

Management Plan of Baltal-Thajwas Wildlife Sanctuary

2020-25



**Department of Wildlife Protection
Jammu & Kashmir**



MANAGEMENT PLAN OF BALTAL-THAJWAS WILDLIFE SANCTUARY

2020-25

Prepared by

Wildlife Trust of India

F-13, Sector-8, Noida (NCR)-201301

With the support of,

Wildlife Protection Department, Jammu and Kashmir

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Wildlife Trust of India for Department of Wildlife Protection, Jammu & Kashmir

Table of Contents

<i>Preface</i>	4
<i>Acknowledgements</i>	5
PART I EXISTING SITUATION.....	6
1 Introduction to the Area	7
1.1 Name, Location, Constitution and the Extent of Area	7
1.2 Approach and Access	11
1.3 The Statement of Significance	11
2 Background Information and Attributes.....	12
2.1 Boundaries	12
2.2 Geology, Rock and Soil	12
2.3 Terrain	13
2.4 Climate	15
2.5 Water Sources	15
2.6 Distribution of wildlife and habitat.....	17
2.6.1 Fauna	17
2.6.2 Land-use Land-cover and Vegetation.....	20
3 History of Management and Present Practices.....	25
3.1 History of management practices in Sindh Forest Division.....	25
3.2 Present management practices	26
3.3 Present management problems and threats to wildlife	31
PART II THE PROPOSED MANAGEMENT	40
4. The vision, objectives, issues and problems	41
4.1 The Vision	41
4.2 Management Goals.....	41
4.3 Objectives of Management	41
4.4 Issues and problems in achieving the objectives.....	42
4.5 SWOT Analysis	43
5 Management Strategies.....	45
5.1 Boundaries	45

5.2 Zonation and Theme Plans.....	46
5.2.1 Habitat management	48
5.2.2 Protection	51
5.2.3 Restoration of the wild medicinal plants	57
5.2.4 Management of human-wildlife interface	57
5.2.5 Eco-development	59
5.2.6Eco-tourism	61
5.2.7 Tourism and Pilgrimage.....	64
5.2.8Research and Monitoring	64
5.2.9 Extension and awareness	66
5.2.10 Maintenance and development of infrastructure	67
5.2.11 Administrative set-up and Human resources	68
5.2.12 Monitoring and evaluation	69
Part III BUDGET.....	72
ANNEXURES	82
Annexure I. Notification of Baltal-Thajwas Wildlife Sanctuary	83
Annexure II. Checklist of mammals in Baltal-Thajwas WLS	86
Annexure III. Checklist of birds in Baltal-Thajwas WLS.....	87
Annexure IV. Plant Species of Baltal-Thajwas WLS	91
Annexure V. Format of village level eco-development microplan.....	92
Annexure VI. Eco-tourism Guidelines of the Government of India.....	94
Annexure VII. Control Forms.....	106

PREFACE

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The wildlife management in Jammu and Kashmir is not new and has evolved to the changing requirements and challenges. Earlier, the laws were mostly exploitative in nature and clear-distinctions between exploitation and protection were recognized. However, poor infrastructure and meager manpower prevented the full implication of such management initiatives.

The landscape of Baltal-Thajwas Wildlife Sanctuary has been carved out from Sindh Forest Division and came into existence in the year 1987. Prior to that, it was managed as the Sonamarg Location Working Circle within the Sindh Forest Division. The first regular and consolidated plan for Sindh Division, including Baltal-Thajwas Block was prepared by S.D. Vadhera in the year 1930 and several upgradations and revisions followed later on.

This is the first ever management plan for the wildlife sanctuary. Baltal-Thajwas WLS is an important habitat for the Ibex and Brown Bear and perhaps amongst the few places in the valley of Kashmir where snow leopard presence has been found. It also holds some rare and important medicinal plants.

The area in addition to possessing high biological attributes also gets its share of tourism especially during the famous annual Holy Amarnathji Yatra. Therefore, a planned response to hold large influx of tourists, its environmental consequences on one hand and conservation of biodiversity of the area on the other is a priority to draw a cohesive balance to sustain. The present management plan is aimed to protect and conserve the threatened and flagship species and fragile habitat as well as to allow for planned and responsible and regulated tourism in specific areas in order to cater livelihood needs of the local population. It is hoped that the present management plan would meet the requirements of all the stakeholders such as scientists, administrators and wildlife managers besides local population as well.

I congratulate the team of Department of Wildlife Protection, Jammu and Kashmir and Wildlife Trust of India for their effort in preparation of this document.

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Wildlife Trust of India takes this opportunity to thank Wildlife Protection Department, Jammu and Kashmir for assigning us the task of preparation of management plan of Baltal-Thajwas Wildlife Sanctuary. We express our deepest sense of gratitude to Mr. Deepak Khanna, IFS (former CWLW) who initiated the process.

We owe much to Mr. Suresh Gupta, IFS (Chief Wildlife Warden) for guidance, suggestions and kind support in accomplishing the task of preparation of the management plan. Thanks to Mr. Suresh Chugh, IFS (ex-Chief Wildlife Warden) for his valuable insights in preparing the plan.

Continuous monitoring and guidance by Mr. Rashid Naqash (CF and Regional Wildlife Warden, Kashmir) made this plan to come in print. Experiences shared by Wildlife Wardens - Mr. Rauf Zargar, Mr. Tahir Shawl, Mr. Intesar Suhail and Mr. Altaf Ahmad, helped outlining the management prescriptions of the plan. Thanks are due to Dr. Khursheed Ahmad and Dr. Samina Amin Charoo for their suggestions. We thank Mr. Shamsudin (ex-Range Officer BTWLS) for his valuable contribution.

We sincerely thank the frontline staff of Baltal-Thajwas WLS for providing field level information and suggesting management actions specific to the protected area.

Help rendered by Dr. Anzar Khurroo and Dr. Akhtar Hussain in identification of plants is humbly acknowledged.

Wildlife Trust of India

December, 2019

PART I EXISTING SITUATION

1 Introduction to the Area

1.1 Name, Location, Constitution and the Extent of Area

The Baltal-Thajwas Wildlife Sanctuary in Ganderbal district of Jammu & Kashmir is located between latitudes 34.311051 to 34.099888 N and longitudes 75.243929 to 75.549154 E and covers an altitudinal range of 2566 m to 5339 m. The sanctuary gets its name from the Thajwas Glacier and Baltal, a locality on way to Amarnath shrine. Situated in the Greater Himalayan Range of the Western Himalayas, it is connected with other important wildlife areas like Aru, Upper Dachigam and the Sind forest. The sanctuary is situated on Srinagar-Kargil highway near the famous tourist resort of Sonamarg (Map 1).

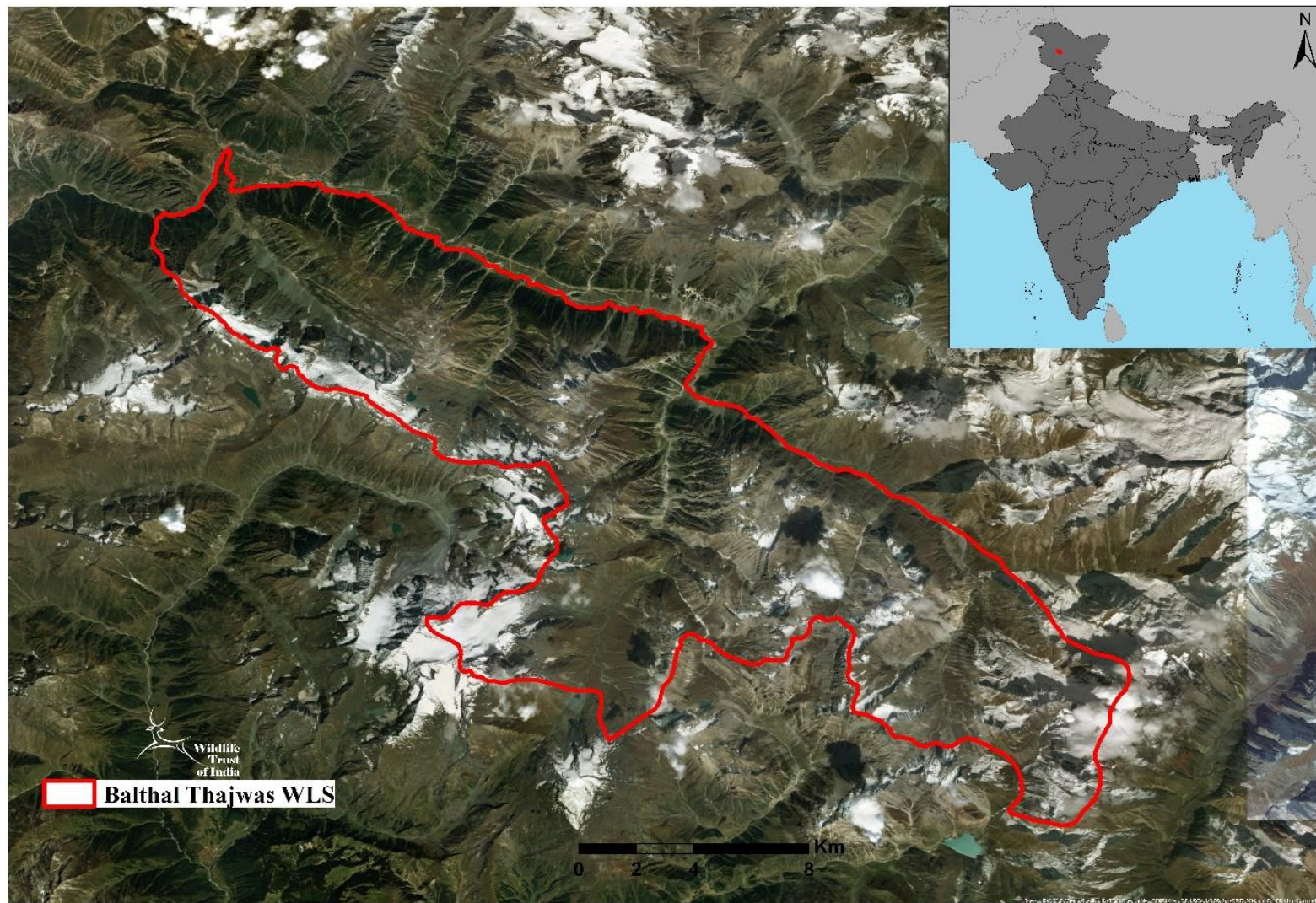


Scenic views of Tajwas (Left) and Baltal (Right) areas of Tajwas Baltal WLS

Baltal-Thajwas was carved out of the erstwhile Sind Forest Division and notified as Wildlife Sanctuary vide S.R.O 156 dated 19-03-1987, as per the provisions of the Jammu and Kashmir Wildlife (Protection) Act, 1978 in view of its ecological, faunal, floral and geomorphological significance (*Annexure I*). Notified area of the sanctuary is 219.19 sq.km.¹Area of the sanctuary calculated in GIS domain is 218.56 sq.km (Map 2). Area statement of the wildlife sanctuary is given in Table 1.1.

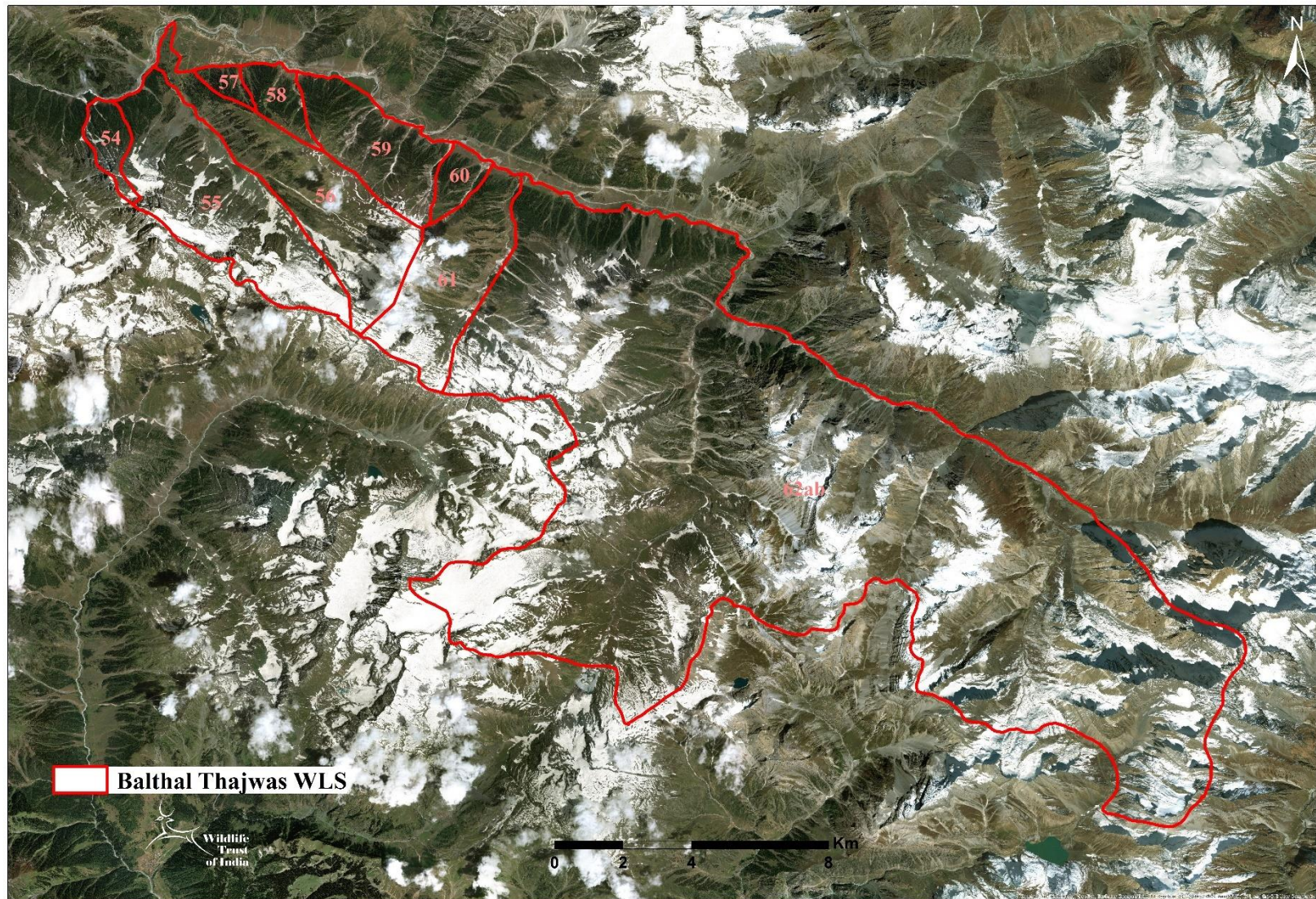
¹Status Report: Thajwas - Baltal Wildlife Sanctuary, Department of Wildlife Protection Jammu & Kashmir Government (<http://jkwildlife.com/pdf/sanc/Thajwas.pdf>)

Table 1.1. Area of different compartments in BTWLS	
Compartment No.	Area (Km²) Calculated in GIS domain
62ab	160.949
54	2.04232
55	16.9672
61	11.1048
60	1.86939
59	8.13927
56	14.1127
57	0.959914
58	2.41958
Total	218.56



Map prepared by GIS Cell, Wildlife Trust of India.
Data Source: Department of Wildlife Protection.

