of the management plan have been discussed in detail in Chapter 6. Detailed year wise APOs has been prepared and are annexed as Annexure –X

#### **11.4 The Budget Plan**

For execution of the proposed activities under this, the main source of funding shall be as follow:

1. Centrally Sponsored Scheme (CSS)
2. KOLDAM-CAMPA
3. JICA
4. BioDCS
5. State Plan

## Chapter-12

### The schedule of operations and miscellaneous regulations

#### 12.1 The schedule

An annual action calendar for timely execution of various management activities in the sanctuary has been prepared and given below, which has to be followed strictly for effective management.

All these prescribed activities should be performed every year. These are all routine activities and other new activities like construction of buildings (Guard hut, BO quarter etc.) will be done as per the availability of budget and completion of other necessary formalities.

#### From 2021-2031

S. No.	Activities	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
1	Demarcation of WLS boundaries – Maintenance of Boundary pillars												
2	Group patrolling												
3	Fire protection-												
4	Habitat improvement- AR , ANR and grafting of wild fruit plants/ fruit tree plantation (including maintenance )												
5	Soil and moisture conservation works												
6	Water development including Water harvesting structures												
7	Maintenance of building , path/small bridges/patrolling huts etc												
8	Awareness, training, Exposure,												

S. No.	Activities	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
9	Monitoring programme												
10	Compilation of monitoring results and preparation of reports												
11	Purchase of various items Maintenance of Assets /equipment												
12	Publicity and promotion Ex-gratia payments / compensation												
13	Livestock immunization												
14	Rescue/Mobilization												
15	Publicity and promotion												

The year wise schedule of the operations proposed to be carried out during the plan period w.e.f. the year 2021-22 to 2030-31 is given as Annexure - X. The component and year – wise abstract of proposals is placed at the end of Annexure X.

## 12.2 Record of deviations and implemented targets

The registers containing the year – wise details of activities proposed under this plan and the works actually executed under various heads will be maintained in Range Office as well as Division Office. This will help in phasing out the annual activities with the framework of the plan from any sector likely to provide funding for the sanctuary. The works not executed at the end of the year shall be marked as balance for the coming financial year.

## 12.3 The record of employment potential

Registers showing the total employment generated will be maintained. This will also show details of man days generated for the weaker sections of the society.

## **12.4 The Control Forms**

The instructions contained in Punjab Leaflet No. 11 regarding maintenance of control forms are followed in the Forest Department. Since no working plan prescription exists for the sanctuaries, only following control forms need to be maintained.

a. **Control Form No. 4:**

This form containing information on roads and buildings is being maintained and shall be updated regularly.

b. **Felling:**

The forms containing removal of trees by the right holders at concessional rates and free grant of inferior species as per settlement rights enjoyed by the right holders up to 2003-04 had been maintained. After 2003-04, no timber was sanctioned to right holders and the register has been maintained as nil upto 31-3-2021.

c. **Regeneration and Plantations:**

Maintenance of control form 'C' for all plantations (Annexure- XI) will be continued.

## **12.5 Maintenance of compartment history**

The compartment history files have been maintained in respect of petty removals by right holders, areas closed of planting of trees, medicinal plants or grasses and beating up operations. The description of compartments will be recorded afresh after at least an interval of ten years.

## **12.6 Use of Pocket field guide for plan implementers**

A pocket guide is required to be prepared at beat level and provided to the Forest Guards, Block Officer and Range Officer with a copy in Division Office. Besides, containing a map, the guide should contain information on works carried out in past. It shall also include the information regarding various physical features important for wildlife management. This needs to be regularly updated.

## **12.7 Review of Management plan**

Management of Protected area is a dynamic process and due to change in local environment, Government policies and rules, technological advancement and local requirement, various management initiatives have to be changed or modified accordingly. For effective and better management following procedure is suggested to review the Management Plan



Source – Lockwood 2006

- It is suggested that every year all the monitoring and evaluation data will be compiled and analyzed during the month of April and May. Based on this analysis APO for the next year will be modified.
- For protection, strategies and actions have to be dynamic and continuous adjustments will be required based on results of monitoring. Priority actions has to be decided to utilize the limited resources available with park authorities to get the maximum output/outcome.
- After 5 year, Management Plan has to be reviewed by an Expert Committee constituted by CWLW Himachal Pradesh. This review will be strategic review and all the component of Management plan including Vision, Goals and Objectives will be reviewed to make it updated as per current policies, rules and requirements.

## **PART – III**

### **Annexures**



Annexure-I

GOVERNMENT OF HIMACHAL PRADESH  
DEPARTMENT OF FOREST FARMING AND CONSERVATION, H.P.

.....

NO.SC-A(1)1/83-Vol.II Dated Shimla-2., the 26.8.1986.

N O T I F I C A T I O N

Whereas, 28 sanctuaries have so far been declared in Himachal Pradesh under Section 18(1), the Wild Life (Protection) Act, 1972 (53 of 1972). And whereas so far, the aforesaid Wild Life protected areas have been under control of Territorial Wing of the Forest Department;

And further, whereas, Chief Wild Life Warden, Himachal Pradesh is the authority under Section 33 of the said Act to control, manage and maintain all the sanctuaries;

Now, therefore, in order to ensure scientific management as envisaged in the Act, the Governor, Himachal Pradesh in exercise of the powers conferred vide serial Nos. 19 and 20 of appendix XIII of Fundamental and Supplementary Rules, Vol.II is pleased to transfer the complete control of sanctuaries given in Appendix to this notification from the Territorial jurisdiction to Wild Life Wing of the Forest Department for the said purposes;

The Governor, Himachal Pradesh is further pleased to order that the control over all movable and immovable property, forestry operations, soil conservation, social forestry and protection works, construction and maintenance of buildings roads and paths, regulation of grazing and felling of trees, if any, exercise of rights, all works in respect of Plan and Non-Plan schemes operating in these areas, shall lie with the Chief Wild Life Warden, H.P. with immediate effect. Further all Class-III and Class IV posts working in the territorial units within the sanctuary areas, immediately before the date of this notification, shall stand transferred to the Wild Life Wing of the Himachal Pradesh Forest Department.

The Himachal Pradesh Government notification no. Ft. SG-A(1)1/35 dated 1.5.1984 creating and re-organizing the Forest Circle and Divisions, shall be deemed to have been modified to the above extent.

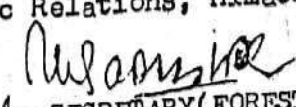
Encls:- As above.

BY ORDER

SECRETARY (FORESTS) TO THE  
GOVERNMENT OF HIMACHAL PRADESH, SHIMLA-1.

No. SC-A(1)-1/83-Vol. II Dated Shimla-2, the 26-8-86.  
Copy is forwarded to:-

1. The Chief Conservator of Forests (Territorial) and Planning and Development, Shimla with 50 spare copies for information and necessary action. Further action for working out complete details of exact areas to be transferred including staff engaged viz. Forest Guards and Deputy Rangers etc. should be taken immediately.
2. The Secretary to the Governor, Himachal Pradesh, Shimla Private Secretary to Hon'ble Chief Minister, H.P. Shimla.
3. Private Secretaries to all Ministers/Ministers of States, Deputy Ministers, H.P. Shimla.
5. Private Secretaries to Hon'ble Speaker/Deputy Speaker, H.P. Shimla.
6. All the Secretaries/Joint Secretaries/Deputy Secretaries/Under Secretaries to H.P. Govt.
7. All Heads of Departments/Deputy Commissioners in Himachal Pradesh.
8. All the Managing Directors of the Corporations in Himachal Pradesh.
9. Divisional Commissioners, Dharamsala and Shimla.
10. All Conservators of Forests, in H.P.
11. All Divisional Forest Officers in H.P.
12. The Accountant General, H.P. & Chandigarh, Shimla.
13. The Deputy Controller, Printing and Stationery H.P. Shimla for publication in the Rajpatra.
14. The Director of Public Relations, Himachal Pradesh, Shimla.

  
Under SECRETARY (FORESTS) TO  
GOVERNMENT OF HIMACHAL PRADESH:

2. Kullu. Kullu. 3. Kokhan. 70-CP 53/97 dated 28.2.1954 1336.00 N. Mohal Khod. S. District Mandi and R/11 Dukam. E. 1/44 Kawagahr and 2/45 Charawat. W. R/O Rajgiri and C.V. of 2/63 Matiana. Kullu.
3. Kullu. Parwati. 4. Kanawar. 70-CP 53/97 dt. 28.2.1954. 5427.00 N. Parbati River. S. Range Boundary of Parbati and Hurla Ranges. E. 1/9, Khobas C.I.d, 2/8 Shitaligahr, 2/7 Titalotan demarcated forests. W. 2/13 Muri, 2/10 Surampat, and C.VI b. C.I. of R/4 Kasol. Kullu.
4. Kullu. Seraj. 5. Tirthan. 6-16/73-SF dated 17.6.1976. 8396.00 N. Shupakuni Dhar and Gargunasan Dhar, Kullu. E. Shrikhad Dhar and dividing line between Parbati and Tirthan nala., S. Bung Dhar and Deori Dhar i.e. Dividing line between Sutlej and Beas Catchments; W. From Mosrapa Thatch along with a Nala to Boundary pillar No. 4 of 2/25 (Maknouch Forest). Then along forest boundary of 2/22 till B.P. No. 3. then ChJara Nala dividing 2/22 and 2/23 (Basu Forest) then ridge till Bischul Tatch and then Nala going southward and joining Balkhack Nala below Baslec Thatch then western boundary of 2/12 and North West boundary of Compartment no. II and III of 2/26 (Dasanal) till it joins Deori Dhar at a point 11,759 feet.
5. Suket/Karsog 1. Shikari 5-11/70-SF 21351.00 N. From the meeting point of Mohali Dhar and external Kullu boundary of 145 S Deotha Forest along the boundary of the Forest upto Deola Nala and then along the Nal upto the confluence with Bharera Gad upstream upto the external boundary of 141 S Chikra Gad then along the boundary of Chikra Gad to join at Rohandi Dhar. Kullu.

## Annexure-II

(Authoritative English Text of this Department Notification No. FFE-B-F(6) 11/ 2005-II, Dated 7<sup>th</sup> June, 2013 as required under Articles 348 (3) of the Constitution of India).

### GOVERNMENT OF HIMACHAL PRADESH DEPARTMENT OF FORESTS

No. FFE-B-F(6)-11/2005-II/ Bandli

Dated Shimla-2, the 7<sup>th</sup> June, 2013

#### NOTIFICATION

Whereas a Notification under Section 26A of the Wildlife (Protection) Act 1972 (53 of 1972) was issued by the Government vide Notification No. FFE-B-F(6)-17/99 dated 1.11.1999 to declare **Bandli as Wildlife Sanctuary** comprising an area of 41 sq. km ;

And whereas, the matter with regard to rationalization of Wildlife Sanctuaries and National Parks in Himachal Pradesh was under consideration of the Hon'ble Supreme Court in IA No. 139/2010 in Writ Petition Civil No. 337 of 1995 titled Centre for Environmental Law, WWF-I Versus Union of India & Others;

And whereas, in pursuance to the Hon'ble Supreme Court order dated 7<sup>th</sup> May 2010, the State Government issued intention Notifications under Section 18 of the Wildlife (Protection) Act, 1972, in respect of Wildlife Sanctuaries and National Parks for which rationalization had been proposed;

And whereas, the Hon'ble Supreme Court vide order dated 05/08/2011, further directed the State Government to follow the procedure laid down under Section 18 to 26A and 35 of the Wildlife (Protection) Act, 1972, before issuance of final Notifications under Section 26A of the Wildlife (Protection) Act 1972, which procedure was duly followed;

And whereas, the Hon'ble Supreme Court vide order dated 01/02/2013 passed in IA No. 155 (earlier IA No. 139/2010), has permitted the State Government to issue final Notifications under Sections 26A, 35(4) & 36A of the Wildlife (Protection) Act, 1972, with regard to the proposed rationalization of boundaries of Wildlife Sanctuaries and National Parks in Himachal Pradesh;



And whereas, as a consequence of rationalization of boundaries of Bandli Wildlife Sanctuary, the actual area on ground has been found 32.11 sq. km. This area of 32.11 sq. km shall now constitute Bandli Wildlife Sanctuary after rationalization;

Now, therefore, the Governor, Himachal Pradesh in exercise of the powers vested in her under Section 26A of the said Act is pleased to declare the said area of 32.11 sq. km of Bandli as '**Bandli Wildlife Sanctuary**' with immediate effect for the purpose of protecting, propagating and developing wildlife and its environment.

The limits of Bandli Wildlife Sanctuary shall be as under:

Sr. No.	Name of Wildlife Sanctuary	Constituents i) District ii) Forest Division	Boundaries of Bandli Wildlife Sanctuary.
1.	<b>Bandli</b>	i) Mandi ii) Kullu WL Division	<p><b>NORTH:</b> Boundary starts from Boundary Pillar No. 61 upto 80 of Bandli D.P.F and along point 1763 mtr., 1636 mtr. and across Kohal nalla DPF boundary along Bhadrohlu nalla.</p> <p><b>EAST:</b> -Boundary Pillar No. . 80 upto 94 of Bandli D.P.F upto Seri khad.</p> <p><b>SOUTH:</b> From Boundary Pillar No. 94 upto 95 of Bandli D.P.F. along Seri khad.</p> <p><b>WEST:</b> Boundary Pillar No. 95 to 162 and 1 upto 61 of Bandli D.P.F. exclusive of adjacent cultivation.</p>

This area is situated within the Geo-coordinates North Lat.31°28'37"N & Long.76°53'43"E East Lat.31°25'41"N & Long.76°56'47"E, South Lat.31°25'13"N & Long.76°55'38"E West Lat.31°27'16"N & Long.76°52'17"E which falls on Survey of India topo sheet No. 53 A/15 on scale 1: 50,000.

**Area of Bandli Wildlife Sanctuary= 32.11 sq. km**

By Order

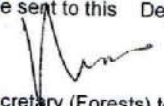
Principal Secretary (Forests) to the  
Government of Himachal Pradesh.

Endst. No As above

Dated Shimla-2 the 7<sup>th</sup> June, 2013

Copy forwarded to:-

1. All the Administrative Secretaries to the Govt. of H.P. Shimla-2.
2. All the Divisional Commissioners, Shimla, Mandi & Dharamshala, H.P.
3. All the Heads of Departments of H.P.
4. The Principal Chief Conservator of Forests, H.P. Shimla-1
5. The Principal Chief Conservator of Forests, (Wildlife) H.P. Shimla-1.
6. All CCFs / DFOs (Wildlife) in H.P.
7. All the Deputy Commissioners in H.P.
8. All the CCFs/CFs /DFOs in H.P.
9. ALR-cum- Under Secretary Law to the Government of Himachal Pradesh.
10. The Commissioner, Municipal Corporation, Shimla.
11. The Controller H.P. Printing & Stationary Department Shimla-5 for publication in the Raj-Patra (Extra-ordinary) Five Copies of the Raj-Patra be sent to this Department.
12. Guard File.

  
Under Secretary (Forests) to the  
Government of Himachal Pradesh.