Map 1. Map showing location of Baltal Thajwas WLS



Map prepared by GIS Cell, Wildlife Trust of India.
Data Source: Department of Wildlife Protection.

Map 2. Compartment map of Baltal Thajwas WLS

1.2 Approach and Access

The sanctuary is about 90 km east of Srinagar city and 70 km from Ganderbal - the district headquarters. The nearest airport - Srinagar is about 100 km away. The nearest railhead is Nowgam is approximately 100 km from Sonamarg, but is not yet connected either with Jammu and other parts of the country. It is easily approachable by an all-weather road from Srinagar, but snow affects the use of the road in winter. Private transport services are available for Kangan, situated about 30 km to the west of Sonamarg.

1.3 The Statement of Significance

Baltal-Thajwas is one of the 14 Wildlife Sanctuaries in the state of Jammu & Kashmir. It falls in the eco-tone of Greater Himalayas (Kashmir) and Trans-Himalayas (Ladakh) that makes it biodiversity rich and is one of the potential habitats of snow leopard in the Kashmir valley. The fauna of this region is distinguished by the presence of many species of Indo-Chinese forms which do not occur in the peninsula, but commonly occur in the central and North-eastern Himalayas, Southern China and Myanmar². Other than snow leopard musk deer, ibex, serow, Asiatic black bear, brown bear and Tibetan wolf are striking mammalian fauna of the sanctuary. There are reports of presence of Kashmir Stag (Hangul) *Cervus hanglu hanglu* in the sanctuary³. Variations in physiographical and topographical features enrich the sanctuary with mesophytic vegetation of temperate conifers, broad leaf forests and alpine grasslands, making the landscape unique for biological and ecological heritage. The sanctuary also forms the catchment of the Sindh River that waters the entire Sindh Valley.

In addition to the ecological attributes, Sonamarg and the Thajwas glacier in the landscape offer spectacular vistas and host thousands of tourists from across the world. This area is adjacent to the Amarnath Shrine and Baltal serves as basecamp for the pilgrims during the *Yatra*. In addition, it is a gateway to Ladakh and on the old trade route to Tibet.

²Hilaluddin 1997. Faunal Diversity. In: Biodiversity of Jammu and Kashmir: a profile (ed. M. Ahmedullah), pp. 64-83. New Delhi: World Wide Fund for Nature – India.

³Qureshi, Q. et al., Status and distribution of Hangul *Cervus elaphus hanglu*, Wagner in Kashmir, India. J. Bom. Nat. Hist. Soc., 2009, 106, 63-71.

Some of the significant values of the sanctuary are summarized below;

- Eco-tone of Greater Himalayas and Trans-Himalayas
- One of the potential snow leopard habitats in the Kashmir valley
- Presence of Kashmir Stag (Hangul) *Cervus hanglu hanglu*
- Presence of Kashmir musk deer *Moschus cupreus*
- Forms catchment of the Sindh River
- Hosts famous tourist destinations such as Sonamarg and the Thajwas glacier
- Important place for pilgrims of the Amarnath Shrine

2 Background Information and Attributes

2.1 Boundaries

Boundaries of the sanctuary are as below;

North :	Sindh River
South :	Lidder Forest Division
East :	Zojila Pass
West :	Forest Division Sindh

2.2 Geology, Rock and Soil

The lower northern reaches of the sanctuary have moderate physiography whereas the higher reaches and the southern side are rugged (Map 3). Major part of the area is covered by Trias while as part of the area is covered by alluvium and karewa deposits with very little area under massive hard Panjal traps. At Thajwas, the valley widens out and steeply descending slopes of the Panjal trap are succeeded by partly metamorphosed representatives of the Permian and lower middle Trias.

Bluish grey limestone inter-bedded with quartzites and slates (Upper Triassic), Shale and Phyllites with inter-bedded limestone (Middle Triassic) and also Panjal Traps (Lower Triassic to Permo-Carboniferous) are the key formations. The Panjal volcanics are massive, fine grained and dark green to pale green in colour⁴.

⁴Gupta, B D (1963). Progress report of the geological mapping in the Sindh Valley, Srinagar district, J&K for field season 1962-63.

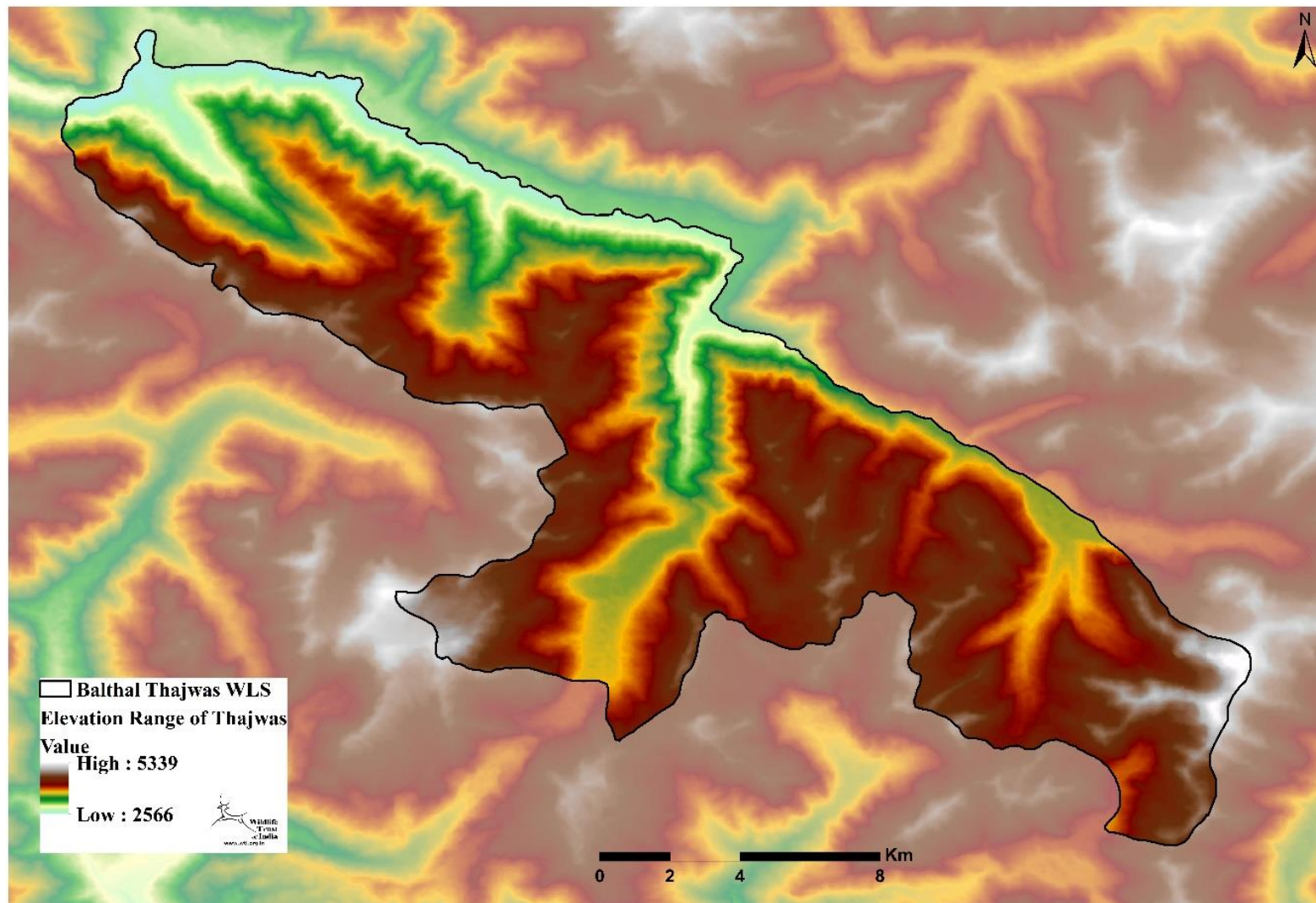
The underlying rock determines the various soil formations. The depth of the soil depends upon the slope and dip of the rock. In general, steeper the slope, the shallower the soil. This accounts for the poorer quality of forests along the steeper slopes.

2.3 Terrain

The landscape is dominated by high mountains, rugged cliffs and upland pastures. Altitudinal range varies from 2566 m to 5339 m. The sanctuary is characterized by a mix of trans and western Himalayan landscape with glaciers and deep valleys; dry rocky terrain in upper elevations; and, green and forested areas at lower elevations.

The streams originating from the lakes and glaciers in the sanctuary drain into the Sindh River.

The sanctuary can be divided into three blocks - Thajwas, Sarbal and Rainur, having distinct terrain characteristics. The Thajwas block facing south is moderately steep and Thajwas glacier comes in this block. This block is moderately steep and is covered with moderate to dense conifer forest. The east facing Sarbal block forming the eastern boundary of the sanctuary is steep and dominated by moderate to dense fir forest in lower and middle elevations. Rainur block on the northern side of the sanctuary is primarily undulating, interspersed with cliffs and streams. Alpine pastures occupy this block.



Map prepared by GIS Cell, Wildlife Trust of India.
Data Source: Department of Wildlife Protection, Aster Dem: USGS Earth Explorer (<https://earthexplorer.usgs.gov/>)

Map 3. Elevation map of Baltal Thajwas WLS

2.4 Climate

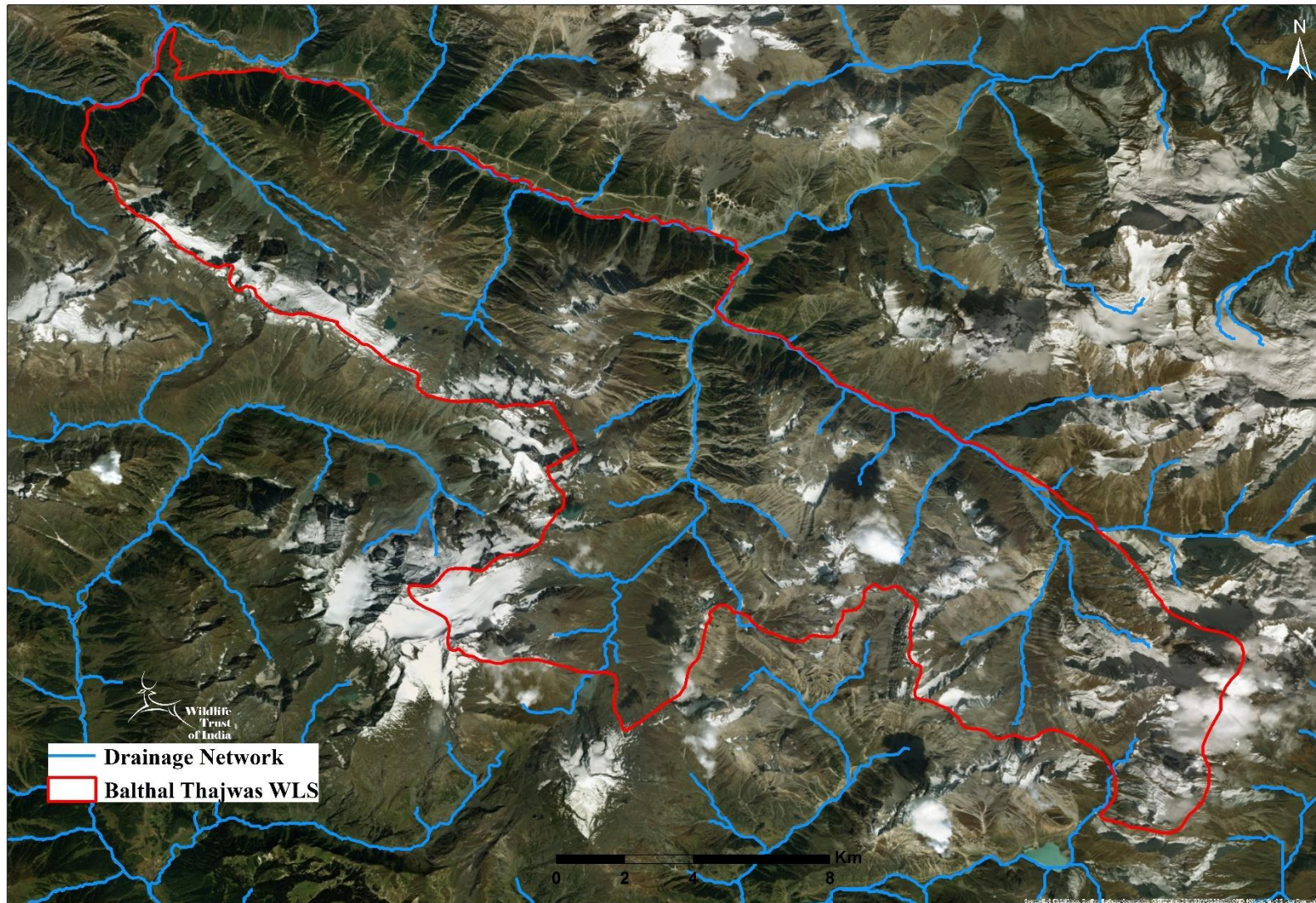
The basic pattern of weather and climate over the Himalayas is governed by the summer and winter monsoon system of Asia⁵. In addition, the Himalayas are affected by extra tropical western system (Western Disturbances), which moves in winter over the north of the sub-continent from west to east. Baltal-Thajwas WLS falls in high altitude area of Greater Himalayas and adjacent to Trans-Himalayas. Therefore, it is extreme cold during winters and pleasant during summer. It snows during winter and rains mostly during spring. The area receives most of the precipitation in the form of snow from November to March. The area receives about 1000 mm rainfall annually. The upper region of the sanctuary receives more rainfall (about 2000mm annually) compared to the lower areas. About 63% of the total rainfall occurs in the winter and spring season. The temperatures remain sub-zero during the winter months and gradually increase as the spring approaches. The summer is pleasant and the maximum temperature may go to 30°C.

2.5 Water Sources

The sanctuary and its surrounding areas harbour few of the very famous glaciers such as Kohlai and Thajwas. Quite a few tributaries of Sindh River originate from these glaciers making it a very important catchment area. Drainage pattern of the sanctuary is depicted in Map 4.

The main nallas draining the catchment originate from the glaciers and high altitude lakes. These tributaries join the Sindh Nalla, which marks the eastern boundary of the sanctuary. All these tributaries are perennial owing to high snowfall and presence of several lakes in the upper reaches.

⁵Mani, A., 1981. The climate of the Himalayas. In: J.S. Lall and A.D. Moddie, eds., *The Himalayas—Aspects of Change*. Oxford: Oxford University Press



Map prepared by GIS Cell, Wildlife Trust of India.

Data Source: Department of Wildlife Protection, Aster Dem: USGS Earth Explorer (<https://earthexplorer.usgs.gov/>)

2.6 Distribution of wildlife and habitat

2.6.1 Fauna

According to the bio-geographic classification by Rodgers and Panwar (1988)⁶, the Baltal-Thajwas Wildlife Sanctuary falls in the North-west Himalayan Province (Province 2A) of the Himalayan zone. This Province includes the whole Kashmir valley, characterized by temperate and sub-tropical vegetation. Fauna of this region is distinguished by the presence of many species of Indo-Chinese forms, which do not occur in the peninsula, but commonly occur in the central and north-eastern Himalayas, Southern China and Myanmar⁷. The faunal elements found in the sanctuary show affinities with Palearctic (Siberian sub-region) and Oriental (Indian sub-region) regions. Presence of the trans-Himalayan (snow leopard and ibex) and Greater Himalayan (musk deer and black bear) species makes it a unique abode to wildlife in northern India.

A. Mammals

Sixteen species of mammals are reported from the Baltal-Thajwas Wildlife Sanctuary (Annexure II). Key large mammals of the sanctuary are - snow leopard (*Panthera uncia*), Siberian Ibex (*Capra ibex siberian*), Musk deer (*Moschus cupreus*), brown bear (*Ursus arctos*), Asiatic black bear (*Ursus thibetanus*), leopard (*Panthera pardus*); Himalayan serow (*Capricornis thar*) and Tibetan wolf (*Canis himalayensis*). Long tailed marmot (*Marmota himalayana*) is one of the characteristic species in the area. Brief account of key species in the sanctuary is given below;

Snow leopard (IUCN: Endangered; WPA of J&K: Schedule I)

Concrete evidence of presence of snow leopard in the sanctuary is missing; however, the sanctuary is a potential habitat for the species in Kashmir region. Main prevalent threats are disturbance caused by the migrant flocks in the alpine regions and poaching.

Ibex (IUCN: Least concern; WPA of J&K: Schedule I)

⁶Rodgers, W.A. and Panwar, H.S. 1988. Planning a wildlife protected area network in India. 2 volumes. Project FO: IND/82/003. FAO, Dehradun, India, 339 pp.

⁷ Hilaluddin 1997. Faunal Diversity. In: Biodiversity of Jammu and Kashmir: a profile (ed. M. Ahmedullah), pp. 64-83. New Delhi: World Wide Fund for Nature - India.

Ibex is one of the two wild ungulates present in Baltal-Thajwas WLS. It is also the major prey species for the large carnivores. Poaching and resource competition with livestock seems the major threats. It is present almost throughout the sanctuary except the marginal areas. Main areas of its presence are - Rainure, Doorinar, Ranga and Koker seena

Kashmir Musk Deer(IUCN: Endangered; WPA of J&K: Schedule I)

The subalpine and alpine habitats of the WLS are the high potential musk deer habitats. Poaching and disturbance due to livestock and other anthropogenic pressures are the major threats. The species is primarily located in Thajwas, Rainure, Rangadori and Doorinar areas.

Brown Bear (IUCN: Least concerned; WPA of J&K: Schedule I)

The WLS is a high potential area for brown bears with its habitat dominated by subalpine and alpine habitats. The brown bear (*Ursus arctos*) occurs throughout the sanctuary, in the sub-alpine and alpine regions (3200-5000 m). Thajwas, Rainure and Doorinar are the prime locations occupied by the species. They often come into conflict with the nomadic graziers (Bakerwals) by causing livestock damage, a reason for retaliatory killing.

Tibetan Wolf (IUCN: Least concerned; WPA of J&K: Schedule I)

This endangered species is present inside the WLS and comes into conflict with the herders as it kills their livestock. The species is found all across the sanctuary, except the dense forest areas. It is in conflict with the herders as it kills their livestock.

Long-tailed Marmot (IUCN: Least concern; WPA of J&K: Schedule II, Part I)

Baltal-Thajwas is one of the main areas in Kashmir for long-tailed marmot. It is localized to Doorinar and Rainure areas of the sanctuary.

Kashmir Stag or Hangul (IUCN: Critically endangered; WPA of J&K: Schedule I)

Any researcher or sanctuary management staff have not sighted the species in the past two decades. However, reports⁸ mention presence of Hangul, and elderly people in the area report their traditional movement to the sanctuary. A herd of five hanguls was sighted in Gund area, villagers informed that Hangul herds cross Mammer to go to Wanghat.

⁸Qureshi, Q. et al., Status and distribution of Hangul *Cervus elaphus hanglu*, Wagner in Kashmir, India. J. Bom. Nat. Hist. Soc., 2009, 106, 63-71.

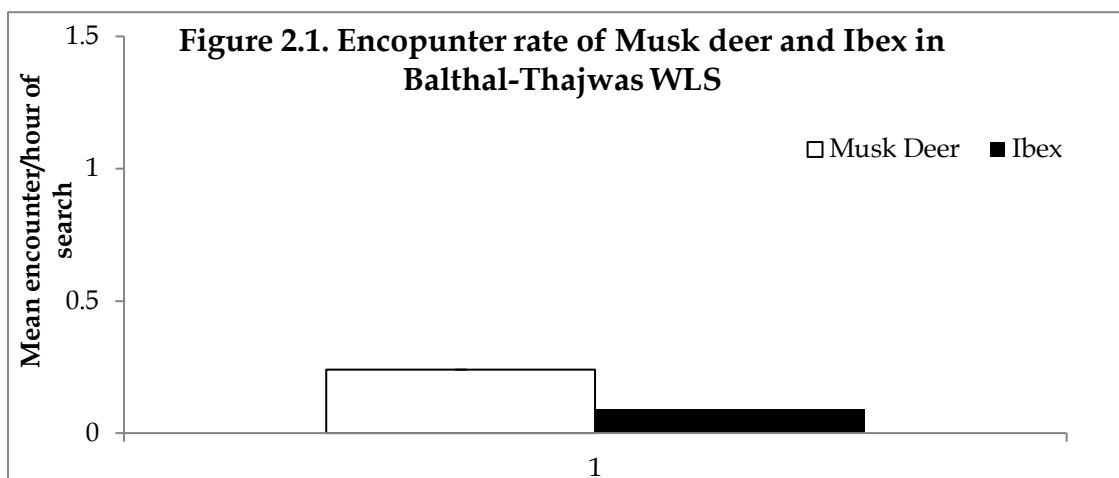
Leopard (IUCN: Vulnerable; WPA of J&K: Schedule I)

It is one of the key predators in the sanctuary, where it occupies the areas with lower elevations.

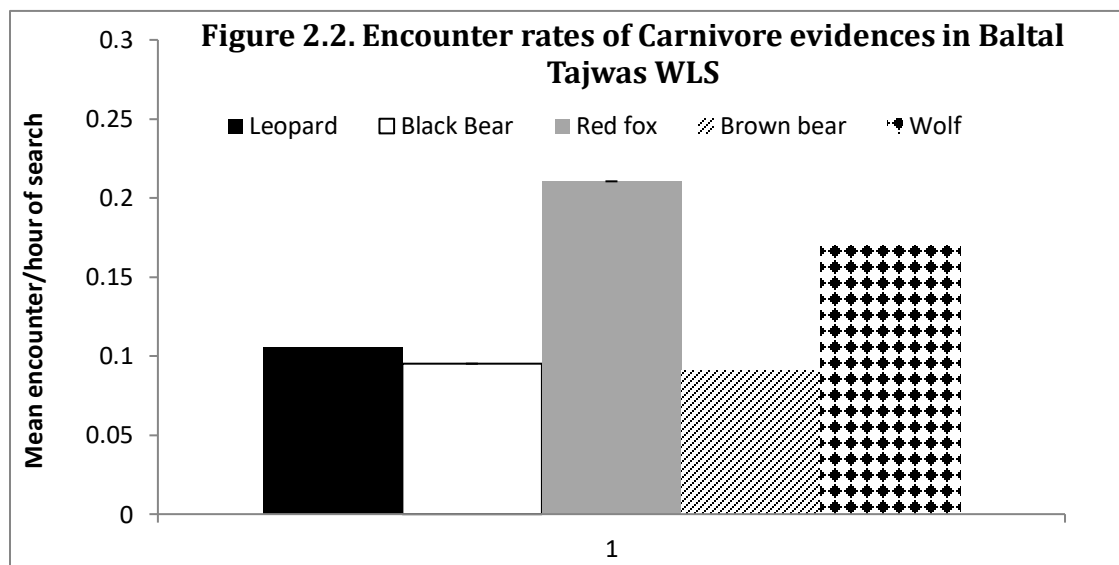
Kashmir grey langur: *Semnopithecus ajax*(IUCN: Endangered;WPA of J&K: Schedule 1)

The species is found in Sarbal and Sonamarg areas of the sanctuary.

WTI conducted a survey in the area in 2014-15 for assessment of Hangul population. Other mammals, such as, musk deer, Himalayan ibex, Wolf, Leopard, Yellow throated martin, Red fox, Jackal, Flying squirrel, Black bear and Snow leopard are also thought to be present in this area, as ascertained through secondary accounts and some direct/indirect evidence. Salient findings are depicted in figures 2.1 and 2.2.



B. Avifauna



Baltal-Thajwas is home to some of the rare and restricted range species such as Long-billed bush warbler *Locustella major*, Kashmir nuthatch *Sitta cashmirensis*, Ibis bill *Ibidorhyncha struthersii*. Bird diversity in the area generally varies seasonally. About 95% of bird species here comprise of the migratory community. Over a hundred species of birds have been documented from this wildlife sanctuary (Suhail, I. pers. comm.) and these include an impressive assemblage of raptors, galliformes and passerines. Amongst the important species are:

- a) Passerines: Long-billed bush warbler, Kashmir nuthatch
- b) Galliformes: The species found in the sanctuary are the Himalayan monal (*Lophophorus impejanus*) and the Himalayan snowcock (*Tetraogallus himalayensis*), Snow partridge Lerwa lerwa.
- c) Raptors: Golden eagle *Aquila chrysaetos*
- d) Others: Bearded vulture *Gypaetus barbatus*, Himalayan griffon *Gyps himalayensis*, Wall creeper *Tichodroma muraria*

Checklist of avifauna in the sanctuary is provided in *Annexure III*.

2.6.2 Land-use Land-cover and Vegetation

Land-use and Land-cover in the sanctuary can broadly be classified into four categories – dense forest, open forest, water body and snow cover. Dense vegetation is limited to the north western part of the sanctuary. Almost the entire eastern part is snow clad (Map. 5).

Being an eco-tone, the Sanctuary possesses unique flora and based on combination and dominance of different flora, several vegetation types occur in the Sanctuary. Conifer forest dominates the lower and middle elevations and fir (*Abies pindrow*) is the main constituent. Fir is dominant along the east and north aspects whereas the kail (*Pinus wallichiana*) is dominant along southern aspects. The undergrowth consists of shrubs. In Greater Himalayan Range, there is no tree growth above 3,600m. Forest mainly occurs between 2000-3600m. The meadows lie largely above 35,00m.

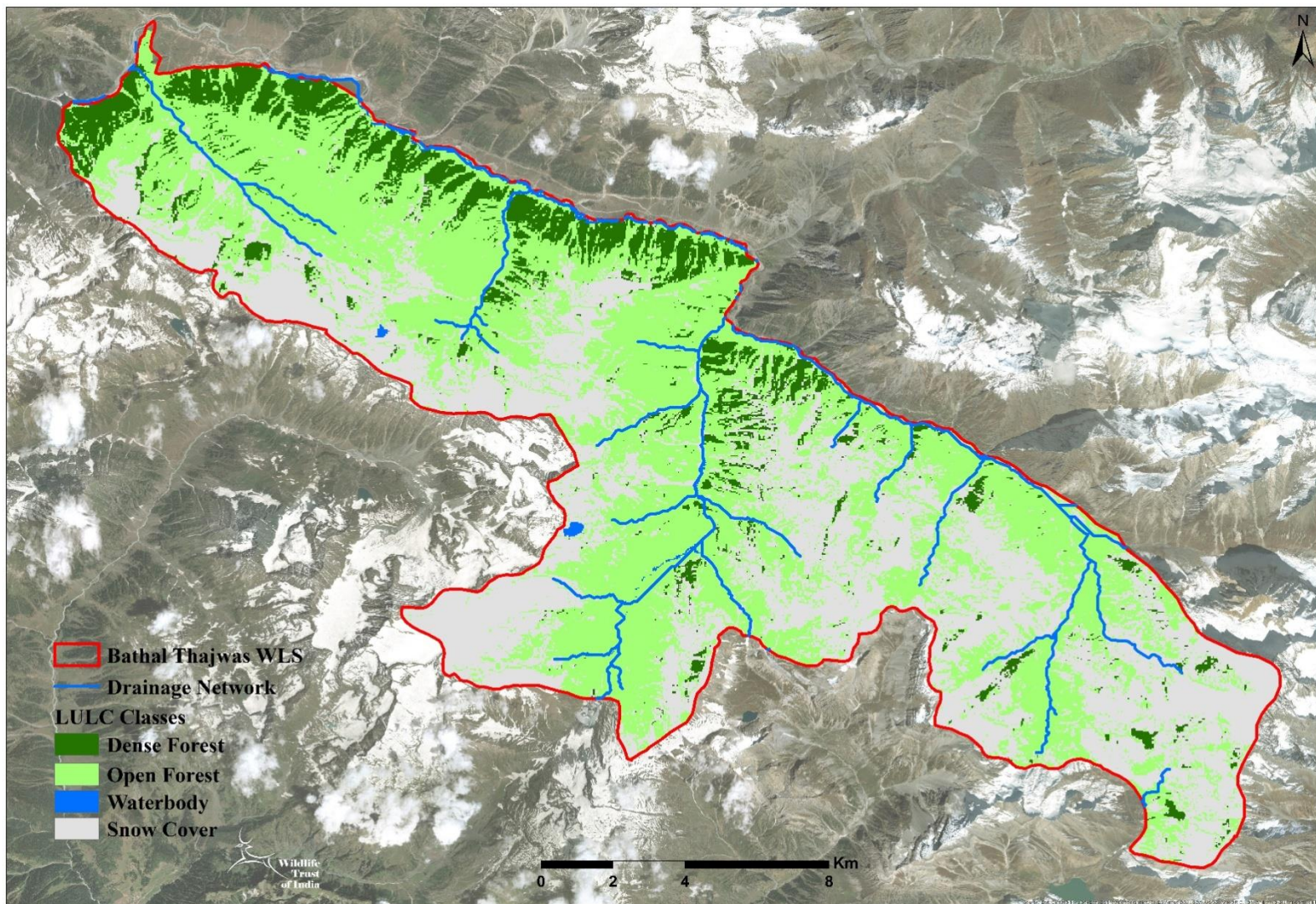
As per the Champion and Seth (1968)⁹ classification following forest types are found in the sanctuary and the surrounding areas;

- Western Mixed Coniferous Forests (12/c1d)
- Deciduous Sub-alpine Scrub (14/1s2)
- Sub-alpine and alpine pastures (14/DS1)

However, before this classification came into practice, there was enough evidence to classify the Kashmir Valley Forests as a type by themselves, nomenclature as “Kashmir Valley Temperate Type”¹⁰. The major part of vegetation of Baltal-Thajwas Wildlife Sanctuary comes under Kashmir Alpine Forests. This group corresponds to Champion and Seth’s type 15 III C and is found beyond 3200 m. This group is characterised by the presence of vast alpine vegetation. This group is divided into two sub-groups: Subgroup III A-Alpine Scrubs and Subgroup III B-Alpine Pasture Lands

⁹Champion, H. G. and Seth, S. K. (1968). A Revised Survey of Forest Types of India, Govt. of India Press, New Delhi, p. 404.