हिमाचल प्रदेश सरकार  
वन विभाग

संख्या: एफ.एफ.ई.-बी-एफ.(6)-11/2005-II बान्दली तारीख शिमला-2 7 जून, 2013

अधिसूचना

सरकार ने वन्य जीव (संरक्षण) अधिनियम, 1972 (1972 का 53) की धारा 26क के अधीन अधिसूचना संख्या एफ.एफ.ई.-बी-एफ-एफ(6)-17/99 तारीख 1-11-1999 द्वारा 41.00 वर्ग किलोमीटर से समाविष्ट क्षेत्र बान्दली को वन्य जीव अभ्यारण्य के रूप में घोषित करने की अधिसूचना जारी की थी;

और हिमाचल प्रदेश में वन्य जीव अभ्यारण्यों और राष्ट्रीय पार्कों के युक्तिकरण की बाबत मामला आईए न0 139/2010 इन रिट पिटिशन सिविल न0 337 ऑफ 1995 नामतः सेन्टर फॉर एनवारनमेंटल लॉ, डबल्यू डबल्यू एफ-1 बनाम यूनियन ऑफ इण्डिया एण्ड अदरज में माननीय उच्चतम न्यायालय के विचाराधीन था;

और माननीय उच्चतम न्यायालय के आदेश तारीख 7 मई, 2010 के अनुसरण में राज्य सरकार ने वन्य जीव अभ्यारण्यों और राष्ट्रीय पार्कों, जिनके लिए युक्तिकरण प्रस्तावित किया गया था, की बाबत वन्य जीव (संरक्षण) अधिनियम, 1972 की धारा 18 के अधीन आशय अधिसूचनाएं जारी की थी;

और माननीय उच्चतम न्यायालय के आदेश तारीख 5-8-2011 द्वारा, वन्य जीव (संरक्षण) अधिनियम, 1972 की धारा 26क के अधीन अन्तिम अधिसूचनाएं जारी करने से पूर्व वन्य जीव (संरक्षण) अधिनियम, 1972 की धारा 18 से 26क और 35 के अधीन अधिकथित प्रक्रिया का अनुसरण करने के लिए भी राज्य सरकार को निर्देश दिए गए, जिस प्रक्रिया का सम्यक् रूप से अनुसरण किया गया था;

और माननीय उच्चतम न्यायालय ने आईए न0 155 (पहले आईए न0 139/2010) में पारित आदेश तारीख 1-2-2013 द्वारा, राज्य सरकार को हिमाचल प्रदेश में वन्य जीव अभ्यारण्यों और राष्ट्रीय पार्कों की सीमाओं के प्रस्तावित युक्तिकरण की बाबत वन्य जीव (संरक्षण) अधिनियम, 1972 की धारा 26क, 35(4) एवं 36क के अधीन अन्तिम अधिसूचनाएं जारी करने को अनुमत किया है;

और बान्दली वन्य जीव अभयारण्य की सीमाओं के युक्तिकरण के परिणामस्वरूप मौके पर भू-क्षेत्र 32.11 वर्ग किलोमीटर पाया गया है तथा (32.11 वर्ग किलोमीटर का यह क्षेत्र) युक्तिकरण के पश्चात् अब बान्दली वन्य जीव अभयारण्य का गठन करेगा;

अतः हिमाचल प्रदेश की राज्यपाल, वन्य जीव (संरक्षण) अधिनियम, 1972 की धारा 26क के अधीन उनमें निहित शक्तियों का प्रयोग करते हुए वन्य जीव और इसके पर्यावरण के संरक्षण, प्रसारण या विकसित करने के प्रयोजन के लिए, 32.11 वर्ग किलोमीटर क्षेत्र को तुरन्त प्रभाव से बान्दली वन्य जीव अभयारण्य घोषित करती हैं ।

बान्दली वन्य जीव अभयारण्य की सीमाएं निम्न प्रकार से होंगी:

क्रम संख्या	वन्य जीव अभयारण्य का नाम	घटक i) जिला ii) वन मण्डल	बान्दली वन्य जीव अभयारण्य की सीमाएं
1	बान्दली	i) मण्डी ii) कुल्लू (वन्य जीव) मण्डल	<p>उत्तर: बांदली सीमांकित आरक्षित जंगल (डी पी एफ) की सीमा स्तम्भ संख्या 61 से 80 तक बिन्दु 1763 मीटर, 1636 मीटर और खोल नाला सीमांकित आरक्षित जंगल (डी पी एफ) को पार करते हुए भदरोहलू नाला के साथ साथ।</p> <p>पूर्व: बांदली सीमांकित आरक्षित जंगल (डी पी एफ) की सीमा स्तम्भ संख्या 94 से 95 सैरी खड तक ।</p> <p>दक्षिण : बांदली सीमांकित आरक्षित जंगल (डी पी एफ) की सीमा स्तम्भ संख्या 80 से 94 तक सैरी खड के साथ साथ।</p> <p>पश्चिम : बांदली सीमांकित आरक्षित जंगल (डी पी एफ) की सीमा स्तम्भ संख्या 95 से 162 तथा बूर्जी संख्या 1 से 61 तक साथ लगती कृषि भूमि को छोड़ती हुई ।</p>

इस क्षेत्र की भौगोलिक स्थिति: उत्तर अक्षांश  $31^{\circ} 28' 37''$  उत्तर और देशान्तर  $76^{\circ} 53' 43''$  पूर्व । पूर्व अक्षांश  $31^{\circ} 25' 41''$  उत्तर और देशान्तर  $76^{\circ} 56' 47''$  पूर्व । दक्षिण अक्षांश  $31^{\circ} 25' 13''$  उत्तर और देशान्तर  $76^{\circ} 55' 38''$  पूर्व और पश्चिम अक्षांश  $31^{\circ} 27' 16''$  उत्तर और देशान्तर  $76^{\circ} 52' 17''$  पूर्व। यह क्षेत्र भारतीय सर्वेक्षण विभाग की टोपो शीट नम्बर 53ए/15, (पैमाना 1:50,000) पर दर्शाया गया है ।

क्षेत्रफल : 32.11 वर्ग कि० मी०

आदेश द्वारा,

प्रधान सचिव (वन)  
हिमाचल प्रदेश सरकार ।

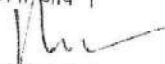


पृष्ठांकन संख्या: यथोपरि।

दिनांक शिमला-2, 7 जून, 2013

प्रतिलिपि निम्नलिखित को सूचनार्थ एवं आगामी आवश्यक कार्यवाही हेतु प्रेषित है:-

1. समस्त प्रशासनिक सचिव, हिमाचल प्रदेश-शिमला-2
2. सभी मण्डलायुक्त, शिमला, मण्डी व धर्मशाला मण्डल हिमाचल प्रदेश।
3. समस्त विभागाध्यक्ष हिमाचल प्रदेश।
4. प्रधान मुख्य अरण्यपाल हिमाचल प्रदेश शिमला-1
5. प्रधान मुख्य अरण्यपाल (वन्य प्राणी) हिमाचल प्रदेश-शिमला-1
6. समस्त मुख्य अरण्यपाल/वनमण्डलाधिकारी (वन्य प्राणी) हिमाचल प्रदेश।
7. समस्त जिलाधीश, हिमाचल प्रदेश।
8. समस्त मुख्य अरण्यपाल/अरण्यपाल/वनमण्डलाधिकारी, (क्षेत्रीय) हिमाचल प्रदेश।
9. सहायक विधि परामर्शी एवं अवर सचिव (विधि) हिमाचल प्रदेश सरकार।
10. आयुक्त नगर निगम शिमला हिमाचल प्रदेश।
11. नियन्त्रक, मुद्रण एवं लेखन सामग्री विभाग, हिमाचल प्रदेश शिमला-5 को राजपत्र में प्रकाशित करने हेतु। कृपया इसकी पांच अतिरिक्त प्रतियां छापी/जावें।
12. गार्ड फाइल।

  
अवर सचिव (वन)  
हिमाचल प्रदेश सरकार।

### Annexure- III

#### Compensation Cases in respect of Wildlife Division Kullu During the Year

**2014-2015 to 2020-21**

Sr. No.	Year	Name of Wild Life Sanctuary	Name of person who Death/Killing, Major Minor injuries	Type of Injury	Account of Compensation
1	2014-15	Bandli WLS	Nil	Nil	Nil
2	2015-16		Nil	Nil	Nil
3	2016-17		Nil	Nil	Nil
4	2017-18		Nil	Nil	Nil
5	2018-19		Nil	Nil	Nil
6	2019-20		Nil	Nil	Nil
7	2020-21		Sh. Kanshi Ram S/o Garja Ram R/o Nerad PO. Batwara Tehsil Sundernagar Distt. Mandi H.P	Killing of an Ox by Leopard	30,000/-

### Annexure- IV

#### List of buildings of Bandli Wildlife Sanctuary

SN	Name of Building	Year of Construction	Cost Incurred
1	Additional Alteration of Range office	1995-96	50,000/-
2	Rangeoffice cum Residence	1962-63	-
3	Information Center at Range office	2017 to 2021	11,28,297/-
4	Range Store at Range office compound	2007-08	1,50,000/-
5	Forest Guard Hut NAC Trambri Beat	1998-99	2,47,230/-
6	Forest Guard Hut at Maloh	1996-97	2,00,000/-
7	Nature club at Maloh	2003-04	90,000/-
8	Forest Guard Hut at Bober	2015-16	7,30,000/-
9	Nature Club at Bober	2003-04	90,000/-
10	Mali Hut at Bober	2017-18	7,24,981/-
11	B.O. Quarter At Bober	1995-96	2,20,000/-
12	Forest Guard Hut at Khurahal	2004-05	3,00,000/-
13	Forest Guard Hut at Nerad in	1994-95	1,00,000/-

	Saul		
14	Patrolling Hut Neri	1999-2000	1,99,600/-
15	Watch Tower at Bober Tibba	2004-05	1,50,000/-
16	Entry Gate Ticket Window at Maloh	2016-17	2,00,000/-

### Annexure- V

#### List of roads and paths in Bandli wildlife sanctuary

SN	Name of road and Path	Year of Construction	Length in KM
1	B/ Path from Mujhar To Saul Via Neri	1989-90 and 91-92	5.2 Km
2	Inspection path Maloh To Saul Via Neri	1993-94	3.6 Km
3	Foot Path From Sarauni Khad to Saruni Village	1998-99	105 Mts
4	Foot Path Maloh To Neri Via Bari ( Sariun)	1999-2000	5 Km
5	B/path Kaphari to Kharni	1999-2000	6 Km
6	B /path Nalani To Bashau	1999-2000	6 .380 Km
7	Foot Path Saruni to Jarol	2000-01	4 Km
8	Path Kharni to Badhu	2000-01	4 Km
9	Foot Path Kandar to Neri	2001-02	4 Km
10	Foot Path Bober to Thana	2002-03	4 Km
12	Foot Path Steran to Mujhar Sialu	2003-04	3 Km
13	I/ Path Badhrolu to Jogni Mata	2004-05	4 Km
14	Badrolu to Neri Kanda	2001-02	5 Km
15	Bober to Kandar	1987-88	6 Km
16	Bober To Bhauntla	1989-90	3 Km

## Annexure- VI

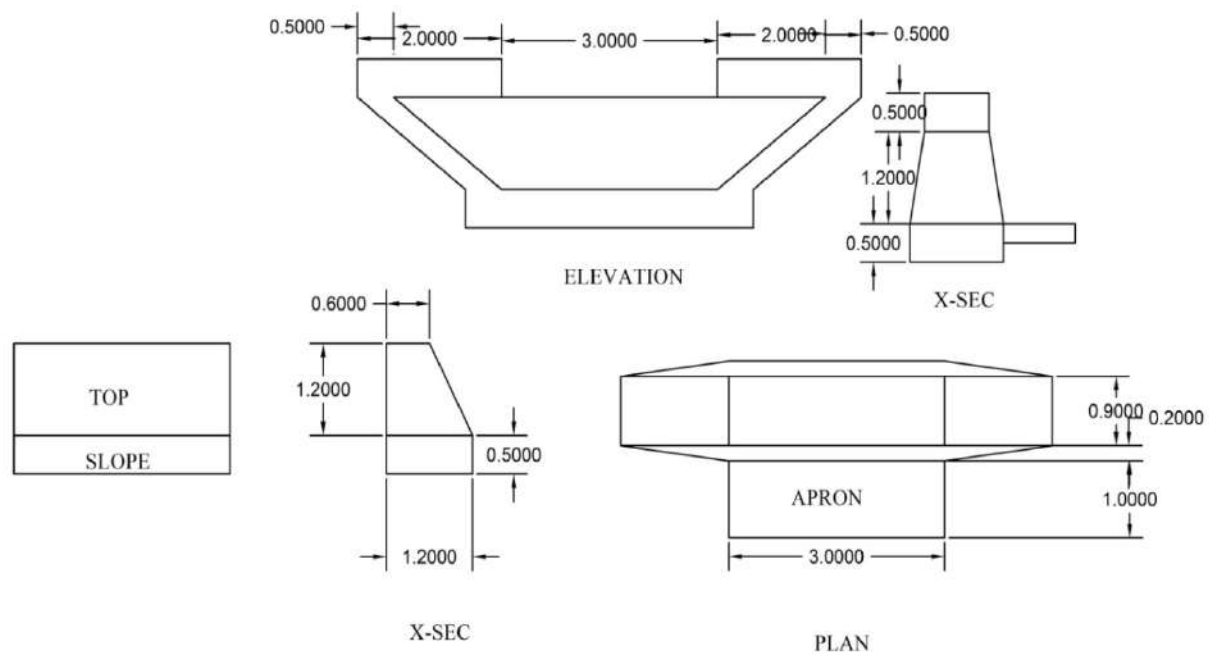
### Boundary Pillars in Khokhan WL Sanctuary

SN	Name of Beat	Name of Forest	Big Pillars	Small Pillars	Total No of Pillars
1	Maloh	OD-25 Bandli DPF	19	Nil	19
2	Bober	-do-	99	Nil	99
3	Khurahal	-do-	37	Nil	37
4	Saul	-do-	10	Nil	10
		<b>Total</b>	<b>165</b>		<b>165</b>

## Annexure- VII

### DESIGN OF FCHECK WALL AND CHECK DAMS

#### DESIGN OF DRY STONE MASONRY CHECK WALL AND CHECK DAM



### Annexure – VIII

ANNUAL PLAN OF OPERATION OF PROTECTED AREAS FOR THE YEAR 2021-22 IN RESPECT OF “BANDLI WILD LIFE SANCTUARY”							
Item of Work		Location	Unit	Rate per unit (Rs. )	Target		Justification
		Beat			Phy	Fin. (Rs)	
Non Recurrent Activities							
Soil & Moisture Conservation							
i)Construction of Check Walls/Breast walls/ Retaining Walls							
1	Nihri Nala	Khurahah	No.	L/S	1	25000	To control soil erosion
2	Kharni Nala	Soul	No.	L/S	1	25000	To control soil erosion
3	Nagalth Nala	Bobber	No.	L/S	1	25000	To control soil erosion
4	Kohil Nala	Maloh	No.	L/S	1	25000	To control soil erosion
5	Rohari Nala	Saul	No	L/S	1	20000	To control soil erosion
6	Kandi Nala	Bober	No	L/S	2	40000	To control soil erosion
7	Kandar Nala	Khurahah	No	L/S	2	40000	To control soil erosion
8	Sariun Nala	Maloh	No	L/S	2	40000	To control soil erosion
Sub-Total						240000	
ii) Construction of Check Dams (BW/ DRSM /CWS)							
1	Bhoura Nala	Maloh	No.	L/S	4	100000	To control soil erosion
2	Darwa Nala	Bobber	No.	L/S	4	100000	To control soil erosion
3	Badhu Nala	Soul	No.	L/S	2	50000	To control soil erosion
4	Nihri Nala	Khurahah	No.	L/S	2	50000	To control soil erosion
5	Neri Nala	Saul	No	L/S	2	40000	To control soil erosion
6	Kandar Nala	Khurahah	No	L/S	2	40000	To control soil erosion
7	Padhru Nala	Bober	No	L/S	2	40000	To control soil erosion
8	Kohil Nala	Maloh	No	L/S	5	100000	To control soil erosion
Sub total						520000	
iii	C/O of water ponds :-						
1	DPF Bandli	Maloh	No.	L/S	2	40000	