¹⁰Ticku, B. L. (1977). Revised working plan for Pir Panjal.



Map prepared by GIS Cell, Wildlife Trust of India.

Data Source: Department of Wildlife Protection, LULC: USGS Earth Explorer (<https://earthexplorer.usgs.gov/>)

A. Kashmir Alpine Forests

- **Alpine Scrubs (3401– 3700m):** This group occurs around the upper limits of Kashmir Sub-Alpine Forests and along the fringes of alpine pastures. The hardy species such as *Betula utilis*, *Juniperus communis*, *Rhododendron spp*, *Salix spp* grow in this habitat, which experiences violent winds and is steep outcrops.
- **Alpine Pastures:** There are vast meadows occurring generally along gentle slopes above tree line i.e. above 3400m, these grasslands extend till around 4000 m. These meadows harbour open grassland communities and form the characteristic alpine tundra. They are locally called as 'Margs' and the chief constituents of these communities include grasses and herbs. The important herbs include *Primula*, *Anemone spp*, *Saxifraga spp*, *Taraxicum spp*.

B. Sub-alpine forests (3200m-3600m): The Birch (*Betula utilis*) and Silver fir (*Abies alba*) forests dominate the sub-alpine vegetation. The associated tree species include spruce(*Picea spp.*) and kail (*Pinus wallichiana*) while the dominant shrub species include *Juniperus* and *Salix*. The pure strands of Birch mark the tree line at 3500 m to 3600 m. It gives place to Juniper shrubs at subalpine areas above 3600 m.

C. Rocks and glaciers:Rock Faces (above 4000m): This altitude starts to replace the margs(pastures in english) with rock dominated terrain. The rocky areas contain sparse vegetation but some of cliffs and hilltops are covered by dwarf evergreen shrubs including *Juniperus recurva*, *Rhododendron anthopogon* etc. associated with herbs, *Stachya sericea*, *Sieversia slata*, *Veronica melissaefolia* and medicinal plants like *Sausurrea sacra*. The area is interspersed with steep rocky cliffs, gorges and some of the famous glaciers such as Thajwas glacier. Kashmir's largest glacier - the Kolhai, is located in the adjoining area.

D. Middle slopes/temperate zone: (2701m-3200m) Silver fir (*Abies alba*) and Blue Pine/Kail (*Pinus wallichiana*) forests and associated spruce (*Picea smithiana*) dominate the middle slopes. The broad leaf trees associated at some locations include maple (*Acer caesium*) and *Prunus spp*. The dominant shrub species include *Rosa brunonii*, *Taxus walliciana* and *Isodon spp*.

E. Riverine: (below 2500m) The riverine vegetation includes the stream side flora which is confined to the main nallahs and their tributaries. This is typically constituted of conifer species like the blue pine and fir in lower areas whereas along the higher areas it is open grasslands. The dominating shrubs are *Viburnum continifolium*, *Berberis lycium*, and *Sorberia tomentosa*. *Aesculus indica* and *Juglans regia* are associated *Robinia pseudoacacia*, *Populus ciliata* and *Salix caprea*.

An exhaustive list of plants is provided in *Annexure IV*.

Plants of medicinal values

The Himalayas is known for the wealth of medicinal plants it harbours. The Kashmir Valley. Some important ones are *Arenebia benthamii*, *Rheum emodi*, *Meconopsis aculeate*, *Geum elatum*, *Jurinea macrocephala*, *Potentilla spp.*, *Podophyllum*.

3 History of Management and Present Practices

The first attempt at forest administration seems to have been made in 1859 when *Mahal Nawara* or the Forest (Exploitation) Department was constituted under the overall control of the Governor of Kashmir. However, the attempts to safeguard and rationally exploit the forests were unfocused and crude¹¹. The cornerstone of commercial forestry in Kashmir was established when the *Ain-i-janglat* was passed in 1883. From this year onwards, the potential value of the state forests began to be recognized and as a consequence, the department was split into two branches, namely, the *Mahal Nawara* proper, and the *Mahal Janglaat*. The former exclusively looked after exploitation and collection of taxes on fuelwood and timber whereas the latter dealt with the protection of forests. Yet, the staff was meagre and there were only two supervising officers for the entire valley. Obviously, the felling was unscientific and not restricted.

3.1 History of management practices in Sindh Forest Division

At the time of J. McDonnell, the erstwhile Sindh Division was part of the Kamraj Forest Division. The Sindh Division was more or less free from overexploitation from 1891 A.D. to 1910 A.D. except that about 500 trees each of fir and dead kail (*Pinus wallichiana*) trees were removed. The first Kamraj Division plan by Mr. Love in 1911 prescribed the Indian selection system for better stocked compartments whereas the poorly stocked areas were grouped into improvement working circle. The plan for Sindh Range contained three working circles, viz. Selection, Improvement and Coppice with standard. The Kamraj Division was bifurcated into erstwhile Sindh and Kamraj Forest Divisions in the year 1918. The Sindh Division comprised of Khuihama, Mansbal and Sindh Range. The present Sindh Division comprises of four Ranges viz; Sindh, Mansbal, Malhar and Harran/Shallabugh Plantation Range.

The Baltal-Thajwas Wildlife Sanctuary was established in 1987. Prior to that, it was managed as the Sonamarg Location Working Circle within the Sindh Forest Division. Mr. S.D. Vadhera prepared the first regular and consolidated plan for Sindh Division, including Baltal-Thajwas Block in the year 1930. The plan advocated conversion to uniformity of all

¹¹Ticku, B. I. (1977). Revised working plan for Pir Panjal Forest Division (1977-78 to 1986-87). 190pp.

easy and accessible conifer forests. This resulted in removal of large quantity of timber through illicit felling and grant to concessionists. B. Sher Singh revised the Vadhera's Plan in 1942, advocating concentration of working not only on silvicultural grounds, but also with a view to making the then low-rated fir pay as a timber. The important thing in the Sher Singh's Plan was the introduction of Sonamarg Location Working Circle. Sher Singh's plan was revised by Naqushband in 1950, which remained effective till 1980. This plan has realized the beauty and fragility of the Sonamarg Circle and thus the exploitation was limited taking care of its natural beauty. The first revision of the plan was prepared by R.L. Khajuria, retaining the broad outlines of the previous plan. The second revision of the plan was prepared by G. Naqushband, which was later revised by G.H. Naqash in 1967.

3.2 Present management practices

Post-notification the sanctuary is being managed without any approved Management Plan. Annual Plan of Operations (APO) form the guiding document for the management of the PA. Thus, this is the first Management Plan of the sanctuary.

3.2.i Administrative set up and organizational structure

The sanctuary is under the administrative control of Wildlife Warden. There is one Forest Range and one Forest Beat. The beats are divided into nine compartments. The sanctuary has not been divided into different zones for any management purpose.

3.2.ii Protection

The patrolling units are beats and Forester commands the patrolling in the WLS. The areas that are regularly patrolled include Thajwas, Nawkan and Gadekole mainly due to ease of patrolling due to logistic reasons. Since the area is adjacent to one of the famous tourist resorts, tourists used to take vehicles through a small area of the WLS to see the Thajwas glacier. To regulate this there was a check-post of wildlife. However, due to the order of Hon'ble High Court, vehicles are not allowed now and thus the check-post has also been closed down. Additionally, the shortage of staff also doesnot allow putting manpower for the check post. There are no anti-poaching camps inside the sanctuary for surveillance and protection against poaching or other wildlife crime. Communication system such as

wireless station and wireless sets are not available; however mobile phones are generally used for communication. The patrolling staff doesnot use any specific format to collect information while conducting patrolling. The maintenance of wildlife crime data is also poor. The boundary has been demarcated recently but pillars and fencing have not yet been put. It makes the areas near to human habitation prone to encroachment. There is inadequate infrastructure such as staff quarters, anti-poaching camps and vehicles for the protection staff. Poor staff strengthis also a hurdle in effective protection.

3.2.iii Habitat management

There is no habitat improvement / management plan for the sanctuary. Alpine meadows are the characteristics of this WLS but very little management input has been given to manage them scientifically. The meadows are under huge anthropogenic pressure especially from livestock and pilgrimage tourism. The rare medicinal plants found in some of these pastures, such as Poshpathri, Rainure and Doorinar are also not managed properly. Moreover, some of the pastures, such as Nawkan, Doorinar, Hapat gund, Abhij pather are infested with unwanted plants like *Rumex*, *Circium*, *Sambucus* but there has been no management intervention to control these plants. Soil erosion is an important issue along fast flowing nullahs in summer. The problem has been addressed at few locations, such as Gadekole, where check dams have been constructed. However, many other erosion prone areas are still to be targeted.

There are few sites where regeneration is poor due to livestock grazing. The forest fires are very occasional and thus there has been no forest fighting equipment and fire lines in the sanctuary.

3.2.iv Eco-tourism

Tourism is a prominent activity in and around the sanctuary due to several places and features of tourists' interest, but, there is no eco-tourism zone identified and demarcated. There are also no facilities for tourists such as public conveniences, tourist guides etc. to cater to the tourists.

The sanctuary is famous for the Thajwas glacier in addition to many charismatic Western Himalayan flora and fauna it harbors. The Siberian ibex, Kashmir musk deer and Himalayan brown bear are some of the charismatic fauna seen in this sanctuary. In addition to these attributes, the sanctuary is also known for its spectacular beauty of snow-clad mountains, Thajwas glacier and fast-flowing mountain streams, high altitude lakes and the alpine meadows. Additionally, the Kashmir's largest glacier 'Kolhai' is in its fringe area. Further, the sanctuary is situated in Sonamarg, the world famous tourist destination. Trekking Kishensar-Vishensar-Nilsar and Gangbal routes are already recognized in the adjoining range. These tourism activities have direct and indirect bearing on the sanctuary such as biotic disturbance, change in behavior of wild animals, extraction of resources etc. Currently, the tourism activities are managed by the Department of Tourism, J&K government and the sanctuary authorities have no stake in it.

3.2.v Eco-development

Sarband, Nilgrath, Sonamarg and Shutkari are the fringe villages. There are about 300 families in these villages. They mainly depend on the sanctuary for firewood and grazing. Brief profile of dependency of the villages are given in Table 3.1-3.4. There have been no eco-development activities in these villages to reduce their dependence.

Table 3.1. Dependency profile of Sarband Village in Baltal Thajwas WLS		
1	No of households	40
2	Average no. of people per household	9.25
3	Average No of horses	2
4	Average no of cows	2.5
5	Average no of sheep	0.5
6	Average daily firewood removal per household	19.37
7	Annual firewood removal	92.9 mt
8	Average daily fodder removal per household	20

Table 3.2. Dependency profile of NilGrath Village in Baltal Tajwas WLS		
1	No of households	62
2	Average no. of people per household	9
3	Average No of horses	1
4	Average no of cows	2.8
5	Average no of sheep	2
6	Average daily firewood removal per household	16
7	Annual firewood removal	163.68 mt
8	Average daily fodder removal per household	22

Table 3.3. Dependency profile of Sonamarg Village in Baltal Thajwas WLS		
1	No of households	55
2	Average no. of people per household	8
3	Average No of horses	1.8
4	Average no of cows	1.6
5	Average no of sheep	1.6
6	Average daily firewood removal per household	23.5
7	Annual firewood removal	155.1 mt
8	Average daily fodder removal per household	14.5

Table 3.4. Dependency profile of Shutkari Village in Baltal Thajwas WLS		
1	No of households	40
2	Average no. of people per household	7
3	Average No of horses	2.8
4	Average no of cows	1.4
5	Average no of sheep	1.4
6	Average daily firewood removal per household	20
7	Annual firewood removal	96 mt
8	Average daily fodder removal per household	20

3.2.vi Research and monitoring

Sindh Valley has a rich and unique assemblage of wildlife (Shikar map 1910). This rare wildlife attracted the early hunters and explorers, whose accounts form the baseline information for the mammals of Jammu and Kashmir¹²¹³. These old accounts are the source of historic distribution of important species such as Ibex and brown bear. However, there has been little research done in the sanctuary in the recent past. There is no baseline data available on rare and threatened flora and fauna, which is a bottleneck in management and monitoring of the threatened species and their habitats. Information regarding the major threats and the prescriptions thereof to address these issues is lacking. Further, there is not much information available on the practical and applied aspects of research such as impact of livestock, which can be useful for the management. Primary data required for preparation of this management plan was collected through field surveys and consultation with the frontline staff.

3.2.vii Human Resource

¹²Burrard, G. (1925). Big Game hunting in the Himalayas and Tibet. London: Herbert Jenkis.

¹³Stockley, C. (1936). Stalking in the Himalayas and Northers India. London: Herbert Jenkins

The deployment of frontline staff in the sanctuary is limited to one Deputy Forester, one beat guard. This strength is grossly inadequate to protect, monitor and manage the 210 sq. km. area of the sanctuary. The forest Range Officer is in-charge of other range too. The sanctuary is under the administrative control of a Wildlife Warden at division level. Current position of staff in Baltal-Thajwas sanctuary is given below;

Table 3.5. Current position of staff in BTWLS			
Sl. No.	Designation	No. of Sanctioned Staff	No. of Posted Staff (as on November 2019)
1	Wildlife Warden	1	1
2	Forest Range Officer	1	1
3	Forester	1	1
4	Deputy Forester	1	0
5	Forest Guard	1	0
6	Watcher/Helper	2	2

3.3 Present management problems and threats to wildlife

Apart from livestock grazing, fuel wood extraction especially in conifer forests, removal of juniper and extraction of medicinal plants are some of the other detrimental anthropogenic activities, which pose management challenges to the Baltal-Thajwas WLS. Historically, after timber exploitation, the Sonamarg Location Working Circle (presently B.T. WLS) was protected as a Hill station and thus, the timber exploited from this area was reduced. Post-notification of the sanctuary in 1987 tree felling is banned.

BTWLS is pre-dominantly a high altitude wildlife sanctuary with the majority of its area under alpine grasslands and subalpine forest and subalpine scrub. There is a small seasonal hamlet (30 households) called Sarbal inside the WLS and another village called *Nilgrath* adjacent to the boundary of the sanctuary. Gujar Pati is another seasonal hamlet in the adjacent area near Thajwas who stay for the summer only. These villages are dependent on the WLS for fuelwood and fodder. Adjacent to the WLS is the Sonamarg market with big hotels as the Sonamarg is also a famous tourist resort. The main problem associated with the management of the sanctuary comes from the large scale grazing by unlimited flocks of sheep and goat during summers in the alpine and subalpine grasslands and the concrete

construction and expansion of the Sonamarg market along the boundary of the WLS. Specific problems are discussed as under:

3.3.i Domestic Livestock Grazing

The area experiences heavy grazing pressures of sheep and goats of local and nomadic communities (Bakkarwal, Shephards and Gujjars) during summer season. Bakkarwals, the traditional graziers, overwinter in the warmer plains and with the onset of summer migrate along with their livestock to the lush green alpine pastures of the valley. Shepherds rear the livestock of affluent peoples during summer and in-lieu of taking care of the livestock and grazing get cash and kind from the owners. Gujjars are residents and migratory as well. The resident Gujjars generally live around the forest and migrate locally to take their buffaloes/cattle to their 'dokes' in the adjacent pasture areas during summer. Migratory Gujjars, mainly from Jammu region, take their livestock to Pirpanjal and Greater Himlayas during summer. However, they prefer short migrations unlike Bakkarwals.

Importantly, some pastures traditionally used by these herders are situated outside the Protected Areas, but with increasing livestock population, the grazing pressure on the sanctuary is mounting high to an extent that grazing in Jammu and Kashmir has reached beyond the production capacity of the pastures resulting into poor natural regeneration of the forests¹⁴. Uncontrolled grazing degrades the ecology, hindering the natural plant succession and facilitating colonization of unwanted hard/spiny species like *Euphorbia*, *Ephedra*¹⁵.

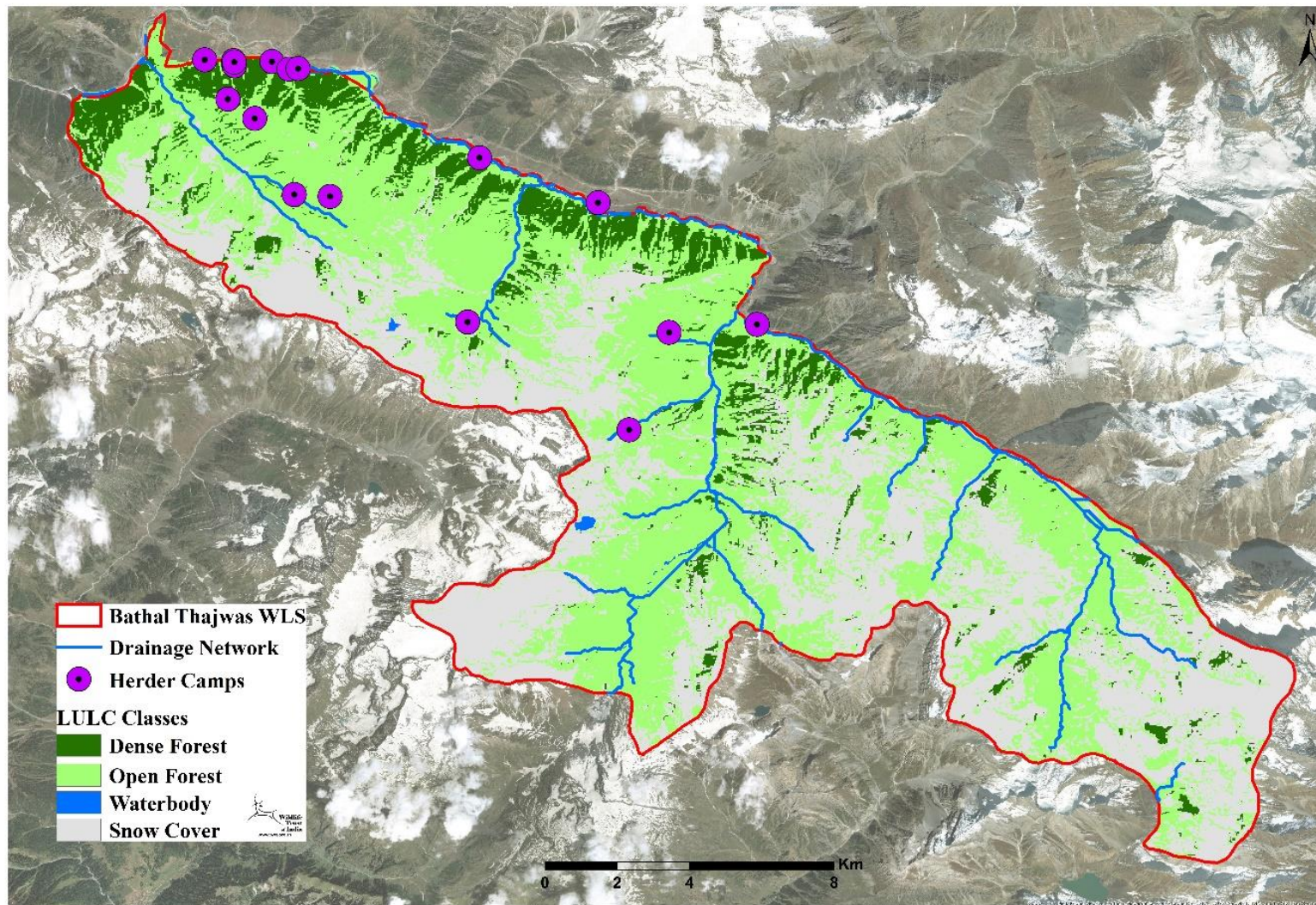
Wildlife Trust of India conducted a survey of graziers in 2015. The survey results indicated use of the sanctuary by about 150 herders who reside inside the sanctuary during summer along with their flocks, horses, cattle and dogs. The livestock strength exceeds 40,000 head including sheep, goat, buffalo and horses. May end to September end is the peak season when herders use the area the most. It is the time when vegetation is in plenty. In addition to these resident families, few more thousands of livestock transit through the sanctuary

¹⁴Seth, C. M. (1994). Ecology of Rupri Grasslands and impacts of Nomadism on the Ecosystem" PhD Thesis, University of Jammu, Jammu, India.

¹⁵Ahmadullah, M. 1997. Biodiversity of Jammu & Kashmir. World Wide Fund for Nature - India.

and put an extra pressure on the vegetation. The herders follow the following routes through the sanctuary: Aru – Lidderwath – Doorinar, and Aru – Poshpathri – Sindh and Drass and back to Pirpanjal/Jammu. Migratory herders use the WLS as route on their departure from Mataein, Gumri and other neighbouring areas. Livestock grazing locations in the sanctuary are shown in Map 6.

Shepherds bring livestock from as far as Budgam and Baramulla, a group of 2-3 shepherds herds 1200-1500 sheep for grazing in the sanctuary. Bakkarwal herders also bring livestock of people who do not have legal/traditional grazing rights/privilege in the sanctuary; this exerts an additional grazing pressure on the sanctuary. Graziers occupy alpine and subalpine habitats of the sanctuary in summer. As per the survey, number of livestock by resident graziers goes as high as 40,000. Number of transient livestock adds to this figure leading to grossly over use of the alpine areas.



Map prepared by GIS Cell, Wildlife Trust of India.

Data Source: Department of Wildlife Protection, LULC: USGS Earth Explorer (<https://earthexplorer.usgs.gov/>)

Map 6. Map of Balthal Thajwas Wildlife Sanctuary showing locations of herders camps

Effects of grazing pressure could be a reduced biomass and change in the species composition of the grasslands - unpalatable species replacing the palatable species etc. leading to negative impacts on native wild ungulates such as musk deer and ibex¹⁶¹⁷. Forage quality prominently affects survival and population performance of these ungulates. Thus, in areas with high grazing intensity, livestock occupy the better summer pastures, pushing the wild ungulates to less suitable habitats. Many a time herder also kill carnivores in retaliation to livestock depredation by predators.

3.3.ii Poaching

Poaching is a direct threat and can eliminate population of a species within a short time period. Since this sanctuary harbors a good population of musk deer, poachers seem to be after the musk deer for its musk. Presently, patrolling is largely focused around the Sonamarg and Thajwas areas while Sarbal-Domail side is neglected. Poachers generally access through Domail and Sarbal areas. Evidences of poaching have been recorded in Rainure area. Rainur and Doorinar areas are more sensitive in terms of poaching of musk deer and galliformes. Reportedly, the migratory graziers also use guns in wildlife poaching.

Staff scarcity and poor infrastructure limits the intensity of patrolling in these areas. Level of protection and deployment of resources are localized mainly near Sonamarg and the threat prone areas beyond Sarbal and Domail are largely neglected. Most likely, these areas leave blank for wildlife offenders to enter inside the sanctuary and commit the crime. In the recent years, poaching cases of musk deer and snow partridge have been reported in 2016. One more poaching case was registered in 2017. Records on wildlife crime are not maintained in an easy retrievable manner in the sanctuary.

¹⁶ Ahmad, R., U. Pacchnanda, I., Suhail., Haq.S., Querishi.S., Puri.M. & Kaul.R. (2011). The Lost Markhor of Pirpanajal: Assessing the distribution of markhor (*Capra falconeri*) and other important fauna along the southern slopes of Pirpanjal with special reference to resource competition with local grazer communities, in Hirpora WLS, Jammu and Kashmir. Wildlife Trust of India, Noida UP

¹⁷ Mishra, C., Van Wieren, S. E., Ketner, P., Heitkönig, I., & Prins, H. H. (2004). Competition between domestic livestock and wild bharal *Pseudois nayaur* in the Indian Trans-Himalaya. *Journal of Applied Ecology*, 41(2), 344-354.

Table 3.6. Areas prone to poaching and other wildlife crime in BTWLS		
Species	Poaching / illegal exploitation prone areas	Season
Musk deer	Doorinar, Rainure, Poshpathar	Autumn, early winter and early spring
Ibex	Rainure	
Brown bear	Rainure	Summer, Autumn
Snow partridge	Rainure	Summer, Autumn
Wolf	Doorinar	Summer, Autumn
Medicinal Plants; <i>Aconitum</i> , <i>Arnebia</i> , <i>Jurinea</i>	Rainure	Summer
<i>Trillium</i>	Sarbal, Doorninar	Summer

3.3.iii Encroachment

The sanctuary areas adjacent to villages are prone to encroachment. There is only one village Sarbal inside the Sanctuary. It has about 37 households. There are no other permanent human settlements inside the sanctuary but *dokes* of herders used seasonally, do exist in many of the sites such as Hapat nad, Rainur, Nawkan and Doorinar. Conversion of Kaccha Gujjar dokes into concrete hotels along the Sonamargboundary makes the area encroachment prone.

3.3.iv Firewood Extraction and NTFP Collection

Firewood is an important need of the villagers of Nilgraht and Sarbal and the migrant herders, for which they depend on the sanctuary. Conventional methods of cooking and heating, almost overwhelmingly employed in the area, consume a fair amount of fuel. There are about 100 families in the two local villages and each family uses about 15 kg of fuelwood daily for about 6 months every year. Thus, on an average about 2719 quintals fuel wood is removed every year from the sanctuary. In addition, there are about 150 families of herders who remove about 20 kg of fuel wood per day, assuming a 100-day stay in the

area, the total fuelwood extracted per season for 150 family works out to be about 3000 quintals of fuel wood from the sanctuary. The migratory graziers in subalpine and alpine areas use Junipers for fuel wood. The graziers camping closer by the conifer forests use pine and fir as fuel wood.

In addition, roadside eateries and tea stalls are also partially dependent on fuelwood from the sanctuary. A road connects the sanctuary to other parts in the region, thus making vehicular transportation of fuelwood outside the sanctuary area easier. This is of great concern, as transportation of fuelwood in such a manner may make collection unsustainable. Herders (Bakkarwals, Gujjars and Shepherds) and locals extract medicinal plants for trade. *Trillidium* (Tripater) is distributed from Sarbal to Ranga and Chunadori (Compartment 60). It is heavily extracted due to its increasing demand in last few years. Locals, shepherds, Gujjars and Bakkarwals are also involved in illegal extraction and trade.

Arnebia (Kahwazaban) is abundant in Doorinar (near the lake area) and Rainure.

Pambehakh is distributed along Doorinar and Rainure and is extracted by locals and herders.

Aconitum (Patrees) is found in Rainure and Poshpathri and is extracted by Bakkarwals and Shepherds.

Jurinea (googgal dhup) is extracted from Rainure and Poshpathri by Bakkarwals and Shepherds for illegal trade.

Medicinal plants are sold to middle men at Sonamarg and it is ultimately sent to Srinagar. Sometimes the medicinal plants are also directly taken to Srinagar.

3.3.v Human-wildlife conflict

Human-Wildlife Conflict (HWC) is currently one of the most serious wildlife management issues confronting the managers of wildlife in Jammu & Kashmir State. However, it is not a major issue around the BTWLS and conflict is limited mainly to crop and livestock depredation, human attack cases are rare. There has been just one human death by black bear in the recent past in the fringe area. Moreover, movement of brown bears and black

bears near the Sonamarg market is a concern. Bears come to human habitation in early spring and late autumn. The poorly disposed garbage in the market place is an attraction for them. Additionally, brown bear and wolf attack and injure herders' livestock and face retaliatory consequences, often leading to their death. The sanctuary management keeps only the records of human death and injury due to conflict.

3.3.vi Tourism and Pilgrimage

The sanctuary is situated near the famous pilgrimage site—Amarnath Cave and tourist destination—Sonamarg. During summer, lakhs of pilgrims visit the Amarnath cave through tracks running adjacent to boundary and a small stretch inside the sanctuary as well. Noise pollution due to use of loudspeakers, helicopters and huge rush of vehicles is one of the major issues disturbing the wild animals during this pilgrimage. Setting up of *Dhabas* and security camps inside the sanctuary during the pilgrimage season could have negative impacts on the wildlife and their habitat. Shepherds from Pahalgam also setup *Dhabas* at Poshpathri to sell Kashmiri tea to pilgrims. At Mahagunas top and Poshpathri, army also establishes *Langar/Hotel* for the pilgrims. Improper management of food and solid wastes by these establishments is a major cause of concern since these are potential sources of land and water pollution. Reportedly, earthen pits are dug to dump municipal waste generated along the route and which are covered after the Yatra. However, number of such pits are not sufficient and not deep enough; hence, after some days of decomposition, the resultant stench attracts brown bears, who then dig out the waste. The next rain after the contents of the pit are dug out causes the filth to flow into the river causing pollution of streams and their beds, which poses threats to birds like Ibis bill who breed in these habitats.

Sonamarg is also a famous tourist place and large number of concrete buildings have come up along the boundary of the sanctuary, leaving no buffer between the constructions and the WLS, especially on the southern aspect. A large number of tourists also trek through the WLS to see the Thajwas glacier. Unregulated and irresponsible tourist activities pose threats to the local environment. Tourists also lit fire in the forest and leave it unextinguished, posing threat of spread of uncontrolled fire.

3.3.viiDisease Transmission

Domestic livestock grazing in the sanctuary increases the chances of spread of contagious / transmittable diseases in wild animals. There is an evidence of livestock affecting wild ungulate health in Dachigam National Park. In 1977, a captive Hangul in Dachigam National Park died of the John's disease, which had affected few sheep of the Dachigam breeding farm¹⁸. Preventive measures to reduce the chances of wildlife being affected by such diseases are not taken.

3.3.viii Infrastructure

Support of proper infrastructure is fundamental to efficient execution of day to day functioning and discharge of duties. Lack of infrastructure is one of the main constraints affecting the management of the sanctuary. There is shortage of staff quarter and protection infrastructure such as patrolling camps, shelter sheds, camping facilities etc. There is just one staff quarter and a guest house located in Thajwas beat. There is no staff quarter in the Sarbal beat. Apart from these infrastructures, there is no shelter shed, patrolling camp or anti-poaching camp established in the sanctuary.

There is dearth of firefighting and wildlife monitoring equipment and so is the case with communication equipment such as wireless sets. Staff use their personal mobile phones for communication. There are no vehicles available (both two-wheeler as well as four-wheeler) for mobility of frontline staff.