2	DPF Bandli at Dohra	Khurahah	No.	L/S	2	40000	
3	DPF Bandli at Kharni	Saul	No.	L/S	2	40000	
4	DPF Bandli at Kandi	Bobber	No.	L/S	2	40000	
<b>Sub Total</b>						<b>160000</b>	
<b>Habitat improvement Plantations</b>							
1	Enrichment plantation of native fruit bearing and fodder species plants	Maloh	No	38000	2 ha	76000	
<b>Sub Total</b>						<b>76000</b>	
<b>Construction of New building &amp; other structures</b>							
1	Completion of Boundary wall and gate at FGD Hut Maloh	Maloh	No	L/S	1	100000	
2	Construction of Shed at Range office compound	Range office compound	No	L/S	1	250000	
<b>Sub Total</b>						<b>350000</b>	
<b>Others</b>							
<b>Capacity Building/Training/ Research &amp; Monitoring</b>							
<b>Staff welfare activities</b>							
i	Provision of ration during patrolling etc	DPF Bandli	L/S	20000	L/S	20000	
<b>Sub-Total</b>						<b>20000</b>	
<b>Wildlife Protection and Conservation Activities</b>							
1	Maint. of Fire Line From Thanda pani To Kohil Nala	Maloh	2Kms	L/S	L/S	20000	To control fire hazards in the sanctuary
2	Maint. of Fire Line from Neri to Kanda	Soul	2Kms	L/S	L/S	20000	To control fire hazards in the sanctuary
3	Maint of Fire Line from Bobber to Watch Tower	Bober	2Km	L/S	L/S	20000	To control fire hazards in the sanctuary
4	Maint of Fire Line from Neri to Kandar	Khurahah	2 km	L/S	L/S	20000	To control fire hazards in the sanctuary
5	Maint of Fire in DPF Bandli	DPF Bandli	10 km	L/S	L/S	75000	To control fire hazards in the sanctuary
6	Deployment of Anti poacher and Antigrezers	DPF Bandli	No.	L/s	5 for 12 month	450400	

7	Fire Watcher	DPF Bandli	No.	L/s	5 for 3 month	110000	
8	Control Burning/Cleaning of Pine needles	DPF Bandli	L/S	L/s	L/s	20000	Protection of Flora & Faunna from fire during fire season.
9	Hiring of Vehicle for Petrolling and Naka	DPF Bandli	L/S	L/s	L/s	25000	To check /controll illigal activities inside WLS
10	Group Petrolling	DPF Bandli	L/S	L/S	L/S	110000	To check /controll illigal activities inside WLS
11	Celebration of Wild Life Week	Bandli Sanctury	No	L/s	L/S	20000	To organise wildlife awareness camp among local peoples & school children.
12	Augmentation of Salt Licks	Bandli WLS	L/S	L/S	L/S	20000	
13	Raising of Nursery at Maloh and Bober	Bandli WL sanctury	15000 plants			125100	
<b>Sub-Total</b>						<b>1035500</b>	
<b>Communication</b>							
1	Communication and connectivity to field staff	W/L Range SNR	No.	Rs.300/- PM	9 person for 12 Months	32400	Mobile connectivity to field staff
<b>Sub-Total</b>						<b>32400</b>	
<b>Office Expenses</b>							
1	Stationary, Electricity bills etc.	W/L Range SNR	L/S	L/S	L/S	50000	
<b>Sub-Total</b>						<b>50000</b>	
<b>Total Non Recurring</b>						<b>2483900</b>	
<b>Recurrent expenditure</b>							
<b>Maintenance &amp; repair of building &amp; other structures</b>							
1	Maintenance of Fg Hut NAC Trambri	At Range office Compound	No.	1	L/S	30000	As per actual Need



2	Maint. of Range Store	At Range office Compound	No.	1	L/S	30000	As per actual Need
3	Repair of Toilets	At Range office compound	No	1	L/S	150000	As per actual need
4	Repair of R.O. Residence	At Range office compound	No	1	L/S	100000	As per actual need
5	Maint of Range office building	At Range office compound	No	1	L/S	50000	As per actual need
6	Maint of F gd hut Khurahal	Khurahal	No.	1	L/S	30000	As per actual Need
7	Maint of F gd hut Saul	Saul	No.	1	L/S	250000	As per actual Need
8	Maint of Nature Club Maloh	Maloh	No.	1	L/S	200000	As per actual Need
9	Repair of Stairs of guard quarter	Maloh	No	1	L/S	50000	As per actual Need
				Sub-Total		890000	
Maintnance of inspection/Bridle paths, Nursery & others etc.							
1	Maint. of path From Kohilnala to Neri Kanda	Maloh	Kms	4	L/S	100000	For better connectivity
2	Maint of Path from Nalani to Neri Kanda	Maloh	Kms	4	L/S	100000	-do-
3	Maint of Path from Badhrolu to Jogni Mata	Maloh	Kms	4	L/S	100000	-do-
4	Maint of Path from Bharpat to Neri	Saul	Kms	2	L/S	50000	-do-
5	Maint. of path From Thana to Belnu	Bobber	Kms	3	L/S	80000	For better connectivity
6	Repair of Path from Main road to Bober Nursery Nihari	Bober	Kms	0.5	L/S	30000	-do-
7	Dohra to Belnu	Khurahal	Kms	3	L/S	80000	For better connectivity
8	Maint. of path From Steran to Siralu	Khurahal	Kms	3	L/S	60000	-do-
9	Maint. of path From Rera foot bridge to Basahu	Saul	Kms	4	L/S	100000	For better connectivity
10	Maint of Path from Saul to Neri	Saul	Kms	4	L/S	50000	For better connectivity
11	Maint. of Nursery	Maloh & Bobber	No.	2	L/s	150000	

12	Travelling Allowance to field staff	WL Range sundernagar			L/S	120000	
<b>Sub-Total</b>						<b>1020000</b>	
<b>Habitat improvement</b>							
<b>Maintenance of Plantation</b>							
1	Maintenance of Plantations ( Kharni)	Saul	ha	L/s	3	21000	1 <sup>st</sup> year maintenance
2	Maintenance of Plantations ( Kandar)	Khurahhal	ha	L/s	2	14000	1 <sup>st</sup> year maintenance
3	Maintenance of Plantations ( Bhauntla)	Bober	ha	L/s	3	21000	1 <sup>st</sup> year maintenance
4	Maintenance of Plantations ( Marinu Ka Phat)	Maloh	ha	L/s	5	25000	3 <sup>rd</sup> year maintenance
5	Maintenance of Plantations ( Nihari)	Bober	ha	L/s	5	25000	3 <sup>rd</sup> year maintenance
6	Maintenance of Plantations ( Dohra)	Khurahhal	ha	L/s	3	15000	3 <sup>rd</sup> year maintenance
7	Maintenance of Plantations (Nered)	Soul	No	L/s	L/S	7000	Maint. of 3rd Year Plantation
8	Maintenance of Plantations (Gehri Nala)	Bobber	No	L/s	L/S	7000	Maint. of 3rd Year Plantation
9	Maintenance of Plantations (Kohil Nala)	Maloh	No	L/s	L/S	7000	Maint. of 3rd Year Plantation
10	Maintenance of Plantations (Magar Nala)	Bobber	No	L/s	L/S	4000	Maint. of 4th. Year Plantation
11	Maintenance of Plantations Sariun Nala)	Maloh	No	L/s	L/S	4000	Maint. of 4th. Year Plantation
<b>Sub-Total</b>						<b>150000</b>	
<b>TOTAL RECURRING</b>						<b>2060000</b>	
<b>Operational support</b>						<b>20000</b>	
<b>Grand Total(Non Recurring and Recurring)</b>						<b>4563900</b>	

ANNUAL PLAN OF OPERATION OF PROTECTED AREA FOR THE YEAR 2022-23 IN RESPECT OF "BANDLI WILD LIFE SANCTUARY"							
Item of Work		Location	unit	Rate per Unit	Target		Justification
					Phy	Fin	
1	2	3	4	5	6	7	8
<b>A. Non Recurrent Activities</b>							
<b>Infrastructure Development</b>							
<b>Construction of new building &amp; other structure</b>							
<b>Soil &amp; Moisture Conservation</b>							
<b>Check Dam</b>							
	Dohra Nala	Khurahah	No.	L/S	4	100000	To control soil erosion
1	Kharni Nala	Soul	No.	L/S	4	100000	To control soil erosion
2	Darwa Nala	Bobber	No.	L/S	5	125000	To control soil erosion
3	Joo Nala	Maloh	No.	L/S	7	175000	To control soil erosion
<b>Sub Total</b>						<b>500000</b>	
<b>Check walls/ Breast walls/ Retaining wall</b>							
1	Stern Nala	Khurahah	No.	L/S	4	80000	To control soil erosion
2	Neri Nala	Soul	No.	L/S	4	80000	To control soil erosion
3	Gehri Nala	Bobber	No.	L/S	4	80000	To control soil erosion
4	Sariun Nala	Maloh	No.	L/S	5	100000	To control soil erosion
<b>Sub Total</b>						<b>340000</b>	
<b>Habitat Improvement</b>							
<b>Enrichment Plantation</b>							
1	DPF Bandli	Bandli WLS	ha	40000	3	120000	
<b>Sub Total</b>						<b>120000</b>	
<b>TOTAL NON RECURRING</b>						<b>960000</b>	
<b>B. Recurrent Activities</b>							
<b>Wildlife Protection and Conservation Activities</b>							

<b>Protection</b>							
1	Deployment of Anti poacher and Antigrezers	Bandli WLS	No.	L/s	5 for 12 month	450400	Deployment of Anti poacher and Antigrezers
2	Fire Watcher	Bandli WLS	No.	L/s	5 for 3 month	110000	Fire Watcher
3	Rescue/ transportation of injured wild animals	Bandli WLS	L/s	L/s	L/s	20000	For better protection of wildlife
4	Hiring of vehicle	Bandli WLS	L/s	L/s	L/s	50000	For patrolling and Naka
5	Control Burning/Cleaning of Pine needles	DPF Bandli	L/S	L/s	L/s	20000	Protection of Flora & Fauna from fire during fire season.
6	Augmentation of salt licks	Bandli WLS	L/s	1	L/S	20000	For wild animals
7	Cleaning of Fire Lines	Bandli WLS	L/S	L/s	L/s	150000	Protection of Flora & Fauna from fire during fire season.
8	Provision of Ration during patrolling	Bandli WLS	L/S	L/s	L/s	20000	
9	Group Patrolling	Bandli WLS	L/S	L/s	L/s	150000	For protection of forest & Wild Life
<b>Sub Total</b>						<b>990400</b>	
<b>Education and Awareness Generation</b>							
1	Workshop/ Seminars	Bandli WLS	L/s	L/s	L/s	80000	Workshop regarding wildlife awareness among local peoples residing in and around sanctuary area.
2	Wildlife week and other awareness programme	Bandli WLS	L/s	L/s	L/s	50000	For wildlife awareness among local peoples residing in and around sanctuary area.
3	Office expenses	Bandli WLS	L/s	L/s	L/s	70000	
<b>Sub Total</b>						<b>200000</b>	
<b>Communication</b>							

1	Communication and connectivity to field staff	W/L Range SNR	No.	Rs.300/- PM	9 person for 12 Months	32400	Mobile connectivity to field staff
<b>Sub Total</b>						<b>32400</b>	
<b>Nursery</b>							
<b>Upgrading/ Improvement of Nursery</b>							
1	Maloh & Bobber Nursery	Bandli WLS	ha	L/S	L/S	100000	Development, Improvement & raising of plants
2	Collection/Carriage/Watch & ward of Seized timber	Khokhan WLS	L/S	L/S	L/S	20000	
<b>Sub Total</b>						<b>120000</b>	
<b>Infrastructure of Development</b>							
1	Maint. of Fgd Hut Maloh	Maloh Beat	No.	L/S	L/S	90000	For staff
2	Maint. of Nature club Bobber	Bobber Beat	No.	L/S	L/S	60000	For visitors
				<b>Sub Total</b>		<b>150000</b>	
<b>Maintenance of Roads/ Paths/ Buildings</b>							
1	Maint. of path From Sariun to Neri Kanda	Maloh Beat	Km	4	L/S	100000	For better connectivity
2	Maint. of path From Bhadrolu to Neri Kanda	Maloh Beat	Km	4	L/S	100000	For better connectivity
	Maint. Of Path From Dayoda to Badi Dhar	Maloh Beat	Km	3	L/S	75000	For better connectivity
3	Maint. of path From Kaphari to Kharni	Saul Beat	Km	3	L/S	75000	For better connectivity
4	Maint. of path From Kharni to Badhu	Saul Beat	No.	4	L/S	100000	For better connectivity
5	Maint. of path From Bobber to Bhountla	Bobber Beat	No.	3	L/S	75000	For better connectivity
6	Maint. of path From Bobber to Kandar	Bobber Beat	No.	4	L/S	100000	For better connectivity
7	Maint. of path From Kandar to Neri	Khurahhal Beat	No.	4	L/S	100000	For better connectivity
8	Maint. of path From Muijjar to Saul Via Neri	Khurahhal Beat	No.	4	L/S	100000	For better connectivity
				<b>Sub Total</b>		<b>825000</b>	

<b>Habitat Improvement</b>							
<b>Afforestation</b>							
1	Maintenance of Plantations ( Kharni)	Saul	ha	L/s	3	15000	2nd year Maintenance
2	Maintenance of Plantations ( Kandar)	Khurahhal	ha	L/s	2	10000	2 <sup>nd</sup> year Maintenance
3	Maintenance of Plantations ( Bhauntla)	Bober	ha	L/s	3	15000	2 <sup>nd</sup> year Maintenance
4	Maintenance of Plantations ( Marinu Ka Phat)	Maloh	ha	L/s	5	15000	4 <sup>th</sup> year Maintenance
5	Maintenance of Plantations ( Nihari)	Bober	ha	L/s	5	15000	4 <sup>th</sup> year maintenance
6	Maintenance of Plantations ( Dohra)	Khurahhal	ha	L/s	3	10000	4 <sup>th</sup> year Maintenance
7	Maintenance of Plantations (Nered)	Soul	ha	L/s	3	4000	Maint. of 4 <sup>th</sup> Year Plantation
8	Maintenance of Plantations (Gehri Nala)	Bobber	ha	L/s	5	6000	Maint. of 4 <sup>th</sup> Year Plantation
9	Maintenance of Plantations (Kohil Nala)	Maloh	ha	L/s	5	6000	Maint. of 4 <sup>th</sup> Year Plantation
10	Maintenance of Plantations (Magar Nala)	Bobber	ha	L/s	3	4000	Maint. of 5th. Year Plantation
11	Maintenance of Plantations Sariun Nala)	Maloh	ha	L/s	3	4000	Maint. of 5th. Year Plantation
				<b>Sub Total</b>		<b>104000</b>	
<b>TOTAL RECURRING</b>						<b>2421800</b>	
<b>TOTAL RECURRING &amp; NON-RECURRING</b>						<b>3381800</b>	
<b>Operational Charges</b>						<b>40000</b>	
<b>GRAND TOTAL</b>						<b>3421800</b>	