3.3. ix. Human resource

Baltal-Thajwas Wildlife Sanctuary suffers from a serious staff shortage reflected by the following. Inadequate strength of frontline staff hampers the protection and management works. The present staff strength of —Deputy Forester (1); Helper/watcher (2), Veterinary Assistant (1), Casual Labours(7)for 210 sq km, is too small for such a mountainous landscape. On top of this, lack of regular training and required equipment and infrastructure are important issues that hamper effective management of the sanctuary.

¹⁸Kurt, F. (1978). Kashmir deer (*Cervus elaphus hanglu*) in Dachigam. In: Threatened deer, pp.159-172. IUCN, Morges, Switzerland.

PART II THE PROPOSED MANAGEMENT

4. The vision, objectives, issues and problems

4.1 The Vision

The management aspires to conserve the ecotone characteristics of the sanctuary and its unique assemblage of flora, fauna and habitats to ensure flow of ecosystem services for sustainable benefits of humankind in the region.

4.2 Management Goals

The Baltal-Thajwas Wildlife Sanctuary will be managed as a repository of natural process and wild flora and fauna of the eco-tone zone of the Greater Himalaya and Trans-Himalaya for posterity. The management intends to manage the ecological concerns of the sanctuary for conserving its processes and components in general and threatened flora, fauna and habitats in particular. In the process it will protect and conserve the habitats and populations of carnivores, herbivores and threatened wildlife against all threats, natural and otherwise.

The management goals of the sanctuary largely aim at contributing towards meeting the following Goals of India's National Wildlife Action Plan (2017-31);

- Conservation of threatened species
- Control of poaching and illegal trade in wildlife
- Management of tourism in wildlife areas
- People's participation in wildlife conservation
- Development of human resources
- Strengthening research and monitoring

4.3 Objectives of Management

To meet the management goals following objectives have been stipulated for the plan period i.e. 2020-2025;

1. To monitor the status and threats to threatened animal species, especially musk deer, ibex, brown bear, long-tailed bush warbler, other threatened avifauna; medicinal plants in trade; and important forage plants species of ungulates.

2. To undertake eco-development activities in fringe areas for reducing the dependence of people on natural resource of the sanctuary
3. To reduce anthropogenic pressure and address other threats to the fragile high altitude ecosystems- the alpine meadows and the glaciers.
4. To restore and rejuvenate habitats of key threatened species of the sanctuary such as, ibex, musk deer, and brown bear.
5. To ensure a strong protection strategy aimed at controlling poaching of threatened species such as musk deer
6. To understand and address the causes of human-wildlife conflict and ensure timely redressal of conflict cases to prevent retaliatory killings of predators such as brown bear and Tibetan wolf
7. To protect sanctuary land against encroachment and take measures to stop non-compatible land-use in the eco-sensitive zone
8. To win support of local communities for wildlife conservation
9. To facilitate eco-tourism for the benefits of the local communities and awareness building of visitors
10. To ensure capacity building of the frontline staff for effective enforcement, apart from staff development and staff welfare measures
11. To facilitate and undertake long-term and short-term basic and applied research programme by coordinating with various local and national institutions.

4.4 Issues and problems in achieving the objectives

Key limiting factors, which restricts the desirable pace of management practices, are as below;

- Inadequate and late budgetary allocations
- Shortage of staff and inadequate infrastructure to implement management activities
- Anthropogenic pressure on wildlife habitats
- Resource dependency reduction of local communities is a capital-intensive programme, which also requires people's participation.

- High pressure of unsustainable pilgrimage tourism in many parts of the sanctuary
- There is no eco-tourism guideline available for the sanctuary
- The high livestock population using the meadows of the sanctuary pose danger of contagious diseases in wild ungulates
- Lack of quality infrastructure facilities for staff
- Lack of proper exposure training of staff and field functionaries
- Weak intelligence network.
- Uncertainty due to army operations

4.5 SWOT Analysis

The **Strengths, Weaknesses, Opportunities** and **Threats** to Baltal-Thajwas Wildlife Sanctuary have been worked out as below;

Strengths

- a) Being situated in the ecotone of Greater Himalaya and Trans-Himalaya it is a biodiversity rich area
- b) High probability of presence of threatened species such as Snow leopard and Hangul
- c) Limited villages around the sanctuary hence comparatively low human dependence

Weaknesses

- a) Managed without any Management Plan, hence poorly planned management
- b) Inadequate enforcement due to shortage of staff and lack of skills
- c) Despite being one of the most important protected areas in Kashmir, it is not much popular.
- d) Lack of research and resultant information for scientific management of the sanctuary

Opportunities

- a) Develop and conserve it as a single unit with the contiguous Dachigam National Park landscape

- b) Ample scope of research work to convert weakness into strength
- c) Only PA in the valley to support snow leopard and other faunal elements of trans-Himalaya (such as Ibex), hence providing good opportunity for development

Threats

- a) Unregulated tourism due to proximity to Sonamarg and Amarnath Shrine
- b) Human wildlife conflict leading to retaliatory killing of wildlife and developing negative attitude in villagers
- c) Grazing pressure on the alpine meadows
- d) Poaching of musk deer and other species

5 Management Strategies

The wildlife sanctuary hosts a number of species of both the Greater Himalayan and Trans-Himalayan regions hence maintaining the habitat characteristics and species assemblage, especially of herbivores – to support the carnivores, is of prime importance and would need management attention. Management actions aiming at protection of wildlife against natural and man-made ecosystem stressors such as poaching, resource exploitation, infestation of weeds, grazing, soil erosion etc. would be undertaken. Followings are the key principles of management strategies for the sanctuary.

- **Restorative strategy:** Restoration of habitat attributes lost over time, such as revival of meadows, controlling weeds to restore potential of a site, soil conservation work to restore catchment functions, restoration of water bodies etc. The techniques of restoration would be such that it is acceptable on aesthetic, economic, environmental or ecological considerations and as ‘near natural’ as possible (Sawarkar, 2005) e.g. restoration of degraded habitats should not be attempted by planting exotics; weed control should not be attempted by using weedicide; restoration of natural water bodies instead of creating artificial water holes etc.
- **Compensatory strategy:** It would seek to compensate loss of habitat attributes for various reasons, as in case of the sanctuary: reducing dependence of graziers on meadows, reducing dependence of locals on the sanctuary resources, unsustainable tourism activities etc. Eco-development measures in the fringe villages, grazing regulation, providing alternate grazing lands, sustainable eco-tourism are some of the compensatory strategies.

Actions under restorative and compensatory strategies need not necessarily be within the management area. Such actions often would need might need to be taken outside the sanctuary to reduce pressure on management area.

5.1 Boundaries

Demarcation of the external as well as internal boundaries of the sanctuary will be important for management. Demarcation and mapping of internal boundaries such as blocks and compartments will be done for the purpose of management actions and monitoring. Demarcation and mapping of tourism zone and routes inside the sanctuary will

help regulating tourism in the area. Map of eco-sensitive zone of the sanctuary be created and land-use and land-cover class, location of villages, ecologically sensitive areas (such as water bodies, wildlife corridors) etc. within the zone would be depicted.

5.2 Zonation and Theme Plans

Since it is difficult to design a standard management practice to be implemented throughout the landscape, it would be practical to adopt zone and theme approach of management. Following three zones are proposed: Conservation zone; Eco-development Zone; and Eco-tourism Zone. Details of the Zones are as below;

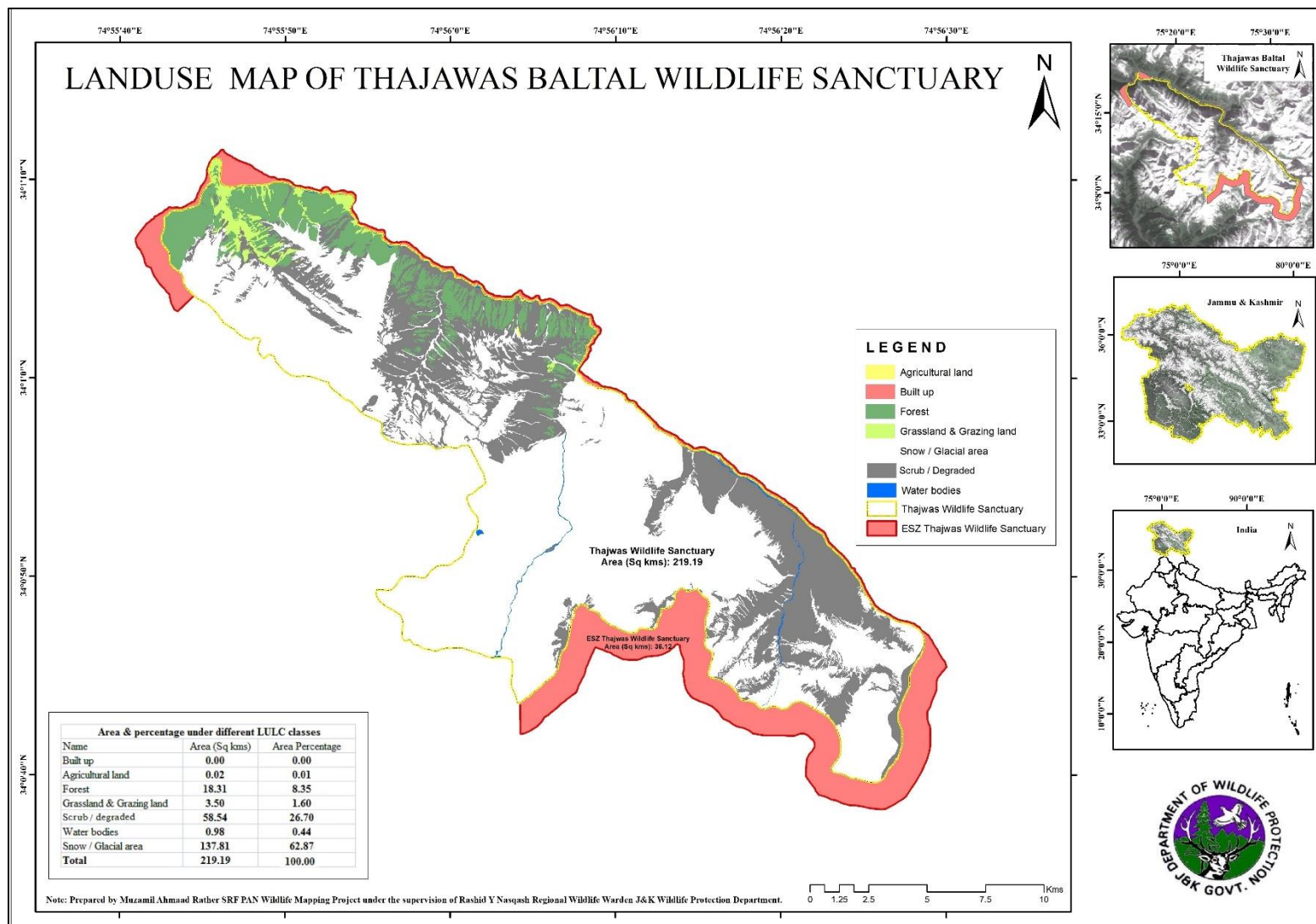
Conservation Zone: The zone would cover the entire sanctuary area except the tourism zone. **Eco-sensitive zone:** In the eco-sensitive zone (ESZ), anthropogenic activities will be regulated, restricted and permitted as per the final notification of ESZ. Activities in the ESZ shall be implemented as per the Zonal Master Plan, to be prepared and approved by the designated state government authorities. The draft map of eco-sensitive zone is given in Map 7.

Eco-development Zone: The zone would be outside the boundary of the sanctuary within 5 km of the sanctuary boundary.

Eco-tourism Zone: The area from Sonamarg boundary till Hapat Gund just before Thajwas glacier and the area from Sarbal till Doorinar can be set as the Eco-tourism Zone.

The sanctuary would be managed as per separate sub-plans or Theme Plans, the critical building block of the management plan, given below.

- i. Habitat management
- ii. Protection
- iii. Restoration of the wild medicinal plants
- iv. Management of human-wildlife interface
- v. Eco-development
- vi. Eco-tourism
- vii. Tourism and Pilgrimage
- viii. Research and monitoring



Map 7. Map of Baltal-Thajwas WLS showing the proposed eco-sensitive zone (Source: DWP, J&K)

- ix. Extension and awareness
- x. Maintenance and development of infrastructure
- xi. Human resource
- xii. Monitoring and evaluation

5.2.1 Habitat management

Objective

Protect, restore and manage important habitats for the threatened wildlife in the sanctuary.

Priority actions

- a. Management of livestock grazing:** Recent studies across the Himalayas have shown that uncontrolled livestock grazing is a major threat to wild herbivores and their habitat¹⁹²⁰²¹²²²³. Moreover, it is one of the key management issues in Baltal-Thajwas too. It is, thus, important to lay emphasis on management of livestock grazing practice to prevent degradation of alpine pastures.

Following actions should be taken in this direction;

- Curtailing down the number of livestock herds taken by shepherds and Bakkarwals in the sanctuary. This can be done by allowing only the bonafide graziers to bring their flocks. By disallowing non-bonafide graziers, grazing pressure on alpine meadows can be brought down by about half. The number of livestock allowed for grazing in the sanctuary by shepherds and Bakkarwals should be specified based on the actual number of livestock owned by them. The practice of these communities of bringing livestock of non-bonafide communities for grazing in the sanctuary should be discontinued through application of appropriate social, legal and educational measures.

¹⁹ Mishra, C. (2001). High altitude survival: conflicts between pastoralism and wildlife in the Trans-Himalaya. Wageningen Universiteit.

²⁰ Mishra, C., Van Wieren, S. E., Ketner, P., Heitkönig, I. and Prins, H. H. (2004). Competition between domestic livestock and wild bharal *Pseudois nayaur* in the Indian Trans-Himalaya. *Journal of Applied Ecology*, 41(2), 344-354.

²¹ Bagchi, S., Mishra, C. & Bhatnagar, Y. (2004). Conflicts between traditional pastoralism and conservation of Himalayan ibex (*Capra sibirica*) in the Trans-Himalayan mountains. *Animal Conservation*, 7, 121-128.

²² Ahmad, R., U. Pacchnanda, I., Suhail, Haq.S., Querishi.S., Puri.M., and Kaul.R. (2011). The Lost Markhor of Pirpanajal: Assessing the distribution of markhor (*Capra falconeri*) and other important fauna along the southern slopes of Pirpanjal with special reference to resource competition with local grazer communities, in Hirpora WLS, Jammu and Kashmir. Wildlife Trust of India, Noida UP.

²³ Ahmad, R. (2014). An investigation into the interactions among wild ungulates and livestock in the temperate forests of Kaj I nag. Ph.D. dissertation, Manipal University, Manipal, India.