ANNUAL PLAN OF OPERATION OF PROTECTED AREA FOR THE YEAR 2023-24 IN RESPECT OF "BANDLI “WILD LIFE SANCTUARY"							
Item of Work			unit	Rate per Unit	Target		Justification
		Location			Phy	Fin	
1	2	3	4	5	6	7	8
A. Non Recurrent Activities							
Infrastructure Development							
Construction of new building & other structure							
Soil & Moisture Conservation							
Check Dam							
1	Khurahal Nala	Khurahal	No.	L/S	4	100000	To control soil erosion
2	Kharni Nala	Soul	No.	L/S	4	100000	To control soil erosion
3	Darwa Nala	Bobber	No.	L/S	5	125000	To control soil erosion
4	Joo Nala	Maloh	No.	L/S	7	175000	To control soil erosion
			Sub Total			500000	
Check walls/ Breast walls/ Retaining wall							
1	Stern Nala	Khurahal	No.	L/S	4	80000	To control soil erosion
2	Neri Nala	Soul	No.	L/S	4	80000	To control soil erosion
3	Gehri Nala	Bobber	No.	L/S	4	80000	To control soil erosion
4	Sariun Nala	Maloh	No.	L/S	5	100000	To control soil erosion
				Sub Total		340000	
Habitat Improvement							
Enrichment Plantation							
1	DPF Bandli	Bandli WLS	ha	40000	3	120000	
			Sub Total			120000	
TOTAL NON RECURRING						960000	
B. Recurrent Activities							
Wildlife Protection and Conservation Activities							

Protection							
1	Deployment of Anti poacher and Antigrezers	Bandli WLS	No.	L/s	5 for 12 month	450400	Deployment of Anti poacher and Antigrezers
2	Fire Watcher	Bandli WLS	No.	L/s	5 for 3 month	110000	Fire Watcher
3	Rescue/ transportation of injured wild animals	Bandli WLS	L/s	L/s	L/s	20000	For better protection of wildlife
4	Hiring of vehicle	Bandli WLS	L/s	L/s	L/s	50000	For patrolling and Naka
5	Control Burning/Cleaning of Pine needles	DPF Bandli	L/S	L/s	L/s	20000	Protection of Flora & Fauna from fire during fire season.
6	Augmentation of salt licks	Bandli WLS	L/s	1	L/S	20000	For wild animals
7	Cleaning of Fire Lines	Bandli WLS	L/S	L/s	L/s	150000	Protection of Flora & Fauna from fire during fire season.
8	Provision of Ration during patrolling	Bandli WLS	L/S	L/s	L/s	20000	
9	Group Patrolling	Bandli WLS	L/S	L/s	L/s	150000	For wildlife protection
				Sub Total		990400	
Education and Awareness Generation							
1	Workshop/ Seminars	Bandli WLS	L/s	L/s	L/s	80000	Workshop regarding wildlife awareness among local peoples residing in and around sanctuary area.
2	Wildlife week and other awarness programme	Bandli WLS	L/s	L/s	L/s	50000	For wildlife awareness among local peoples residing in and around sanctuary area.
3	Office expenses	Bandli WLS	L/s	L/s	L/s	70000	
				Sub Total		200000	
Communication							
1	Communication and connectivity to field staff	W/L Range SNR	No.	Rs.300/ - PM	9 person for 12 Months	32400	Mobile connectivity to field staff



				Sub Total		32400	
Nursery							
Upgrading/ Improvement of Nursery							
1	Maloh & Bobber Nursery	Bandli WLS	ha	L/S	L/S	100000	Development, Improvement & raising of plants
2	Collection/Carriage/W atch & ward of Seized timber	Khokhan WLS	L/S	L/S	L/S	20000	
				Sub Total		120000	
Infrastructure of Development							
1	Maint. of Fgd Hut Maloh	Maloh Beat	No.	L/S	L/S	90000	For staff
2	Maint. of Nature club Bobber	Bobber Beat	No.	L/S	L/S	60000	For visitors
				Sub Total		150000	
Maintenance of Roads/ Paths/ Buildings							
1	Maint. of path From Kohilnala to Neri Kanda	Maloh	Km	4	L/S	100000	For better connectivity
2	Maint of Path from Nalani to Neri Kanda	Maloh	Km	4	L/S	100000	For better connectivity
3	Maint of Path from Badhrolu to Jogni Mata	Maloh	Km	4	L/S	75000	For better connectivity
4	Maint of Path from Bharpat to Neri	Saul	Km	2	L/S	75000	For better connectivity
5	Maint. of path From Thana to Belnu	Bobber	Km	3	L/S	100000	For better connectivity
6	Repair of Path from Main road to Bober Nursery Nihari	Bober	Km	0.5	L/S	75000	For better connectivity
7	Dohra to Belnu	Khurahal	Km	3	L/S	100000	For better connectivity
8	Maint. of path From Steran to Siralu	Khurahal	Km	3	L/S	100000	For better connectivity
9	Maint. of path From Rera foot bridge to Basahu	Saul	Km	4	L/S	100000	For better connectivity
				Sub Total		825000	
Habitat Improvement							

<b>Afforestation</b>							
1	Maintenance of Plantations (Kharni)	Saul	ha	L/s	3	15000	2nd year maintenance
2	Maintenance of Plantations (Kandar)	Khurahhal	ha	L/s	2	10000	2 <sup>nd</sup> year maintenance
3	Maintenance of Plantations (Bhauntla)	Bober	ha	L/s	3	15000	2 <sup>nd</sup> year maintenance
4	Maintenance of Plantations (Marinu Ka Phat)	Maloh	ha	L/s	5	15000	4 <sup>th</sup> year maintenance
5	Maintenance of Plantations (Nihari)	Bober	ha	L/s	5	15000	4 <sup>th</sup> year maintenance
6	Maintenance of Plantations (Dohra)	Khurahhal	ha	L/s	3	10000	4 <sup>th</sup> year maintenance
7	Maintenance of Plantations (Nered)	Soul	ha	L/s	3	4000	Maint. of 4 <sup>th</sup> Year Plantation
8	Maintenance of Plantations (Gehri Nala)	Bobber	ha	L/s	5	6000	Maint. of 4 <sup>th</sup> Year Plantation
9	Maintenance of Plantations (Kohil Nala)	Maloh	ha	L/s	5	6000	Maint. of 4 <sup>th</sup> Year Plantation
10	Maintenance of Plantations (Magar Nala)	Bobber	ha	L/s	3	4000	Maint. of 5th. Year Plantation
11	Maintenance of Plantations (Sariun Nala)	Maloh	ha	L/s	3	4000	Maint. of 5th. Year Plantation
				<b>Sub Total</b>		<b>104000</b>	
<b>TOTAL RECURRING</b>						<b>2421800</b>	
<b>TOTAL RECURRING &amp; NON-RECURRING</b>						<b>3381800</b>	
<b>Operational Charges</b>						<b>40000</b>	
<b>GRAND TOTAL</b>						<b>3421800</b>	

ANNUAL PLAN OF OPERATION OF PROTECTED AREA FOR THE YEAR <b>2024-25</b> IN RESPECT OF " <b>BANDLI "WILD LIFE SANCTUARY"</b>							
Item of Work		Location	unit	Rate per Unit	Target		Justification
					Phy	Fin	
1	2	3	4	5	6	7	8
<b>A. Non Recurrent Activities</b>							
<b>Infrastructure Development</b>							
<b>Construction of new building &amp; other structure</b>							
<b>Soil &amp; Moisture Conservation</b>							
<b>Check Dam</b>							
1	Nihari Nala	Khurahah	No.	L/S	4	100000	To control soil erosion
2	Nerad Nala	Soul	No.	L/S	4	100000	To control soil erosion
3	Gehri	Bobber	No.	L/S	5	125000	To control soil erosion
4	Nihara Nala	Maloh	No.	L/S	7	175000	To control soil erosion
				<b>Sub Total</b>		<b>500000</b>	
<b>Check walls/ Breast walls/ Retaining wall</b>							
1	Mujhar Nala	Khurahah	No.	L/S	4	80000	To control soil erosion
2	Badhu Nala	Soul	No.	L/S	4	80000	To control soil erosion
3	Darwa Nala	Bobber	No.	L/S	4	80000	To control soil erosion
4	Kohil Nala	Maloh	No.	L/S	5	100000	To control soil erosion
				<b>Sub Total</b>		<b>340000</b>	
<b>Habitat Improvement</b>							
<b>Enrichment Plantation</b>							
1	DPF Bandli	Bandli WLS	ha	40000	3	120000	
				<b>Sub Total</b>		<b>120000</b>	
<b>TOTAL NON RECURRING</b>						<b>960000</b>	
<b>B. Recurrent Activities</b>							
<b>Wildlife Protection and Conservation Activities</b>							
<b>Protection</b>							

1	Deployment of Anti poacher and Antigrezers	Bandli WLS	No.	L/s	5 for 12 month	450400	Deployment of Anti poacher and Antigrezers
2	Fire Watcher	Bandli WLS	No.	L/s	5 for 3 month	110000	Fire Watcher
3	Rescue/ transportation of injured wild animals	Bandli WLS	L/s	L/s	L/s	20000	For better protection of wildlife
4	Hiring of vehicle for patrolling and Naka	Bandli WLS	L/s	L/s	L/s	50000	
5	Control Burning/Cleaning of Pine needles	DPF Bandli	L/S	L/s	L/s	20000	Protection of Flora & Fauna from fire during fire season.
6	Augmentation of salt licks	Bandli WLS	L/s	1	L/s	20000	For wild animals
7	Cleaning of Fire Lines	Bandli WLS	L/S	L/s	L/s	150000	Protection of Flora & Fauna from fire during fire season.
8	Provision of Ration during patrolling	Bandli WLS	L/S	L/s	L/s	20000	
9	Group Patrolling	Bandli WLS	L/S	L/s	L/s	150000	
				Sub Total		990400	
Education and Awareness Generation							
1	Workshop/ Seminars	Bandli WLS	L/s	L/s	L/s	80000	Workshop regarding wildlife awareness among local peoples residing in and around sanctuary area.
2	Wildlife week and other awarness programme	Bandli WLS	L/s	L/s	L/s	50000	For wildlife awareness among local peoples residing in and around sanctuary area.
3	Office expenses	Bandli WLS	L/s	L/s	L/s	70000	For office use
				Sub Total		200000	
Communication							
1	Communication and connectivity to field staff	W/L Range SNR	No.	Rs.300/ - PM	9 person for 12 Month	32400	Mobile connectivity to field staff

				Sub Total		32400	
Upgrading/ Improvement of Nursery							
1	Maloh & Bobber Nursery	Bandli WLS	ha.	L/S	L/S	100000	Development, Improvement & raising of plants
2	Collection/Carriage/Watch & ward of Seized timber	Bandli WLS	L/S	L/S	L/S	20000	
				Sub Total		120000	
Infrastructure of Development							
1	Maint. of Fgd Khurahal	Khurahal Beat	No.	L/S	L/S	50000	For staff
2	Maint. of Information Centre at Sundernagar	Range office compound	No.	L/S	L/S	60000	For visitors
				Sub Total		110000	
Maintenance of Roads/ Paths/ Buildings							
1	Maint. of path From Sariun to Neri Kanda	Maloh Beat	Km	4	L/S	100000	For better connectivity
2	Maint. of path From Bhadrolu to Neri Kanda	Maloh Beat	Km	4	L/S	100000	For better connectivity
3	Maint. Of Path From Dayoda to Badi Dhar	Maloh Beat	Km	3	L/S	75000	For better connectivity
4	Maint. of path From Kaphari to Kharni	Saul Beat	Km	3	L/S	75000	For better connectivity
5	Maint. of path From Kharni to Badhu	Saul Beat	No.	4	L/S	100000	For better connectivity
6	Maint. of path From Bobber to Bhountla	Bobber Beat	No.	3	L/S	75000	For better connectivity
7	Maint. of path From Bobber to Kandar	Bobber Beat	No.	4	L/S	100000	For better connectivity
8	Maint. of path From Kandar to Neri	Khurahal Beat	No.	4	L/S	100000	For better connectivity
9	Maint. of path From Mujjar to Saul Via Neri	Khurahal Beat	No.	4	L/S	100000	For better connectivity
				Sub Total		825000	
Habitat Improvement							
Afforestation							
1	Maint of Plant DPF Bandli	Bober	ha	L/s	3	21000	Ist year maintenance
	Maintenance of Plantations (Kharni)	Saul	ha	L/s	3	10000	3rd year maintenance

2	Maintenance of Plantations (Kandar)	Khurahah	ha	L/s	2	7000	3rd year maintenance
3	Maintenance of Plantations (Bhauntla)	Bober	ha	L/s	3	10000	3rd year maintenance
4	Maintenance of Plantations (Marinu Ka Phat)	Maloh	ha	L/s	5	10000	5 <sup>th</sup> year maintenance
5	Maintenance of Plantations (Nihari)	Bober	ha	L/s	5	10000	5 <sup>th</sup> year maintenance
6	Maintenance of Plantations (Dohra)	Khurahah	ha	L/s	3	6000	5 <sup>th</sup> year maintenance
7	Maintenance of Plantations (Nered)	Soul	Ha	L/s	3	6000	5 <sup>th</sup> year maintenance
8	Maintenance of Plantations (Gehri Nala)	Bobber	Ha	L/s	5	10000	5 <sup>th</sup> year maintenance
9	Maintenance of Plantations (Kohil Nala)	Maloh	ha	L/s	5	10000	5 <sup>th</sup> year maintenance
				<b>Sub Total</b>		<b>100000</b>	
<b>TOTAL RECURRING</b>						<b>2578800</b>	
<b>TOTAL RECURRING &amp; NON-RECURRING</b>						<b>3538800</b>	
<b>Operational Charges</b>						<b>50000</b>	
<b>GRAND TOTAL</b>						<b>3588800</b>	

ANNUAL PLAN OF OPERATION OF PROTECTED AREA FOR THE YEAR <b>2025-26</b> IN RESPECT OF " <b>BANDLI WILD LIFE SANCTUARY</b> "							
Item of Work		Location	unit	Rate per Unit	Target		Justification
					Phy	Fin	
1	2	3	4	5	6	7	8
<b>A. Non Recurrent Activities</b>							
<b>Infrastructure Development</b>							
<b>Construction of new building &amp; other structure</b>							
<b>Soil &amp; Moisture Conservation</b>							
<b>Check Dam</b>							
1	Belnu Nala	Khurahah	No.	L/S	4	100000	To control soil erosion
2	Kapari Nala	Soul	No.	L/S	4	100000	To control soil erosion
3	Magar Nala	Bobber	No.	L/S	5	125000	To control soil erosion
4	Burahita Nala	Maloh	No.	L/S	7	175000	To control soil erosion
				<b>Sub Total</b>		<b>500000</b>	
<b>Check walls/ Breast walls/ Retaining wall</b>							
1	Khurahah Nala	Khurahah	No.	L/S	4	80000	To control soil erosion
2	Neri Nala	Soul	No.	L/S	4	80000	To control soil erosion
3	Nihari Nala	Bobber	No.	L/S	4	80000	To control soil erosion
4	Sariun Nala	Maloh	No.	L/S	5	100000	To control soil erosion
				<b>Sub Total</b>		<b>340000</b>	
<b>Habitat Improvement</b>							
<b>Enrichment Plantation</b>							
1	DPF Bandli	BandliW LS	ha	40000	2	80000	
				<b>Sub Total</b>		<b>80000</b>	
<b>TOTAL NON RECURRING</b>						<b>920000</b>	
<b>B. Recurrent Activities</b>							
<b>Wildlife Protection and Conservation Activities</b>							
<b>Protection</b>							

1	Deployment of Anti poacher and Antigrezers	Bandli WLS	No.	L/s	5 for 12 month	450400	Deployment of Anti poacher and Antigrezers
2	Fire Watcher	Bandli WLS	No.	L/s	5 for 3 month	110000	Fire Watcher
3	Rescue/ transportation of injured wild animals	Bandli WLS	L/s	L/s	L/s	20000	For better protection of wildlife
4	Hiring of vehicle for patrolling and Naka	Bandli WLS	L/s	L/s	L/s	50000	
5	Control Burning/Cleaning of Pine needles	DPF Bandli	L/S	L/s	L/s	20000	Protection of Flora & Fauna from fire during fire season.
6	Augmentation of salt licks	Bandli WLS	L/s	1	L/S	20000	For wild animals
7	Cleaning of Fire Lines	Bandli WLS	L/S	L/s	L/s	150000	Protection of Flora & Fauna from fire during fire season.
8	Provision of Ration during patrolling	Bandli WLS	L/S	L/s	L/s	20000	
9	Group Patrolling	Bandli WLS	L/S	L/s	L/s	150000	For protection of WLS
				Sub Total		990400	
Education and Awareness Generation							
1	Workshop/ Seminars	Bandli WLS	L/s	L/s	L/s	80000	Workshop regarding wildlife awareness among local peoples residing in and around sanctuary area.
2	Wildlife week and other awareness programme	Bandli WLS	L/s	L/s	L/s	50000	For wildlife awareness among local peoples residing in and around sanctuary area.
3	Office expenses	Bandli WLS	L/s	L/s	L/s	70000	For office use
				Sub Total		200000	
Communication							



1	Communication and connectivity to field staff	W/L Range SNR	No.	Rs.300/- PM	9 person for 12 Month	32400	Mobile connectivity to field staff
				<b>Sub Total</b>		<b>32400</b>	
<b>Nursery</b>							
<b>Upgrading/ Improvement of Nursery</b>							
1	Maloh & Bobber Nursery	Bandli WLS	ha	L/S	L/S	100000	Development, Improvement & raising of plants
2	Collection/Carriage/ Watch & ward of Seized timber	Bandli WLS	L/S	L/S	L/S	20000	
				<b>Sub Total</b>		<b>120000</b>	
<b>Infrastructure of Development</b>							
1	Maint. of Fgd Bobber	Bobber Beat	No.	L/S	L/S	50000	For field staff
2	Maint. of Range office Sundernagar	Sundernagar	No.	L/S	L/S	60000	For staff
				<b>Sub Total</b>		<b>110000</b>	
<b>Maintenance of Roads/ Paths/ Buildings</b>							
1	Maint. of path From Kohilnala to Neri Kanda	Maloh	Km	4	L/S	100000	For better connectivity
2	Maint of Path from Nalani to Neri Kanda	Maloh	Km	4	L/S	100000	For better connectivity
3	Maint of Path from Badhrolu to Jogni Mata	Maloh	Km	4	L/S	75000	For better connectivity
4	Maint of Path from Bharpat to Neri	Saul	Km	2	L/S	75000	For better connectivity
5	Maint. of path From Thana to Belnu	Bobber	Km	3	L/S	100000	For better connectivity
6	Repair of Path from Main road to Bober Nursery Nihari	Bober	Km	0.5	L/S	75000	For better connectivity
7	Dohra to Belnu	Khurahal	Km	3	L/S	100000	For better connectivity
8	Maint. of path From Steran to Siralu	Khurahal	Km	3	L/S	100000	For better connectivity
9	Maint. of path From Rera foot bridge to Basahu	Saul	Km	4	L/S	100000	For better connectivity
				<b>Sub Total</b>		<b>825000</b>	

<b>Habitat Improvement</b>							
<b>Afforestation</b>							
1	Maint. of Plant DPF Bandli	Bober	ha	L/s	2	18000	Ist year Maintenance
2	Maint of Plant DPF Bandli	Bober	ha	L/s	3	15000	2nd year Maintenance
3	Maintenance of Plantations (Kharni)	Saul	ha	L/s	3	8000	4th year Maintenance
4	Maintenance of Plantations (Kandar)	Khurahhal	ha	L/s	2	5000	4th year Maintenance
5	Maintenance of Plantations (Bhauntla)	Bober	ha	L/s	3	8000	4th year Maintenance
				<b>Sub Total</b>		<b>54000</b>	
<b>TOTAL RECURRING</b>						<b>2331800</b>	
<b>TOTAL RECURRING &amp; NON-RECURRING</b>						<b>3251800</b>	
<b>Operational Charges</b>						<b>50000</b>	
<b>GRAND TOTAL</b>						<b>3301800</b>	

ANNUAL PLAN OF OPERATION OF PROTECTED AREA FOR THE YEAR 2026-27 IN RESPECT OF "BANDLI WILD LIFE SANCTUARY"							
Item of Work		Location	unit	Rate per Unit	Target		Justification
					Phy	Fin	
1	2	3	4	5	6	7	8
<b>A. Non Recurrent Activities</b>							
<b>Infrastructure Development</b>							
<b>Construction of new building &amp; other structure</b>							
<b>Soil &amp; Moisture Conservation</b>							
<b>Check Dam</b>							
1	Belnu Nala	Khurahal	No.	L/S	4	80000	To control soil erosion
2	Kapari Nala	Soul	No.	L/S	4	80000	To control soil erosion
3	Magar Nala	Bobber	No.	L/S	5	150000	To control soil erosion
4	Burahita Nala	Maloh	No.	L/S	7	190000	To control soil erosion
	<b>Sub Total</b>					<b>500000</b>	
<b>Habitat Improvement</b>							
<b>Enrichment Plantation</b>							
1	DPF Bandli	Bandli WLS	ha	40000	2	80000	
				<b>Sub Total</b>		<b>80000</b>	
<b>TOTAL NON RECURRING</b>						<b>580000</b>	
<b>B. Recurrent Activities</b>							
<b>Wildlife Protection and Conservation Activities</b>							
<b>Protection</b>							
1	Deployment of Anti poacher and Antigrezers	Bandli WLS	No.	L/s	5 for 12 month	450400	Deployment of Anti poacher and Antigrezers
2	Fire Watcher	Bandli WLS	No.	L/s	5 for 3 month	110000	Fire Watcher
3	Rescue/ transportation of injured wild animals	Bandli WLS	L/s	L/s	L/s	20000	For better protection of wildlife
4	Hiring of vehicle	Bandli WLS	L/s	L/s	L/s	50000	For patrolling and Naka

5	Control Burning/Cleaning of Pine needles	DPF Bandli	L/S	L/s	L/s	20000	Protection of Flora & Fauna from fire during fire season.
6	Augmentation of salt licks	Bandli WLS	L/s	1	L/S	20000	For wild animals
7	Cleaning of Fire Lines	Bandli WLS	L/S	L/s	L/s	150000	Protection of Flora & Fauna from fire during fire season.
8	Provision of Ration during patrolling	Bandli WLS	L/S	L/s	L/s	20000	
9	Group Patrolling	Bandli WLS	L/S	L/s	L/s	150000	For wildlife protection
				Sub Total		990400	
Education and Awareness Generation							
1	Workshop/ Seminars	Bandli WLS	L/s	L/s	L/s	80000	Workshop regarding wildlife awareness among local peoples residing in and around sanctuary area.
2	Wildlife week and other awareness programme	Bandli WLS	L/s	L/s	L/s	50000	For wildlife awareness among local peoples residing in and around sanctuary area.
3	Office expenses	Bandli WLS	L/s	L/s	L/s	70000	Office use
				Sub Total		200000	
Communication							
1	Communication and connectivity to field staff	W/L Range SNR	No.	Rs.300/- PM	9 person for 12 Month	32400	Mobile connectivity to field staff
				Sub Total		32400	
Nursery							
Upgrading/ Improvement of Nursery							
1	Maloh & Bobber Nursery	Bandli WLS	ha	L/S	L/S	100000	Development, Improvement & raising of plants

2	Collection/Carriage/ Watch & ward of Seized timber	Bandli WLS	L/S	L/S	L/S	20000	
				Sub Total		120000	
Infrastructure of Development							
1	Maint. of Fgd NAC Trambri	Bobber Beat	No.	L/S	L/S	50000	For staff
2	Maint. of Range Store	Sunderna gar	No.	L/S	L/S	60000	For staff
				Sub Total		110000	
Maintenance of Roads/ Paths/ Buildings							
1	Maint. of path From Sariun to Neri Kanda	Maloh Beat	Km	4	L/S	100000	For better connectivity
2	Maint. of path From Bhadrolu to Neri Kanda	Maloh Beat	Km	4	L/S	100000	For better connectivity
3	Maint. of Path From Dayoda to Badi Dhar	Maloh Beat	Km	3	L/S	75000	For better connectivity
4	Maint. of path From Kaphari to Kharni	Saul Beat	Km	3	L/S	75000	For better connectivity
5	Maint. of path From Kharni to Badhu	Saul Beat	No.	4	L/S	100000	For better connectivity
6	Maint. of path From Bobber to Bhountla	Bobber Beat	No.	3	L/S	75000	For better connectivity
7	Maint. of path From Bobber to Kandar	Bobber Beat	No.	4	L/S	100000	For better connectivity
8	Maint. of path From Kandar to Neri	Khurahah Beat	No.	4	L/S	100000	For better connectivity
9	Maint. of path From Mujjar to Saul Via Neri	Khurahah Beat	No.	4	L/S	100000	For better connectivity
				Sub Total		825000	
Habitat Improvement							
Afforestation							
1	Maint of Plant DPF Bandli	Bober	ha	L/s	2	18000	Ist year Maintenance
	Maint of Plantation Bandli DPF	Bober	ha	L/s	2	10000	2nd year Maintenance
2	Maint of Plant DPF Bandli	Bober	ha	L/s	3	9000	3 <sup>rd</sup> year Maintenance
3	Maintenance of Plantations (Kharni)	Saul	ha	L/s	3	6000	5th year Maintenance
4	Maintenance of Plantations (Kandar)	Khurahah	ha	L/s	2	4000	5th year Maintenance

5	Maintenance of Plantations (Bhauntla)	Bober	ha	L/s	3	6000	5th year Maintenance
				<b>Sub Total</b>		<b>53000</b>	
<b>TOTAL RECURRING</b>						<b>2330800</b>	
<b>TOTAL RECURRING &amp; NON-RECURRING</b>						<b>2910800</b>	
<b>Operational Charges</b>						<b>50000</b>	
<b>GRAND TOTAL</b>						<b>2960800</b>	

ANNUAL PLAN OF OPERATION OF PROTECTED AREA FOR THE YEAR 2027-28 IN RESPECT OF "BANDLI “WILD LIFE SANCTUARY”							
Item of Work			unit	Rate per Unit	Target		Justification
		Location			Phy	Fin	
1	2	3	4	5	6	7	8
A. Non Recurrent Activities							
Infrastructure Development							
Construction of new building & other structure							
Soil & Moisture Conservation							
Check Dam							
1	C/o Check Dams in Bandli Wild Life Sanctuary	Bober Block Bandli WLS	No.	20000	25	500000	To control soil erosion
				Sub Total		500000	
Habitat Improvement							
1	C/o Water Ponds in in Bandli Wild Life Sanctuary	Bober Block Bandli WLS	No.	25000	8	200000	For wild animals
				Sub Total		200000	
TOTAL NON RECURRING						700000	
B. Recurrent Activities							
Wildlife Protection and Conservation Activities							
Protection							
1	Deployment of Anti poacher and Antigrezers	Bandli WLS	No.	L/s	5 for 12 month	450400	Deployment of Anti poacher and Antigrezers
2	Fire Watcher	Bandli WLS	No.	L/s	5 for 3 month	110000	Fire Watcher
3	Rescue/ transportation of injured wild animals	Bandli WLS	L/s	L/s	L/s	20000	For better protection of wildlife
4	Hiring of vehicle	Bandli WLS	L/s	L/s	L/s	50000	For patrolling and Naka
5	Control Burning/Cleaning of Pine needles	DPF Bandli	L/S	L/s	L/s	20000	Protection of Flora & Fauna from fire during fire season.
6	Augmentation of salt licks	Bandli WLS	L/s	1	L/S	20000	For wild animals

7	Cleaning of Fire Lines	Bandli WLS	L/S	L/s	L/s	150000	Protection of Flora & Fauna from fire during fire season.
8	Provision of Ration during patrolling	Bandli WLS	L/S	L/s	L/s	20000	
9	Group Patrolling	Bandli WLS	L/S	L/s	L/s	150000	For protection of Wildlife
				Sub Total		990400	
Education and Awareness Generation							
1	Workshop/ Seminars	Bandli WLS	L/s	L/s	L/s	80000	Workshop regarding wildlife awareness among local peoples residing in and around sanctuary area.
2	Wildlife week and other awarness programme	Bandli WLS	L/s	L/s	L/s	50000	For wildlife awareness among local peoples residing in and around sanctuary area.
3	Office expenses	Bandli WLS	L/s	L/s	L/s	70000	Office use
				Sub Total		200000	
Communication							
1	Communication and connectivity to field staff	W/L Range SNR	No.	Rs.300/- PM	9 person for 12 Month	32400	Mobile connectivity to field staff
				Sub Total		32400	
Nursery							
Upgrading/ Improvement of Nursery							
1	Maloh & Bobber Nursery	Bandli WLS	ha	L/S	L/S	100000	Development, Improvement & raising of plants
2	Collection/Carriage/ Watch & ward of Seized timber	Bandli WLS	L/S	L/S	L/S	20000	
				Sub Total		120000	
Infrastructure of Development							



1	Maint. of Fgd Saul	Saul Beat	No.	L/S	L/S	50000	For staff
2	Ticket counter at Maloh	Maloh	No.	L/S	L/S	60000	For visitors
				<b>Sub Total</b>		<b>110000</b>	
<b>Maintenance of Roads/ Paths/ Buildings</b>							
1	Maint. of path From Kohilnala to Neri Kanda	Maloh	Km	4	L/S	100000	For better connectivity
2	Maint of Path from Nalani to Neri Kanda	Maloh	Km	4	L/S	100000	For better connectivity
3	Maint of Path from Badhrolu to Jogni Mata	Maloh	Km	4	L/S	75000	For better connectivity
4	Maint of Path from Bharpat to Neri	Saul	Km	2	L/S	75000	For better connectivity
5	Maint. of path From Thana to Belnu	Bobber	Km	3	L/S	100000	For better connectivity
6	Repair of Path from Main road to Bober Nursery Nihari	Bober	Km	0.5	L/S	75000	For better connectivity
7	Dohra to Belnu	Khurahah	Km	3	L/S	100000	For better connectivity
8	Maint. of path From Steran to Siralu	Khurahah	Km	3	L/S	100000	For better connectivity
9	Maint. of path From Rera foot bridge to Basahu	Saul	Km	4	L/S	100000	For better connectivity
				<b>Sub Total</b>		<b>825000</b>	
<b>Habitat Improvement</b>							
<b>Afforestation</b>							
1	Maint. of Plant DPF Bandli	Bober	ha	L/s	2	10000	2nd year Maintenance
2	Maint. of Plantation Bandli DPF	Bober	ha	L/s	2	6000	3 <sup>rd</sup> year Maintenance
3	Maint. of Plant DPF Bandli	Bober	ha	L/s	3	7500	4 <sup>th</sup> year Maintenance
				<b>Sub Total</b>		<b>23500</b>	
<b>TOTAL RECURRING</b>						<b>2301300</b>	
<b>TOTAL RECURRING &amp; NON-RECURRING</b>						<b>3001300</b>	
<b>Operational Charges</b>						<b>50000</b>	
<b>GRAND TOTAL</b>						<b>3051300</b>	