- Transient Bakkarwals' route through the WLS should be diverted via Kangan-Ganderbal.
- Long term plans to provide alternate grazing areas to bonafide herders should be explored/developed.

b. Pasture development: Development of the degraded pastures is important for wild herbivore population in the sanctuary. Degraded pastures in the sanctuary include Rainure, Pahal pathur, Doorinad, Nawkan. Restoration of these pastures requires following measures;

- Heavily eroded and degraded alpine pastures need to be protected on temporary basis in order to allow recovery and facilitate regeneration of native grasses, herbs and shrubs.
- Artificial seeding of native species should be done in highly degraded pastures where natural recovery through protection does not yield favourable results.
- Nursery should be established to ensure availability of quality planting material of the relevant plant species. Suitability of the species for a particular habitat and specific altitudes should be worked out meticulously.

c. Removal of unwanted floral species: The high grazing pressure and lack of adoption of scientific management practices increase infestation of unwanted weed species affecting the herbage production and rendering the habitat quality poor. Nawkan, Doorinar, and Rainure areas in the sanctuary are heavily infested with weed species. Palatable species of grasses and legumes in the pastures are predominantly replaced by noxious weeds like *Rumex*, *Cirsium*, *Stipa*, *Sambucus*, *Sibbaldia*, *Sonchal* (*Malva sylvestris*), *Van Palak* etc. Management of invasive and unwanted species would require following measures to be implemented;

- Mapping of the weed infested areas in the sanctuary: The weed infested areas should be systematically surveyed and mapped to know the extent of infestation.
- Phenology of weed species: Phenology of the weed species should be compiled/studied to decide the time/season for employing control measures.

- De-weeding: The unwanted species should be manually uprooted before flowering starts. In due course of up-rooting the native and palatable species should be disturbed to a minimal extent.
- Monitoring of the weed cleared sites: The abundance of weed species should be monitored before and after the removal operations to assess the success of the de-weeding operation. Based on the results cycles of the treatments should be decided.
- Plantation of native species: In the weed cleared plots, regeneration of native and palatable species may take some time, hence it is suggested for artificially seeding of suitable plant species in cleared plots.

d. Soil Conservation: Bank scouring by the fast flowing streams and rivulets is an issue to be addressed under this component. To prevent the soil erosion and to check the soil run-off, gully plugging, dry rubble stone masonry and crate-wire bunding should be done in the erosion prone compartments of the sanctuary.

- Construction of bunds and check dams in compartments 56, 58 and 60 should be taken on priority.
- The stretch between Gadekole to Hapat gund (compartment 56) is highly prone to erosion where crate bunding could be a better option to the simple check dams. Other areas where simple check dams can also work include Hawas to Kokran (Compartment 58) and Pahal Pathri to Doorinar (Compartment 60).

e. Plantation and promoting natural regeneration: There are some areas in the sanctuary where natural regeneration is high, but these sites are affected due to livestock grazing in the spring season resulting into damage of saplings. Such areas should be protected. Mentioned below are the identified areas rich in regeneration;

- Gade kole to Thajwas (Compartment 56): Rich regeneration of Prunus (Breth, Zom) and maple (tikone, trikana). In spring, these saplings are eaten by the livestock and there is very high mortality. Thus, protection is needed to allow the regeneration here

- Pahal Pather to Sarbal (Compartment 60): Healthy regeneration of Maple, Prunus, Fir, Spruce and Pine in this area.
- Warine Dob: Good regeneration of Maple, Prunus, Fir, Spruce, Pine and wild Salix.
- Yachimarg, Sarbal to Rangador (Compartment 58): Healthy regeneration of Hazel nut Maple, Prunus, Fir, Spruce, Pine and Aesculus.

Plantation requirements: Plantation of following species should be done in the areas indicated.

- Shutgari to Club (Compartment 56): Conifer (as they were already there), fruit bearing plants (and viburnum and berberies), Aesculus, Maple. About 20000 saplings can be planted over a period of five years.
- Trone khole to Hapat Gund (Compartment 56): About 10000 saplings of coniferz, fruit bearing plants (Viburnum and berberies), Aesculus and Maple can be planted in the area.
- Sarbal to Rangadori (Compartment 61): About 20000 saplings of conifers can be planted in the area.

Salix dendriculata plantation can be done in strategic areas. Services of external experts shall be taken to train the staff in nursery, plantation and post-plantation techniques.

5.2.2 Protection

Objective

Strengthen surveillance and protection measures to secure wildlife and their habitat in the sanctuary.

Priority actions

a. Demarcation and securement

Proper demarcation of the whole sanctuary has been initiated recently taken up and maps in GIS domain prepared. The fringes of the sanctuary are however extremely vulnerable to encroachment, especially along the Sonamarg market and around the Sarbal village.

Permanent demarcation of boundary of the sanctuary in areas adjoining human habitation (near Sonamarg and around the Sarbal village) will be done by erecting fences or RCC/Pillars (for about 2 km length) to prevent against any encroachment. This will also help regulating the anthropogenic pressure. In case of fencing off the area, a gate shall be provided at suitable place to allow the movement of eco-tourists.

b. Wildlife crime prevention activities

Poaching, retaliatory killing of wild carnivores, extraction of medicinal plants, NTFP collection are some of the major wildlife crimes happening in and around the BTWLS. There is an option to involve primary stakeholders such as herders and local villagers to form squads headed by the staff of the sanctuary to conduct wildlife crime prevention patrolling.

Below are the suggested steps to be taken to control wildlife crime in the sanctuary;

- i. Maintaining and creating patrolling paths:* The existing patrolling paths need to be maintained for smooth movement of patrolling teams. New patrolling routes will also be created in areas prone to wildlife crime.

Following patrolling paths have been identified in the sanctuary. These need to be strengthened and maintained. Additionally, new patrolling routes and paths need to be aligned and developed by the Wildlife Warden in consultation with the frontline officers.

Table 5.1. Patrolling paths in BTWLS			
From	To	Length (km)	Compartment No.
Sarbal	Nilgrath (inside WLS)	2	60
Gadibal	Nilgrath	1.5	58-59
Hapat gund	Nawkan top	4	56-57
Thajwas	Koker Seena	3	56
Rangadori	Baltal	4	60-61
Beli	Domail	3	61-62
Domail	Rainure	3	61-62

ii. *Anti-poaching camps (APC)*: The anti-poaching camps will be established in Sarbal, Rainure and Doorinar. The camp at Sarbal will serve the purpose of permanent basecamp while others will be used during vulnerable periods (early spring to early winter in Doorinar whereas late Spring to late Autumn in Rainure).

- Rainaure: At least two anti-poaching camp will be created at strategic locations
- Doorinar: At least two anti-poaching camp will be created at strategic locations
- Sarbal: In Sarbal the permanent camp comprising of staff quarter, communication network and vehicle will be established.

The anti-poaching camps shall be equipped with following items:

- Logistics (sleeping bags, utensils, cooking device) and drinking water
- Solar lighting
- Communication equipment
- First-aid box
- Stationary and data collection formats

The anti-poaching camps shall be regularly monitored by Wildlife Warden and Range Officer.

iii. *On-foot Patrolling*: The Range Officer (RO) will make a patrolling route map based on the sensitivity of an area with regard to wildlife crime. Some of the sensitive areas include Rainure, Poshpathri, Doorinar and Sarbal. The RO will prepare a patrolling roster to ensure that all areas are effectively patrolled and that the teams will keep on changing their routes on regular basis. The RO and forester will also accompany the patrolling teams on regular basis. In later phase of the management plan period mobile application based/GPS based patrolling will be accomplished in the sanctuary.

- Each team will be comprised of one permanent staff (forest guard) and two team members either daily wagers or permanent helpers. Ideally, atleast 10 patrolling parties should be deployed to cover the entire sanctuary area effectively.
- The patrolling teams shall maintain monitoring and patrolling register/data sheet and submit its copy to their controlling authorities.

iv. *Vehicle patrolling*: Vehicle patrolling should be along the motorable areas, especially in sensitive zones of Rainure/Domail and Baltal/Sarbal. More intensive patrolling during vulnerable periods of spring and autumn along these areas will be crucial.

- To conduct vehicle patrolling effectively at least two motor bikes and one four-wheel vehicle will be provided at Sonamarg and Sarbal camps.
- The Range Officer, who will get the patrolling data from the patrolling teams on weekly basis, will send a compiled report to the Wildlife Warden on monthly basis. This will be important to facilitate timely and appropriate action.

v. *Communication network*: If security conditions permit, wireless network shall be established and handsets be provided to the patrolling teams for communication. Wireless Control Room will be established at Sonamarg. All patrolling vehicles and teams will be provided with mobile wireless handsets. The wireless stations will function round the clock in general days, but might remain close during inaccessible period of peak winter. Alternatively, mobile phones may be provided to the patrolling staff for quick communication.

vi. *Registration of arms*: The Wildlife Warden will take appropriate measures to ensure that every person residing in or within 10 km of the sanctuary and holding a license granted under the Arms Act, 1959 shall get the arms registered with the Chief Wildlife Warden or the authorized person.

vii. *Use of modern technology in monitoring and surveillance*

The emerging and advanced technologies can play a huge role in research and management of wildlife. Such technologies are increasingly being adopted by wildlife biologists and managers to improve data collection and have effective monitoring and surveillance, especially when the technologies are cost effective. Remotely piloted aircraft (RPA; commonly known as “drones,” unmanned aerial systems or unmanned aerial vehicles) have seen a rapid uptake by wildlife managers and scientists for novel data, monitoring and surveillance. Drones provide a comparatively low risk-free and low-cost manner to monitor natural at high spatio-temporal resolution with less time and systematically. Drones can collect extremely fine spatial and temporal resolution data at the discretion of the user. Therefore, drones are being used for data collection in an

increasingly diverse suite of ecological applications, including transect counts of African elephants, monitoring for poaching activities, detecting reptile and arboreal mammal nests. The ability to collect data with higher accuracy, higher precision and less bias than the existing approach confirms that drones are a scientifically rigorous data collection tool for wildlife population monitoring. Furthermore, as RPA platforms, sensors and computer vision techniques continue to develop, it is likely that the accuracy and cost-effectiveness of RPA-based approaches will also continue to improve. These advantages have recently made drones to be used in wildlife research and management.

Protected Areas are repositories of biodiversity and their aim is to safeguard this natural heritage for long term. Despite their critical role in conservation, they face shortage of resources in terms of manpower, infrastructure and equipment to fully achieve their aim, especially with the increasing anthropogenic interference and unforeseen circumstances. Thus, there is a demand for cost-effective, versatile and practical initiatives to achieve conservation and management goals by using a balance of traditional techniques, advanced technologies and innovative methods.

The Baltal-thajwas is a remote and tough landscape with an area of 220 sqkm but just 4 frontline staff. It is also one of the highly disturbed areas due to livestock grazing, tourism and pilgrimage tourism. Poaching has also been identified as one of the threats. Therefore the regular monitoring and surveillance is an utmost need and drones can play an important role.

viii. Monitoring and surveillance during winter months

Monitoring and surveillance is a crucial component of wildlife conservation and management. However, trained manpower, equipment and infrastructure is required to do it effectively. Harsh winters and remote areas in high altitude landscape makes this job tough and sometimes impossible as the areas get cut-off due to heavy snow, snow slides etc. Therefore, equipments such as snow shoes, high altitude sleeping bags and tents, feather jackets would be required to trek during winters. Additionally a staff quarter with proper heating system preferably traditional *Hamam* would be ideal to stay for winters in

areas like Baltal-Thajwas WLS. Furthermore, it would be advisable to coordinate and take help from other agencies such as army who stay in such places throughout winter.

c. Capacity building of staff: It is important to enhance the effectiveness of patrolling, crime prevention and management activities. For this, emphasis must be therefore laid to create a workforce that is trained, equipped, and motivated to undertake these tasks. Periodic training programmes on monitoring and enforcement shall be organized for frontline staff and officers. Regular refreshers are also suggested. Following are the indicative lists of topics for the training programmes:

- Effective patrolling and use of scientific devices
- Detection and investigation of wildlife crime
- Legal procedures related enforcement J&K Wildlife Protection Act
- Wildlife monitoring techniques
- Use of Android App based wildlife monitoring system
- Eco-development and eco-tourism
- Human-wildlife conflict management
- Habitat restoration

Initially for two years, one fresh and one refresher-training programme shall be conducted annually with the help of expert individuals/organisations. Later on one annual training programmes shall be conducted.

d. Coordination with other enforcement agencies: The sanctuary management shall work with line-departments such as Forest Department, Police Department, Security Forces etc. to ensure protection of wildlife in the sanctuary and implementation of the J&K Wildlife Protection Act (1978) to control wildlife crime. An interactive session/workshop with these agencies will be conducted annually.

- *Coordination with Sonamarg Development Authority:* The sanctuary management shall work with line-departments such as Forest Department, Sonamarg development authority (SDA), to ensure implementation of certain activities where these agencies have a role. Sonamarg is a tourist hub and most of the activities are controlled by the SDA. The fringes of sanctuary come under SDA and a good number of tourists also visit the sanctuary area. The SDA also performs other activities in the

area and some of the activities have bearing on the sanctuary. Similarly certain activities undertaken by the sanctuary management may have bearing on SDA. Therefore, an interactive session/workshop with the SDA should be conducted annually or six monthly and there should be regular interaction during rest of the time.

5.2.3 Restoration of the wild medicinal plants

Objective

To restore important medicinal plant assemblage in suitable areas of the sanctuary

Priority actions

a. Facilitate natural regeneration

- Rainure is the best site for natural regeneration of medicinal plants. Other sites suitable for natural regeneration of medicinal plants shall be identified and prioritised after a systematic survey.
- Local shepherds and migratory herders will be taken into confidence to release important site from grazing and other anthropogenic pressure to allow natural regeneration of medicinal plants with high trade demand.
- Temporary fences may also be created on experimental basis to protect against anthropogenic disturbances and facilitate natural regeneration of medicinal plants.

b. Assisted regeneration

- Identification of sites for plantation of important medicinal plant species which are threatened due to over-extraction
- Establishing temporary medicinal plant nursery
- Plantation and post-plantation care as per the operational schedule.
- Explore options for convergence of activities under Mahatma Gandhi National Rural Employment Guarantee scheme in the state.

5.2.4 Management of human-wildlife interface

Objective

To act proactively to reduce losses due to human-wildlife conflict in and around the BTWLS

Priority actions

The interface between carnivores and humans sometimes leads to a negative interaction, for the animal or the human and ends into loss to either or both. Whereas, it is difficult to reduce such interactions, good and timely management of the problem can reduce the negative impacts of such events.

Following are the priority action to deal with the problem. Identification and mapping of conflict prone areas

- i. *Analysing the human-wildlife conflict scenario:* Mapping of conflict prone areas shall be done by collating the data of human-wildlife conflict over the last five years (a minimum, 10 years being ideal). The data will include location of each conflict sites, species involved in the conflict, seasonality and timing of each conflict event, type of loss occurred and other associated information. The data shall be analysed to identify conflict hot spots.
- ii. *Conflict mitigation activities:*
 - A. Preventive measures
 - *Sensitisation of people in high and medium conflict areas:* The sanctuary management in partnership with other organizations will organize awareness camps to make the villagers, hoteliers and other stakeholders aware about causes of conflict and preventive measures.
 - *Training of local youth to avoid conflict situations:* In high conflict areas a network of volunteers shall be developed and named as Primary Response Team (PRT). The primary job of the team would be to take immediate actions to avoid encounter of people with the wild animals, help providing the wild animal a safe passage, relay information to Wildlife Protection Department for further action. Regular training of the PRTs on these aspects shall be done, and the sanctuary management shall monitor their activities.
 - *Promote better disposal of garbage:* The presence of brown bears around the Sonamarg market and in Baltal has been because of the open garbage dumps from hotels, army camps and the pilgrims. Thus, safe garbage disposal would be the prime activity. The sanctuary authorities shall apprise the local civil amenities

bodies about the situation and after effects and ensure that the bodies ensure safe disposal of garbage. The stakeholders, such as hotel owners, army camps, pilgrims etc., shall be made aware about the consequences of the improper disposal of the garbage, especially in the peak conflict seasons.