ANNUAL PLAN OF OPERATION OF PROTECTED AREA FOR THE YEAR 2028-29 IN RESPECT OF "BANDLI WILD LIFE SANCTUARY"							
Item of Work		Location	unit	Rate per Unit	Target		Justification
					Phy	Fin	
1	2	3	4	5	6	7	8
<b>A. Non Recurrent Activities</b>							
<b>Infrastructure Development</b>							
<b>Construction of new building &amp; other structure</b>							
<b>Soil &amp; Moisture Conservation</b>							
<b>Check Dam</b>							
1	C/o Check Dams in Bandli Wild Life Sanctuary	Bober Block Bandli WLS			L/S	500000	To control soil erosion
				<b>Sub Total</b>		<b>500000</b>	
<b>Habitat Improvement</b>							
1	C/o Check walls in Bandli Wild Life Sanctuary	Bober Block Bandli WLS			L/S	300000	To control soil erosion
				<b>Sub Total</b>		<b>300000</b>	
<b>TOTAL NON RECURRING</b>						<b>800000</b>	
<b>B. Recurrent Activities</b>							
<b>Wildlife Protection and Conservation Activities</b>							
<b>Protection</b>							
1	Deployment of Anti poacher and Antigrezers	Bandli WLS	No.	L/s	5 for 12 month	450400	Deployment of Anti poacher and Antigrezers
2	Fire Watcher	Bandli WLS	No.	L/s	5 for 3 month	110000	Fire Watcher
3	Rescue/ transportation of injured wild animals	Bandli WLS	L/s	L/s	L/s	20000	For better protection of wildlife
4	Hiring of vehicle	Bandli WLS	L/s	L/s	L/s	50000	For patrolling and Naka
5	Control Burning/Cleaning of Pine needles	DPF Bandli	L/S	L/s	L/s	20000	Protection of Flora & Fauna from fire during fire season.
6	Augmentation of salt licks	Bandli WLS	L/s	1	L/S	20000	For wild animals

7	Cleaning of Fire Lines	Bandli WLS	L/S	L/s	L/s	150000	Protection of Flora & Fauna from fire during fire season.
8	Provision of Ration during patrolling	Bandli WLS	L/S	L/s	L/s	20000	
9	Group Patrolling	Bandli WLS	L/S	L/s	L/s	150000	For Protection of WLS
				Sub Total		990400	
Education and Awareness Generation							
1	Workshop/ Seminars	Bandli WLS	L/s	L/s	L/s	80000	Workshop regarding wildlife awareness among local peoples residing in and around sanctuary area.
2	Wildlife week and other awareness programme	Bandli WLS	L/s	L/s	L/s	50000	For wildlife awareness among local peoples residing in and around sanctuary area.
3	Office expenses	Bandli WLS	L/s	L/s	L/s	70000	For office use
				Sub Total		200000	
Communication							
1	Communication and connectivity to field staff	W/L Range SNR	No.	Rs.300/- PM	9 person for 12 Month	32400	Mobile connectivity to field staff
				Sub Total		32400	
Nursery							
Upgrading/ Improvement of Nursery							
1	Maloh & Bobber Nursery	Bandli WLS	ha	L/S	L/S	100000	Development, Improvement & raising of plants
2	Collection/Carriage/W atch & ward of Seized timber	Bandli WLS	L/S	L/S	L/S	20000	
				Sub Total		120000	
Infrastructure of Development							
1	Maint. of Fgd qtr Bober	Saul Beat	No.	L/S	L/S	50000	For staff

2	Guard quarter at Maloh	Maloh	No.	L/S	L/S	100000	For staff
				<b>Sub Total</b>		<b>150000</b>	
<b>Maintenance of Roads/ Paths/ Buildings</b>							
1	Maint. of path From Kohilnala to Neri Kanda	Maloh	Km	4	L/S	100000	For better connectivity
2	Maint of Path from Nalani to Neri Kanda	Maloh	Km	4	L/S	100000	For better connectivity
3	Maint of Path from Badhrolu to Jogni Mata	Maloh	Km	4	L/S	75000	For better connectivity
4	Maint of Path from Bharpat to Neri	Saul	Km	2	L/S	75000	For better connectivity
5	Maint. of path From Thana to Belnu	Bobber	Km	3	L/S	100000	For better connectivity
6	Repair of Path from Main road to Bober Nursery Nihari	Bober	Km	0.5	L/S	75000	For better connectivity
7	Dohra to Belnu	Khurahah	Km	3	L/S	100000	For better connectivity
8	Maint. of path From Steran to Siralu	Khurahah	Km	3	L/S	100000	For better connectivity
9	Maint. of path From Rera foot bridge to Basahu	Saul	Km	4	L/S	100000	For better connectivity
				<b>Sub Total</b>		<b>825000</b>	
<b>Habitat Improvement</b>							
<b>Afforestation</b>							
1	Maint of Plant DPF Bandli	Bober	ha	L/s	2	6000	3rd year Maintenance
	Maint of Plantation Bandli DPF	Bober	ha	L/s	2	2500	4 <sup>th</sup> year Maintenance
2	Maint of Plant DPF Bandli	Bober	ha	L/s	3	6000	5 <sup>th</sup> year Maintenance
				<b>Sub Total</b>		<b>14500</b>	
<b>TOTAL RECURRING</b>						<b>2332300</b>	
<b>TOTAL RECURRING &amp; NON-RECURRING</b>						<b>3132300</b>	
<b>Operational Charges</b>						<b>50000</b>	
<b>GRAND TOTAL</b>						<b>3182300</b>	

ANNUAL PLAN OF OPERATION OF PROTECTED AREA FOR THE YEAR <b>2029-30</b> IN RESPECT OF " <b>BANDLI WILD LIFE SANCTUARY</b> "							
Item of Work		Location	unit	Rate per Unit	Target		Justification
					Phy	Fin	
1	2	3	4	5	6	7	8
<b>A. Non Recurrent Activities</b>							
<b>Infrastructure Development</b>							
<b>Construction of new building &amp; other structure</b>							
<b>Soil &amp; Moisture Conservation</b>							
<b>Check Dam</b>							
1	C/o Check Dams in Bandli Wild Life Sanctuary	Bober Block Bandli WLS	No.	20000	20	400000	To control soil erosion
				<b>Sub Total</b>		<b>400000</b>	
<b>Habitat Improvement</b>							
1	C/o Check walls in in Bandli Wild Life Sanctuary	Bober Block Bandli WLS	No.	20000	20	400000	
				<b>Sub Total</b>		<b>400000</b>	
<b>TOTAL NON RECURRING</b>						<b>800000</b>	
<b>B. Recurrent Activities</b>							
<b>Wildlife Protection and Conservation Activities</b>							
<b>Protection</b>							
1	Deployment of Anti poacher and Antigrezers	Bandli WLS	No.	L/s	5 for 12 month	450400	Deployment of Anti poacher and Antigrezers
2	Fire Watcher	Bandli WLS	No.	L/s	5 for 3 month	110000	Fire Watcher
3	Rescue/ transportation of injured wild animals	Bandli WLS	L/s	L/s	L/s	20000	For better protection of wildlife
4	Hiring of vehicle	Bandli WLS	L/s	L/s	L/s	50000	For patrolling and Naka
5	Control Burning/Cleaning of Pine needles	DPF Bandli	L/S	L/s	L/s	20000	Protection of Flora & Fauna from fire during fire season.
6	Augmentation of salt licks	Bandli WLS	L/s	1	L/S	20000	For wild animals

7	Cleaning of Fire Lines	Bandli WLS	L/S	L/s	L/s	150000	Protection of Flora & Fauna from fire during fire season.
8	Provision of Ration during patrolling	Bandli WLS	L/S	L/s	L/s	20000	
9	Group Patrolling	Bandli WLS	L/S	L/s	L/s	150000	For protection of Wildlife
				Sub Total		990400	
Education and Awareness Generation							
1	Workshop/ Seminars	Bandli WLS	L/s	L/s	L/s	80000	Workshop regarding wildlife awareness among local peoples residing in and around sanctuary area.
2	Wildlife week and other awareness programme	Bandli WLS	L/s	L/s	L/s	50000	For wildlife awareness among local peoples residing in and around sanctuary area.
3	Office expenses	Bandli WLS	L/s	L/s	L/s	70000	
				Sub Total		200000	
Communication							
1	Communication and connectivity to field staff	W/L Range SNR	No.	Rs.300/- PM	9 person for 12 Month	32400	Mobile connectivity to field staff
				Sub Total		32400	
Nursery							
Upgrading/ Improvement of Nursery							
1	Maloh & Bobber Nursery	Bandli WLS	Ha	L/S	L/S	100000	Development, Improvement & raising of plants
2	Collection/Carriage/ Watch & ward of Seized timber	Bandli WLS	L/S	L/S	L/S	20000	
				Sub Total		120000	
Infrastructure of Development							
1	Maint. of Fgd Khurahal	Saul Beat	No.	L/S	L/S	50000	For staff

2	Entry Gate At Maloh	Maloh	No.	L/S	L/S	200000	For visitors
				<b>Sub Total</b>		<b>250000</b>	
<b>Maintenance of Roads/ Paths/ Buildings</b>							
1	Maint. of path From Kohilnala to Neri Kanda	Maloh	Km	4	L/S	100000	For better connectivity
2	Maint of Path from Nalani to Neri Kanda	Maloh	Km	4	L/S	100000	For better connectivity
3	Maint of Path from Badhrolu to Jogni Mata	Maloh	Km	4	L/S	75000	For better connectivity
4	Maint of Path from Bharpat to Neri	Saul	Km	2	L/S	75000	For better connectivity
5	Maint. of path From Thana to Belnu	Bobber	Km	3	L/S	100000	For better connectivity
6	Repair of Path from Main road to Bober Nursery Nihari	Bober	Km	0.5	L/S	75000	For better connectivity
7	Dohra to Belnu	Khurahah	Km	3	L/S	100000	For better connectivity
8	Maint. of path From Steran to Siralu	Khurahah	Km	3	L/S	100000	For better connectivity
9	Maint. of path From Rera foot bridge to Basahu	Saul	Km	4	L/S	100000	For better connectivity
				<b>Sub Total</b>		<b>825000</b>	
<b>Habitat Improvement</b>							
<b>Afforestation</b>							
1	Maint of Plant DPF Bandli	Bober	ha	L/s	2	5000	4th year Maintenance
2	Maint of Plantation Bandli DPF	Bober	ha	L/s	2	4000	5 <sup>th</sup> year Maintenance
				<b>Sub Total</b>		<b>9000</b>	
<b>TOTAL RECURRING</b>						<b>2426800</b>	
<b>TOTAL RECURRING &amp; NON-RECURRING</b>						<b>3226800</b>	
<b>Operational Charges</b>						<b>50000</b>	
<b>GRAND TOTAL</b>						<b>3276800</b>	

ANNUAL PLAN OF OPERATION OF PROTECTED AREA FOR THE YEAR 2030-31 IN RESPECT OF "BANDLI WILD LIFE SANCTUARY"							
Item of Work		Location	unit	Rate per Unit	Target		Justification
					Phy	Fin	
1	2	3	4	5	6	7	8
<b>A. Non Recurrent Activities</b>							
<b>Infrastructure Development</b>							
<b>Construction of new building &amp; other structure</b>							
<b>Soil &amp; Moisture Conservation</b>							
<b>Check Dam</b>							
1	Nihri Nala	Khurahah	No.	L/S	1	25000	To control soil erosion
2	Kharni Nala	Soul	No.	L/S	1	25000	To control soil erosion
3	Nagalth Nala	Bobber	No.	L/S	1	25000	To control soil erosion
4	Kohil Nala	Maloh	No.	L/S	1	25000	To control soil erosion
5	Rohari Nala	Saul	No	L/S	1	20000	To control soil erosion
6	Kandi Nala	Bober	No	L/S	2	40000	To control soil erosion
7	Kandar Nala	Khurahah	No	L/S	2	40000	To control soil erosion
8	Sariun Nala	Maloh	No	L/S	2	40000	To control soil erosion
				<b>Sub Total</b>		<b>240000</b>	
<b>Habitat Improvement</b>							
1	C/o Water ponds in Bandli WLS	Bober Block Bandli WLS			L/S	<b>400000</b>	For wild animals
2	New Plantation		ha	L/s	5	<b>250000</b>	
				<b>Sub Total</b>		<b>650000</b>	
<b>TOTAL NON RECURRING</b>						<b>890000</b>	
<b>B. Recurrent Activities</b>							
<b>Wildlife Protection and Conservation Activities</b>							
<b>Protection</b>							
1	Deployment of Anti poacher and Antigrezers	Bandli WLS	No.	L/s	5 for 12 month	450400	Deployment of Anti poacher and Antigrezers



2	Fire Watcher	Bandli WLS	No.	L/s	5 for 3 month	110000	Fire Watcher
3	Rescue/ transportation of injured wild animals	Bandli WLS	L/s	L/s	L/s	20000	For better protection of wildlife
4	Hiring of vehicle	Bandli WLS	L/s	L/s	L/s	50000	For patrolling and Naka
5	Control Burning/Cleaning of Pine needles	DPF Bandli	L/S	L/s	L/s	20000	Protection of Flora & Fauna from fire during fire season.
6	Augmentation of salt licks	Bandli WLS	L/s	1	L/S	20000	For wild animals
7	Cleaning of Fire Lines	Bandli WLS	L/S	L/s	L/s	150000	Protection of Flora & Fauna from fire during fire season.
8	Provision of Ration during patrolling	Bandli WLS	L/S	L/s	L/s	20000	
9	Group Patrolling	Bandli WLS	L/S	L/s	L/s	150000	For wildlife protection
				Sub Total		990400	
Education and Awareness Generation							
1	Workshop/ Seminars	Bandli WLS	L/s	L/s	L/s	80000	Workshop regarding wildlife awareness among local peoples residing in and around sanctuary area.
2	Wildlife week and other awareness programme	Bandli WLS	L/s	L/s	L/s	50000	For wildlife awareness among local peoples residing in and around sanctuary area.
3	Office expenses	Bandli WLS	L/s	L/s	L/s	70000	For office use
				Sub Total		200000	
Communication							
1	Communication and connectivity to field staff	W/L Range SNR	No.	Rs.300/ - PM	9 person for 12 Months	32400	Mobile connectivity to field staff
				Sub Total		32400	

Nursery							
Upgrading/ Improvement of Nursery							
1	Maloh & Bobber Nursery	Bandli WLS	ha	L/S	L/S	100000	Development, Improvement & raising of plants
2	Collection/Carriage/ Watch & ward of Seized timber	Bandli WLS	L/S	L/S	L/S	20000	
				Sub Total		120000	
Infrastructure of Development							
1	Maint. of Range office and residence	Range compound	No.	L/S	L/S	200000	For staff
2	Maint of Information centre At Maloh	Bandli WLS	No.	L/S	L/S	50000	For visitors
				Sub Total		250000	
Maintenance of Roads/ Paths/ Buildings							
1	Maint. of path From Sariun to Neri Kanda	Maloh Beat	Km	4	L/S	100000	For better connectivity
2	Maint. of path From Bhadrolu to Neri Kanda	Maloh Beat	Km	4	L/S	100000	For better connectivity
3	Maint. Of Path From Dayoda to Badi Dhar	Maloh Beat	Km	3	L/S	75000	For better connectivity
4	Maint. of path From Kaphari to Kharni	Saul Beat	Km	3	L/S	75000	For better connectivity
5	Maint. of path From Kharni to Badhu	Saul Beat	No.	4	L/S	100000	For better connectivity
6	Maint. of path From Bobber to Bhountla	Bobber Beat	No.	3	L/S	75000	For better connectivity
7	Maint. of path From Bobber to Kandar	Bobber Beat	No.	4	L/S	100000	For better connectivity
8	Maint. of path From Kandar to Neri	Khurahal Beat	No.	4	L/S	100000	For better connectivity
9	Maint. of path From Mujjar to Saul Via Neri	Khurahal Beat	No.	4	L/S	100000	For better connectivity
				Sub Total		825000	
Habitat Improvement							
Afforestation							
1	Maint of Plant DPF Bandli	Bober	ha	L/s	2	4000	5 <sup>th</sup> year Maintenance
				Sub Total		204000	
TOTAL RECURRING						2421400	
TOTAL RECURRING & NON-RECURRING						3311400	

<b>Operational Charges</b>				<b>50000</b>	
<b>GRAND TOTAL</b>				<b>3361400</b>	

Year wise and Component wise Abstract of APOs in respect of Bandli WLS											
Component/ Year	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	Total
<b>A. Non Recurrent Activities</b>											
<b>Infrastructure Development</b>											
Construction of New building & other structures	350000	0	0	0	0	0	0	0	0	0	350000
Soil & Moisture Conservation	920000	840000	840000	840000	840000	580000	700000	800000	800000	240000	7400000
Habitat Improvement	76000	120000	120000	120000	80000	0	0	0	0	650000	1166000
<b>TOTAL NON RECURRING</b>	<b>1346000</b>	<b>960000</b>	<b>960000</b>	<b>960000</b>	<b>920000</b>	<b>580000</b>	<b>700000</b>	<b>800000</b>	<b>800000</b>	<b>890000</b>	<b>8916000</b>
<b>B. Recurrent Activities</b>											0
<b>Wildlife Protection and Conservation Activities</b>	1035500	990400	990400	990400	990400	990400	990400	990400	990400	990400	9949100
Education and Awareness Generation	0	200000	200000	200000	200000	200000	200000	200000	200000	200000	1800000
Communication	32400	32400	32400	32400	32400	32400	32400	32400	32400	32400	324000
Maint. Of Path/ Road	1020000	825000	825000	825000	825000	825000	825000	825000	825000	825000	8445000
Staff welfare activities	20000	0	0		0	0	0	0	0	0	20000
Infrastructure Development	890000	150000	150000	110000	110000	110000	110000	150000	250000	250000	2280000
Office Expenses	50000	0	0	0	0	0	0	0	0	0	50000
Nursery Maintenance	0	120000	120000	120000	120000	120000	120000	120000	120000	120000	1080000
Habitat Improvement	150000	104000	104000	100000	54000	53000	23500	14500	9000	4000	616000
<b>TOTAL RECURRING</b>	<b>3197900</b>	<b>2421800</b>	<b>2421800</b>	<b>2377800</b>	<b>2331800</b>	<b>2330800</b>	<b>2301300</b>	<b>2332300</b>	<b>2426800</b>	<b>2421800</b>	<b>24564100</b>
<b>TOTAL RECURRING &amp; NON- RECURRING</b>	<b>4543900</b>	<b>3381800</b>	<b>3381800</b>	<b>3337800</b>	<b>3251800</b>	<b>2910800</b>	<b>3001300</b>	<b>3132300</b>	<b>3226800</b>	<b>3311800</b>	<b>33480100</b>
Operational Charges	20000	40000	40000	50000	50000	50000	50000	50000	50000	50000	450000
<b>GRAND TOTAL</b>	<b>4563900</b>	<b>3421800</b>	<b>3421800</b>	<b>3387800</b>	<b>3301800</b>	<b>2960800</b>	<b>3051300</b>	<b>3182300</b>	<b>3276800</b>	<b>3361800</b>	<b>33930100</b>

## Annexure- IX

### Detail of Plantations in Bandli WLS

S. No.	Beat	Year of Plantation	Name of Scheme	Name of Plantation area	Area (Hac.)	Remarks
1	Maloh	2016-17	Kol Dam	Badhrolu	5ha	
2	Bober	2016-17	Kol Dam	Magar Nala	4 ha	
3	Khurahhal	2016-17	Kol Dam	Mujhar	4 ha	
4	Maloh	2017-18	Kol Dam	Sariun Nala	3 ha	
5	Bober	2017-18	Kol Dam	Nokhi Nala	3 ha	
6	Bober	2018-19	Kol Dam	Gehri Nala	5 ha	
7	Maloh	2018-19	Kol Dam	Kohil Nala	5ha	
8	Saul	2018-19	Kol Dam	Nerad	3ha	
9	Bober	2018-19	CSS	Nihari	5ha	
10	Maloh	2018-19	CSS	Marinu Ka phat	5 ha	
11	Khurahhal	2018-19	CSS	Dohra	3 ha	
12	Saul	2020-21	CSS	Kharni	3 ha	
13	Khurahhal	2020-21	CSS	Kandar	2 ha	
14	Bober	2020-21	CSS	Bhauntla	3 ha	

## Annexure - X

### List of Forest Nurseries in Bandli WLS

S. No.	Name of Nursery	Beat	Area	Type	Remarks
1	Bober	Bober	1 ha	Permanent	-
2	Maloh	Maloh	.05 ha	Temporary	-
3	Fagla	Bober	.12	Temporary	Presently non functional

**Annexure - XI**  
**Religious Places in Bandli WLS**

<b>S. No.</b>	<b>Maloh Beat</b>	<b>Bober Beat</b>	<b>Saul Beat</b>	<b>Khurahhal Beat</b>
<b>1</b>	Jogni Mata	-	-	Steran

**Annexure - XII**  
**List of Water Resource in Bandli WLS**

<b>S.No</b>	<b>Maloh Beat</b>	<b>Bober Beat</b>	<b>Saul Beat</b>	<b>Khurahhal Beat</b>
1	Bhoura Nala ( Nalani)	Magar Nala ( Nihari)	Saul Khad	Saul Khad
2	Sariun Nala	Belnu ( Natural Spring)	Natural Spring at Nerad	Natural Spring at Dohra
3		Bhumka Nala	Kharni Nala	

### Annexure – XIII

#### List of Fire lines in Bandli WLS

S. No.	Beat	Name of Fire Line	Length in KM
1	Maloh	Along Bandli Dhar	1 Km
2	Maloh	Thanda Pani to Kohil Nala	1.5 Km
3	Bober	Thana to kanda	1 Km
4	Bober & Saul	Bober to neri	4 Km
5	Khurahah	Neri to Kandar	4 Km
6	Bober	Bober to Thana	1.5 Km
7	Bober	Bober to watch Tower	1 Km
8	Saul	Neri to Kanda	2 Km
9	Bober	Thana to Kandar	2.5 Km
10	Khurahah	Neri to Gehra	2 Km

### Annexure –XIV

#### MEE Score Card bandli WLS

Framework Element Number	Framework Element Name	Number of Questions (a)	Maximum Mark per question (b)	Total (a x b)	Marks obtained for the Element	Overall Score
1.	Context	03	10	30	15.0	45.83%
2.	Planning	08	10	80	32.5	
3.	Inputs	06	10	60	27.5	
4.	Process	04	10	40	20.0	
5.	Outputs	04	10	40	17.5	
6.	Outcomes	05	10	50	25.0	
Total		30		300	137.5	

## STRENGTHS

- ❖ Mobile allowances provided to all officer and frontline staff for using personal mobiles for protection and management purposes
- ❖ For last 3 years, the PA has received adequate funds from CAMPA and CSS
- ❖ For last 3 years, the PA has no record of HWC cases

## WEAKNESSES

- New Management Plan is under preparation.
- No zonation (core/ buffer / tourist) and should include the proposed ESZ
- No corridors and network/ security/ landscape plans.
- No contribution from NGOs (funds/in kind) for PA management
- No appreciation / incentives for good work done by field staff

## ACTIONABLE POINTS

- Systematic monitoring of threats such as fire, illicit felling, lopping, felling, encroachment should be carried out regularly
- Wildlife Management Plan should be as per WII guidelines and should include ESZ proposal and pursue early finalization for the same.
- Systematic baseline data on flora and fauna should be generated as early as possible. More specifically on RET and IUCN Red List and IWPA Schedule Species
- Committee should be constituted for involvement of local communities in Conservation Plans and Programmes of the PA
- Communication equipment such as wireless to be procured and used for effective patrolling & coordination with enforcement / line agencies to be enhanced
- Better coordination with line departments to tap state / district funds
- Integrated landscape management plan to be developed
- Risk Plan and Protection Plans to be developed
- Vacant posts to be filled up and better deployment of personnel at various levels should be ensured for effective protection
- Officers and Frontline staff should be trained in wildlife management



- Efforts to be made for the timely release of CSS funds from the State
- PA manager to ensure effective public participation in PA management
- Monitoring of Pre and Post scenario on reduction of anthropogenic pressures on PA with regard schemes such as distribution of induction heaters / LPG
- Expedite development of PA website and its linking with State Forest Department website
- There is a potential for ecotourism by revamping century old FRH at Nagini & Dorah nallah with due publicity to attract visitors. Visitors Feedback Register must be maintained.
- The MEE Committee during its visit to the site held informal discussions with local communities (Uppradhan) who were willing to participate in conservation of PA and suggested renovation of the old FRH, approach road & places of tourist importance, publicity and adequate
- Detailed plans have to be drawn up to adapt management for climate change by coordination with the HP SCC.

#### Annexure –XV

##### Check list of Plants of Bandli Wildlife Sanctuary

S. No	Botanical Name	Common Name
1	<i>Adhatoda vasica</i>	Basuti
2	<i>Agave Americana</i>	Ramban
3	<i>Artemisia vulgaris</i>	
4	<i>Aegle marmalos</i>	Bel
5	<i>Acacia catechu</i>	Khair
6	<i>Albizia stipulate</i>	Siris
7	<i>Albizia lebbek</i>	Ohi
8	<i>Aparagus racemosus</i>	Sansali
9	<i>Bambusa nutas</i>	Pacca bans
10	<i>Bauhinia vahlii</i>	Tor
11	<i>Bauhinia varigata</i>	Kachnar
12	<i>Berberis aristat</i>	Kahmal
13	<i>Bombax ceiba</i>	Simbal
14	<i>Boenninghusania albiflora</i>	Pissomar
15	<i>Butea monosperma</i>	Dhak
16	<i>Caesalpinia sepiaria</i>	Kandheri
17	<i>Caltotropis procera</i>	Aak
18	<i>Carrisa opaca</i>	Karonda,

		Garna
19	<i>Canabis sativa</i>	Bhang
20	<i>Casiia fistula</i>	Amaltas
21	<i>Cassia tora</i>	Elu
22	<i>Cedrela toona</i>	Daral
23	<i>Celtis australis</i>	Khirak
24	<i>Cinnamomum tamala</i>	Tejpatta
25	<i>Citrus medica</i>	Jhamirdi
26	<i>Clematis gouriana</i>	-
27	<i>Clerodendronserratum</i>	-
28	<i>Coelbrookia oppositifolia</i>	-
29	<i>Coriaria nepalensis</i>	Masuri
30	<i>Cornus capitata</i>	Kreeva
31	<i>Dlabergia sissoo</i>	Shisham
32	<i>Debregessia hypoleuca</i>	Siaru
33	<i>Dendrocalamus strictus</i>	Bans
34	<i>Desmodium spp</i>	Safed kathi
35	<i>Dodonea viscoa</i>	Mender
36	<i>Ehretia acuminata</i>	Punna
37	<i>Elaegnus umbellate</i>	Gieae
38	<i>Engelhrdtia coelbrookiana</i>	Sama
39	<i>Erythrina suberosa</i>	Pariara
40	<i>Eucalyptus spp</i>	Safeda
41	<i>Euphorbia royleana</i>	Thor
42	<i>Ficus palmate</i>	Fegra
43	<i>Ficus hispida</i>	Debra
44	<i>Ficus religiosa</i>	Pipal
45	<i>Ficus roxburghii</i>	Trambal
46	<i>Ficus benghalensis</i>	Bar
47	<i>Flacourita ramontchi</i>	Kangu
48	<i>Girardiana hetrephylla</i>	Kugus
49	<i>Grewia oppositifolia</i>	Biul
50	<i>Hedra helix</i>	Grumru
51	<i>Hypericum cernum</i>	-
52	<i>Jatropha cucus</i>	Jaballota
53	<i>Indigophera spp</i>	Kathi
54	<i>Jasminum pubescence</i>	Chameli
55	<i>Kasminum humile</i>	-
56	<i>Lennea grandis</i>	Salambra
57	<i>Litsea spp</i>	Paror
58	<i>Mallotus phillipinensis</i>	Kamabal
59	<i>Mangifera indica</i>	Aam
60	<i>Melia azedarek</i>	Darek
61	<i>Moringa pterygospermum</i>	Suhanjna
62	<i>Morus alba</i>	Tut
63	<i>Moorus serrata</i>	Pharai tu

64	<i>Morraya koengii</i>	Gandhela
65	<i>Myrica nagi</i>	Kafal
66	<i>Myrsine semiserata</i>	-
67	<i>Merium odorum</i>	Kaner
68	<i>Nyctanthus arbortritis</i>	-
69	<i>Olea grandiflora</i>	-
70	<i>Phoebe lanceolata</i>	Bhadrol
71	<i>Phoenix hunilis</i>	Khajare
72	<i>Phyllanthus emblica</i>	Amla
73	<i>Pinus roxburghii</i>	Chil
74	<i>Pistacia integrimma</i>	Kakre
75	<i>Princepia utilis</i>	Bhekhal
76	<i>Prunus padum</i>	Paja
77	<i>Punica granatum</i>	Daru
78	<i>Pyrus pashia</i>	Kainth
79	<i>Quercus incana</i>	Ban
80	<i>Randia tetrasperma</i>	-
81	<i>Reinwardtia trigyna</i>	Basanti phool
82	<i>Rhododenrdron arboreim</i>	Burah
83	<i>Rosa moschata</i>	Kuja
84	<i>Rubus ellipticus</i>	Akha
85	<i>Sapindus mokorossi</i>	Reetha
86	<i>Sapium sebiferum</i>	Dudhla
87	<i>Solanum indicum</i>	-
88	<i>Spondias mangifera</i>	Ambuara
89	<i>Vitex negundo</i>	Banah
90	<i>Xylosma longifollia</i>	Drandu
91	<i>Zizyphus spp.</i>	Ber
92	<i>Zanthoxylum alatum</i>	Tirmira

#### Annexure –XVI

#### Check list of Animals of Bandli Wildlife Sanctuary

S. No.	Name of spp	Zoological name
1	Leopard	<i>Panrthera pardus</i>
2	Leopard cat	<i>Felis beghalensis</i>
3	Jungle cat	<i>Felis chaus</i>

4	Himalayan Palm civet	<i>Pagoma larvata</i>
5	Himalayan yellow throated marten	<i>Martes flavigula</i>
6	Indian hare	<i>Lepus nigricollis</i>
7	Porcupine	<i>Hystrix indica</i>
8	Flying squirrel	<i>Petaurista petaurista</i>
9	Monkey	<i>Macaca mullata</i>
10	Langoor	<i>Presbytis entellus</i>
11	Goral	<i>Nemorhaedus goral</i>
12	Barking deer	<i>Muntiacus muntjac</i>
13	Jackal	<i>Canis aureus</i>
14	Indian fox	<i>Vulpus benghalensis</i>
15	Monitor lizard	<i>Varanus benghalensis</i>
16	Common krait snake	<i>Bungarus caeruleus</i>
17	Rat snake	<i>Ptyas mucosus</i>

#### Annexure –XVI

##### Birds of Bandli Wildlife Sanctuary

S. No.	Common name	Scientific name
1	Jungle crow	<i>Corvus macrorhynchos</i>
2	Peafowl	<i>Pavo cristatus</i>
3	Red jungle fowl	<i>Gallus gallus</i>
4	Kalij pheasant	<i>Gennaeus Albicristatus</i>
5	Cheerv pheasant	<i>Catreus wallichii</i>
6	Common myna	<i>Acridotheres tristis</i>
7	Brahmminy myna	<i>Sturnus pagodarum</i>
8	Rock bunting	<i>Emberza stracheyi</i>
9	White cheeked bulbul	<i>Pycnonotus</i>

		<i>leucogenus</i>
10	Red ented bulbul	<i>Pycnonotus cafer</i>
11	Black bulbul	<i>Hypsipetes madagascariensis</i>
12	Black drongo	<i>Dicrurus adsimilis</i>
13	White breasted king fisher	<i>Halcyon symrenensis</i>
14	Black partridge	<i>Franconius francolonius</i>
15	Grey partridge	<i>Franconius pondicerianus</i>
16	Blossom headed parakeet	<i>Psittacula cyanocephala</i>
17	Slaty headed parakeet	<i>Psittacula spp</i>
18	Rd wattled lapwing	<i>Veneis indicus</i>
19	Hoopoe	<i>Upupa epops</i>
20	Egyptain vulture	<i>Neophron percnopterus</i>
21	Blue whistling thrush	<i>Myiophonus caerulus</i>
22	Common Indian nightjar	<i>Caprimulgus asiatica</i>
23	Tree pie	<i>Dendrocitta vagabunda</i>
24	White backed vulture	<i>Gyps bengalensis</i>
25	Blue throated barbet	<i>Megalaima asiatica</i>
26	White browed fantail	<i>Rhipidura aureola</i>
27	Paradise flycatcher	<i>Terpsiphone paradise</i>
28	Pied bush chat	<i>Saxicola caprata</i>
29	Indian robin	<i>Saxicoloides fulicata</i>
30	Magpie robin	<i>Copsychus saularis</i>
31	Black kite	<i>Milvus migrans</i>
32	Rock pigeon	<i>Columba livia</i>
33	House sparrow	<i>Passer domesticus</i>
34	Kestrel	<i>Falco tinnunculus</i>
35	Spotted dove	<i>Streptopelia chinensis</i>
36	Crimson breasted barbet	<i>Megalaima haemacephala</i>
37	Spotted owlet	<i>Athene brama</i>
38	Golden oriole	<i>Oriolus oriolus</i>
39	Grey tit	<i>Parus major</i>

40	Verditor flycatcher	<i>Muscicapa thalassina</i>
41	Spotted forkial	<i>Enicurus maculates</i>
42	Common quail	<i>Coturnix coturnix</i>
43	Koel	<i>Eudynamys scolopacea</i>
44	Indian great horned owl	<i>Bubo bubo</i>
45	Jungle babbler	<i>Turnides striatus</i>
46	Chukor	<i>Caccabus chukor</i>
47	Yellow billed blue magpie	<i>Cissa flavirostris</i>

#### Annexure - XVIII

Checklist of Birds found during 2 Days Birding Exercise in Bandli Wildlife Sanctuary	
S.No	Common name & Scientific name
1	Indian Peafowl - <i>Pavo cristatus</i>
2	Jungle Bush-Quail - <i>Perdica asiatica</i>
3	Black Francolin - <i>Francolinus francolinus</i>
4	Red Junglefowl - <i>Gallus gallus</i>
5	Cheer Pheasant - <i>Catreus wallichii</i>
6	Kalij Pheasant - <i>Lophura leucomelanos</i>
7	Himalayan Griffon (Himalayan Vulture) - <i>Gyps himalayensis</i>
8	Shikra - <i>Accipiter badius</i>
9	Black Kite - <i>Milvus migrans</i>
10	Rock Pigeon (Blue Rock Pigeon) - <i>Columba livia</i>
11	Oriental Turtle-Dove - <i>Streptopelia orientalis</i>
12	Eurasian Collared-Dove - <i>Streptopelia decaocto</i>
13	Spotted Dove - <i>Streptopelia chinensis</i>
14	Indian Scops-Owl (Collared Scops-Owl) - <i>Otus bakkamoena</i>
15	Asian Barred Owlet - <i>Glaucidium cuculoides</i>
16	Jungle Owlet - <i>Glaucidium radiatum</i>
17	Spotted Owlet - <i>Athene brama</i>

18	Common Kingfisher (Small Blue Kingfisher) - <i>Alcedo atthis</i>
19	White-throated Kingfisher - <i>Halcyon smyrnensis</i>
20	Great Barbet - <i>Psilopogon virens</i>
21	Blue-throated Barbet - <i>Psilopogon asiaticus</i>
22	Speckled Piculet - <i>Picumnus innominatus</i>
23	Grey-capped Woodpecker (Grey-capped Pygmy Woodpecker) - <i>Dendrocopos canicapillus</i>
24	Fulvous-breasted Woodpecker - <i>Dendrocopos macei</i>
25	Grey-headed Woodpecker - <i>Picus canus</i>
26	Black-rumped Flameback (Lesser Goldenbacked Woodpecker) - <i>Dinopium benghalense</i>
27	Alexandrine Parakeet - <i>Psittacula eupatria</i>
28	Rose-ringed Parakeet - <i>Psittacula krameri</i>
29	Plum-headed Parakeet - <i>Psittacula cyanocephala</i>
30	Long-tailed Shrike - <i>Lanius schach</i>
31	Black Drongo - <i>Dicrurus macrocercus</i>
32	Ashy Drongo - <i>Dicrurus leucophaeus</i>
33	White-throated Fantail - <i>Rhipidura albicollis</i>
34	Yellow-billed Blue Magpie - <i>Urocissa flavirostris</i>
35	Red-billed Blue-Magpie - <i>Urocissa erythroryncha</i>
36	Grey Treepie - <i>Dendrocitta formosae</i>
37	Large-billed Crow - <i>Corvus macrorhynchos</i>
38	Red-rumped Swallow - <i>Cecropis daurica</i>
39	Yellow-bellied Fantail - <i>Chelidorhynch hypoxantha</i>
40	Grey-headed Canary-Flycatcher - <i>Culicicapa ceylonensis</i>
41	Green-backed Tit - <i>Parus monticolus</i>
42	Cinereous Tit (Great Tit) - <i>Parus cinereus</i>
43	Black-lored Tit - <i>Machlolophus xanthogenys</i>
44	White-throated Tit (White-throated Bushtit) - <i>Aegithalos niveogularis</i>
45	Wallcreeper - <i>Tichodroma muraria</i>
46	Bar-tailed Treecreeper - <i>Certhia himalayana</i>
47	Red-vented Bulbul - <i>Pycnonotus cafer</i>
48	Himalayan Bulbul (White-cheeked Bulbul) - <i>Pycnonotus leucogenys</i>
49	Himalayan Black Bulbul - <i>Hypsipetes leucocephalus</i>
50	Scaly-breasted Cupwing (Scaly-breasted Wren-babbler) - <i>Pnoepyga albiventer</i>
51	Hume's Warbler - <i>Phylloscopus humei</i>
52	Grey-hooded Warbler - <i>Phylloscopus xanthoschistos</i>
53	Whistler's Warbler - <i>Seicercus whistleri</i>
54	Common Tailorbird - <i>Orthotomus sutorius</i>

55	Oriental White-eye - <i>Zosterops palpebrosus</i>
56	Black-chinned Babbler - <i>Cyanoderma pyrrhops</i>
57	Rusty-cheeked Scimitar-Babbler - <i>Megapomatorhinus erythrogenys</i>
58	Puff-throated Babbler - <i>Pellorneum ruficeps</i>
59	Jungle Babbler - <i>Turdoides striata</i>
60	Streaked Laughingthrush - <i>Trochalopteron lineatum</i>
61	Variegated Laughingthrush - <i>Trochalopteron variegatum</i>
62	Rufous Sibia - <i>Heterophasia capistrata</i>
63	Indian Robin - <i>Copsychus fulicatus</i>
64	Oriental Magpie-Robin - <i>Copsychus saularis</i>
65	Rufous-bellied Niltava - <i>Niltava sundara</i>
66	Blue Whistling-Thrush - <i>Myophonus caeruleus</i>
67	Little Forktail - <i>Enicurus scouleri</i>
68	Spotted Forktail - <i>Enicurus maculatus</i>
69	Himalayan Bluetail (Orange-flanked Bush-Robin) - <i>Tarsiger rufilatus</i>
70	Golden Bush-Robin - <i>Tarsiger chrysaeus</i>
71	Rufous-gorgeted Flycatcher - <i>Ficedula strophciata</i>
72	Ultramarine Flycatcher - <i>Ficedula superciliaris</i>
73	Blue-fronted Redstart - <i>Phoenicurus frontalis</i>
74	Plumbeous Redstart - <i>Phoenicurus fuliginosus</i>
75	White-capped Redstart - <i>Phoenicurus leucocephalus</i>
76	Pied Bushchat - <i>Saxicola caprata</i>
77	Grey Bushchat - <i>Saxicola ferreus</i>
78	Black-throated Thrush - <i>Turdus atrogularis</i>
79	Mistle Thrush - <i>Turdus viscivorus</i>
80	Common Myna - <i>Acridotheres tristis</i>
81	Jungle Myna - <i>Acridotheres fuscus</i>
82	Rufous-breasted Accentor - <i>Prunella strophciata</i>
83	Grey Wagtail - <i>Motacilla cinerea</i>
84	White Wagtail - <i>Motacilla alba</i>
85	Rock Bunting - <i>Emberiza cia</i>
86	Chestnut-breasted Bunting (White-capped Bunting) - <i>Emberiza stewarti</i>
87	Yellow-breasted Greenfinch - <i>Chloris spinoides</i>
88	House Sparrow - <i>Passer domesticus</i>
89	Russet Sparrow - <i>Passer rutilans</i>
90	Scaly-breasted Munia (Spotted Munia) - <i>Lonchura punctulata</i>
91	Himalayan Buzzard - <i>Buteo burmanicus</i>



As per two days birding exercise in Bandli Wildlife Sanctuary organized by DFO ( WL) Kullu , we have seen 91 species of birds in this Sanctuary. This Sanctuary having two tracks

1:- Maloh Village to Neri Village (14km)

2:- Neri Village to Khural Village (10km).

**Plate 1: Birds found in Bandli WLS during 2-days Birding Exercise**



Blue-throated Barbet  
(*Psilopogon asiaticus*)



Blue Whistling-Thrush  
(*Myophonus caeruleus*)



Asian Barred Owlet  
(*Glaucidium cuculoides*)



Alexandrine Parakeet  
(*Psittacula eupatria*)



Yellow-breasted Greenfinch  
(*Chloris spinoides*)



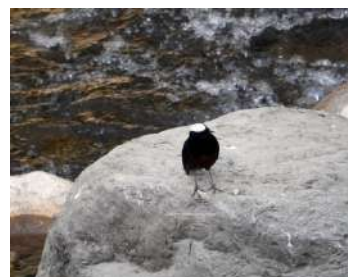
Yellow-billed Blue Magpie  
(*Urocissa flavirostris*)



White Wagtail  
(*Motacilla alba*)



White-throated Fantail  
(*Rhipidura albicollis*)



White-capped Redstart  
(*Phoenicurus leucocephalus*)



Chestnut-breasted Bunting  
(White-capped Bunting) (M)  
(*Emberiza stewarti*)



Chestnut-breasted Bunting  
(White-capped Bunting) (F)  
(*Emberiza stewarti*)



Spotted Owlet  
(*Athene brama*)



Spotted Owlet  
(*Athene brama*)



Spotted Forktail (M)  
(*Enicurus maculates*)



Spotted Forktail (F)  
(*Enicurus maculates*)



Spotted Dove  
(*Streptopelia chinensis*)



Speckled Piculet  
(*Picumnus innominatus*)



Scaly-breasted Cupwing  
(Scaly-breasted Wren-babbler)  
(*Pnoepyga albiventer*)



Russet Sparrow (M)  
(*Passer rutilans*)



Russet Sparrow  
(*Passer rutilans*)



Rufous-gorgeted Flycatcher  
(*Ficedula strophciata*)



Rufous-breasted Accentor (4)  
(*Prunella strophciata*)



Rufous-breasted Accentor (3)  
(*Prunella strophciata*)



Rufous-breasted Accentor (2)  
(*Prunella strophciata*)





Rufous-breasted Accentor (1)  
(*Prunella strophciata*)



Rufous-bellied Niltava  
(*Niltava sundara*)



Rose-ringed Parakeet (1)  
(*Psittacula krameri*)



Rose-ringed Parakeet (2)  
(*Psittacula krameri*)



Rose-ringed Parakeet (M & F)  
(*Psittacula krameri*)



Red-vented Bulbul  
(*Pycnonotus cafer*)



Red Junglefowl  
(*Gallus gallus*)



Red-billed Blue-Magpie  
(*Urocissa erythroryncha*)



Red-billed Blue-Magpie  
(*Urocissa erythroryncha*)



Puff-throated Babbler  
(*Pellorneum ruficeps*)



Prinia SPP.



Plumbeous Redstart  
(*Phoenicurus fuliginosus*)



Plum-headed Parakeet (M)  
(*Psittacula cyanocephala*)



Plum-headed Parakeet (F)  
(*Psittacula cyanocephala*)



Oriental White-eye  
(*Zosterops palpebrosus*)



Oriental Magpie-Robin  
(*Copsychus saularis*)  
(*Tarsiger rufilatus*)



Himalayan Bluetail  
(Orange-flanked Bush-Robin)



Mistle Thrush  
(*Turdus viscivorus*)



Mistle Thrush  
(*Turdus viscivorus*)



Long-tailed Shrike (M)  
(*Lanius schach*)



Long-tailed Shrike(F)  
(*Lanius schach*)



Little Forktail  
(*Enicurus scouleri*)



Jungle Myna  
(*Acridotheres fuscus*)



Jungle Babbler  
(*Turdoides striata*)





Jungle Babbler  
(*Turdoides striata*)



Indian Scops-Owl  
(Collared Scops-Owl)  
(*Otus bakkamoena*)



IMG-5173



Himalayan Buzzard  
(*Buteo burmanicus*)



Himalayan Bulbul  
(White-cheeked Bulbul)  
(*Pycnonotus leucogenys*)



Grey-hooded Warbler (1)  
(*Phylloscopus xanthoschistos*)



Grey-hooded Warbler (2)  
(*Phylloscopus xanthoschistos*)



Grey-headed Woodpecker  
(*Picus canus*)



Grey-headed Canary-Flycatcher  
(*Culicicapa ceylonensis*)



Grey-capped Woodpecker  
(Grey-capped Pygmy Woodpecker)  
(*Dendrocopos canicapillus*)



Grey Bushchat  
(*Saxicola ferreus*)



Grey Wagtail  
(*Motacilla cinerea*)



Grey Treepie  
(*Dendrocitta formosae*)



Golden Bush-Robin  
(*Tarsiger chrysaeus*)



Fulvous-breasted Woodpecker  
(*Dendrocopos macei*)



Common Tailorbird  
(*Orthotomus sutorius*)



Common Tailorbird  
(*Orthotomus sutorius*)



Common Kingfisher  
(Small Blue Kingfisher)



Cinereous Tit (Great Tit)  
(*Parus cinereus*)



**Plate 2: view of Bandli WLS**





**Plate 3: Broad leaf Forest of Bandli WLS**





**Plate 4: Villages adjoining to bandli WLS**





**Plate 5: Wild Flowers of Bandli WLS**





**Plate 6: Works carried out in and around Bandli WLS**





**Plate 7: Wildlife Week Celebration around Bandli WLS**



**Plate 8: Group Patrolling in Bandli WLS**





**Plate 9: Nihari & Maloh Nursery in Bandli WLS**