B. Reactive measures

- *Put in place a conflict management team:* Quick response by trained manpower is the key to reducing damage in conflict scenarios. The Rapid Response Team (Control Room) at Ganderbal takes care of the conflict around the BTWLS also. However, it is important that few staff of the sanctuary be trained to deal with situations until the team from control room reaches the conflict site. It is highly desirable to equip and train the Rapid Response Team at Control Room, Ganderbal. Procurement and maintenance of rescue vehicle along with the assured availability of equipment necessary to capture and/or rescue an animal shall help the smooth conducting of the human-wildlife conflict mitigation process in this area

C. Ex-gratia/relief

- There is a provision of fundsto make *ex-gratia* payments to affected families in case of human loss under conflict situations. However, such *ex-gratia* for the damage of standing crops by wild herbivores and cattle loss (cattle lifting or cattle death) is not in place yet. The sanctuary management would apprise the state level functionaries for including these losses under the *ex-gratia* coverage.

The sanctuary authorities shall assess the feasibility of covering crop damage and livestock depredation by wildlife under insurance scheme. It will reduce the chances of retaliatory killings or other such untoward incidents. Moreover, the sanctuary management may also purse the state authorities to include human-wildlife conflict as a natural disaster.

5.2.5Eco-development

Objective

To promote eco-development activities in fringe areas for reducing the dependence of people on natural resources of BTWLS

Priority actions

- a. **Constitution of eco-development Committees:** Eco-development committees (EDCs) shall be constituted in the villages within 5 km from the sanctuary boundary. Forest Guard of the respective area would be the ex-officio Member Secretary of the EDC. Participation of various ethnic and social groups including women should be the member of the EDC. The committee will act as a bridge between the sanctuary management and fringe communities, besides providing institutional support to implement the eco-development activities.
- b. **Preparation of micro-plans to reduce dependence of fringe communities on the sanctuary resources:** Village level socio-economic surveys and Participatory Rural Appraisals (PRA) shall be done to prepare micro-plans for a guided and need based solutions to reduce the dependence of local communities on the sanctuary. Entry point activities will be conducted in the target villages before preparation of participatory micro-plans. An indicative / sample format of a village level micro-plan is given in *Annexure V*.
Additionally, livelihood improvement and dependence reduction plan shall also be prepared for the *bonafide* migratory and local herders. There about 150 such herder families in the BTWLS.

Services of expert individuals and agencies will be taken in conducting the socio-economic survey and preparation of micro-plans. The activity will be completed in the first two years.
- c. **Indicative entry point activities:** As the micro-plan preparation will take atleast a year, Indicative entry activities will be proposed until micro-plan is implemented. These activities have been decided on the basis of interaction with the communities.
 - Alternatives to reduce dependence on fire wood such as LPG connections and cooking stoves, firewood efficient smokeless chullahs.
 - Solar powered devices to provide clean lighting solution
 - Livestock vaccination to reduce mortalities due to transmittable diseases. It will also act as safeguard against spread to such diseases to wildlife sharing the resources with domestic livestock

- d. **Implementation of micro-plan prescriptions:** The measures prescribed in the micro-plans shall be implemented in the last three years of the management plan period. Eco-development activities shall form an important component of the Annual Plan of Operation (APO) submitted to the government for funding. Moreover, the sanctuary management shall also mobilize resources from line department for implementation of relevant prescriptions. Regular monitoring of implementation and impact of initiatives on attitude of locals and their dependence along with their improvement in ecological condition of the sanctuary shall be done.

5.2.6 Eco-tourism

Objective

To use low impact nature tourism/ eco-tourism as a tool to raise awareness about the sanctuary and enhance locals' livelihood

Priority actions

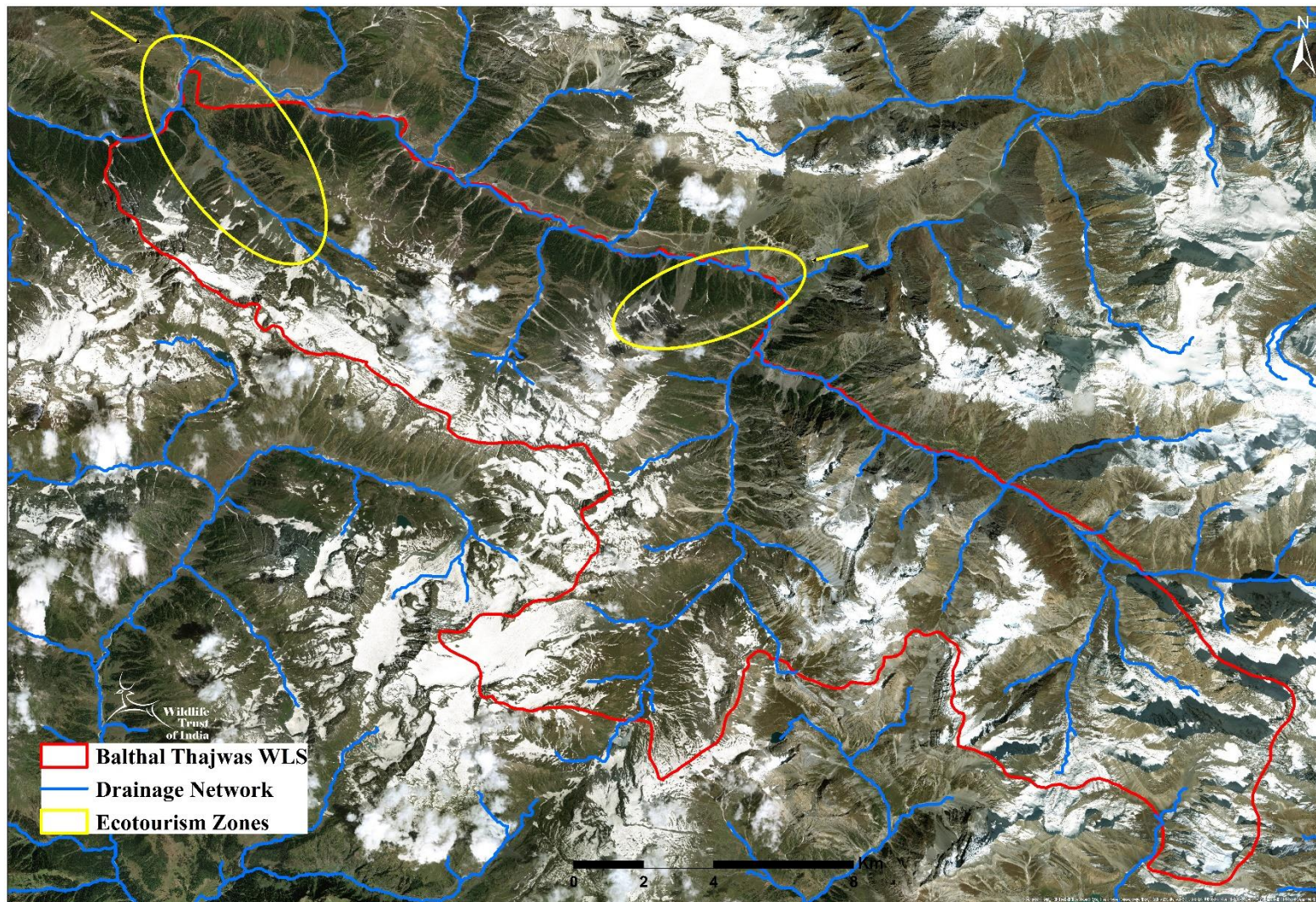
- a. **Identify and map the tourism zone:** To regulate tourism activities in the sanctuary it is important to delineate the tourism zone for the sanctuary. The eco-tourism zone shall comprise of the parts of Compartment Nos. 55, 56, 57 and 58 in western part and 62 ab in the eastern part, as indicated in Map 7. The areas already being used by seasonal tourists will form the part of the eco-tourism zone. The eco-tourism zone shall have negligible impact on the critical wildlife areas and the rare biodiversity and overall ecosystem of the sanctuary. The eco-tourism zones, routes and tracks etc. shall be delineated on a map and marked on the ground to facilitate enforcement of the eco-tourism guidelines.
- b. **Eco-tourism plan:** An eco-tourism plan for the sanctuary shall be prepared in the first year of the management plan period. The routes and camping sites shall be specified in the plan. Since, the J&K Tourism Department is the key stakeholder in the ongoing tourism activities in and around the sanctuary, the sanctuary management will organize consultation with the department while preparing the eco-tourism plan. The eco-tourism policy guidelines issued by the Ministry of Environment, Forest and Climate Change (MoEF&CC) shall be kept central to eco-tourism activities in the sanctuary. The policy guidelines are given in *Annexure VI*.

While preparing the eco-tourism plan following points shall for an integral part of the activity.

- Ensure no or low-impact tourism that protects ecological integrity of wilderness areas
- Highlight the heritage value of wilderness and the Protected Area
- Build environmental and cultural awareness and respect
- Facilitate the sustainability of ecotourism enterprises and activities
- Provide livelihood opportunities to local communities
- Use indigenous, locally produced and ecologically sustainable materials for ecotourism activities

c. Involving locals in eco-tourism activities: Following measures shall be taken to develop scopes for direct and indirect benefit to local communities.

- The local youth can be an important resource to work as guides, tour operators and helpers. To enhance their capacity necessary trainings must be given by the sanctuary management and tourism departments
- The sanctuary management shall assist the local villagers to constitute eco-tourism society or any such community based organization that will operate the eco-tourism process and a mutually agreed upon benefit sharing mechanism shall be developed.
- The sanctuary management shall promote the eco-tourism activities in the area by appropriate strategy to help the community-based eco-tourism initiatives.
- The Wildlife Protection Department / Sanctuary management shall facilitate establishing homestays on pilot basis in strategic areas.



5.2.7 Tourism and Pilgrimage

Objective

To regulate tourism and pilgrimage within the BTWLS

Priority actions

- There are large langar sites at Mahagunas top and Poshpathri established by Army. The numbers of these established within the sanctuary boundary shall be reduced to cater smaller number of pilgrims to cut on huge disturbance and pollution.
- The sanctuary management shall study the disturbances caused due to heavy seasonal tourist rush. The effects of camping sites, movement of large number of people, establishment of eateries by outsiders etc. shall be worked out and alternative, sustainable, low impact and regulated activities shall be implemented in partnership with local administration, shrine board and J&K Tourism Department.
- The authorities such as Shrine Board, Tourism Department and Army will be advised to have proper garbage disposal to reduce river/stream pollution and avoid bear conflict.
- Use of any synthetic chemical by the authorities to decompose the garbage shall be banned completely.
- The sanctuary management shall place a well-equipped monitoring team of 10-15 persons during the pilgrimage to control activities that damage / adversely affect the ecology of the sanctuary. The team should have resources available for rescue of wildlife such as vehicle, cages, tranquilizing equipment etc.
- If the large number of tourists go close to the Glacier, it may have negative effects on the glacier and thus there should be a minimum distance limit (200 m) until the tourists should be allowed to visit. Surveillance and awareness of visitors inside the sanctuary will help in accidental / unintentional forest fire.

5.2.8 Research and Monitoring

Objective

To conduct researches for management and conservation of key habitats and threatened species.

Priority actions

The sanctuary management shall undertake applied and basic research that could help in scientific management of the sanctuary. The sanctuary management can collaborate with universities and conservation organizations to undertake the research works in project mode.

Further, it is important to build the capacity of frontline field staff to conduct regular monitoring of habitat and wildlife population. The staff shall be provided with adequate equipment support.

Following research topics are suggested to be accomplished in the management plan period.

A. Monitoring of threatened species

- The area has been notified as a wildlife sanctuary mainly because of the important western and Trans-Himalayan fauna that it holds, especially the Ibex, the musk deer and the brown bear. Thus, management input should reflect effects on status of these species. To monitor the effects, it is highly desired to monitor these species on regular intervals. Annual surveys shall be systematically done to achieve the objective.
- As mentioned earlier, BTWLS is rich in medicinal plants, thus, documenting the wealth of these medicinal plants and assessing the distribution and threats would be desired to help preserve them.

B. Assess the degradation of key habitats

Keeping in view the anthropogenic pressures and the resultant change in the habitats need to be assessed. Such habitats shall be mapped and problems identified to take appropriate restorative management interventions.

C. Study on the impact of livestock grazing pressure on alpine pastures and mountain ungulates

- Livestock grazing and associated disturbance seems to be one of the major threats to wild herbivore population and the alpine pastures. However, there is inadequate understanding on the impact of livestock grazing on wild ungulates and the pastures

in BTWLS. Long-term monitoring needs to be done by laying permanent plots and periodic study of attributes such as: grazing pressure, wildlife abundance, quality of forage etc. will be done.

D. Update information on the major threats

- Quantification of the existing major threats and identification of potential threats will be taken up. It will lead to prescriptions for management interventions to address the identified threats.

E. Mapping resource use

- Documentation and quantification of the sanctuary resource used by the fringe communities and other users for sustenance and commercial purposes shall be done on priority basis. This resource use will be mapped to help the managers in taking appropriate measures.

F. Inventory of Biodiversity

- Baseline information about the biodiversity of an area will help to manage and conserve it better. Inventory of the biodiversity including micro level flora and fauna can be done by consultation with concerned experts and through collaboration of relevant institutions and organisations.

5.2.9 Extension and awareness

Objective

To spread awareness about conservation values of the BTWLS

Priority actions

a. Develop and maintain a dedicated website for sanctuary

- The website would be an appropriate step to highlight the WLS and its biodiversity. The information acquired through research and other activities would be uploaded on the website on regular basis.
- It would be also easy for the interested tourists and other target groups to get relevant information on the website and plan their trips/treks and studies accordingly.

b. Print publicity material and install hoardings and signage

- For improving awareness level about the socio-cultural and ecological importance of the area in this landscape, attractive hoardings, banners, collaterals, pamphlets and other such publicity materials shall be prepared and publicized suitably.
- The initiatives shall be publicised through digital media. Short documentary films on the ecological and socio-cultural importance of Baltal-Thajwas Wildlife Sanctuary will also help creating awareness.

A. Observing Foundation Day

- The sanctuary has been notified on 19th March 1987, hence this date can be observed as 'Foundation Day' of Baltal-Thajwas Wildlife Sanctuary. Awareness events shall be organized to mark the day and involve various stakeholders in the conservation of the sanctuary.

B. Conducting guided tour for local school students

- Regular guided tour of local school students shall be organized to generate interest on wildlife and conservation of Baltal-Thajwas WLS.

C. Establishing a 'Nature Interpretation Centre'

- Since the area is visited by a large number of tourists, who many a time find it difficult to explore the ecological and socio-cultural treasure trove of the areas. Hence, a Nature Interpretation Centre at Sonamarg shall be established to cater to such visitors and make them aware about the values of the sanctuary.

5.2.10 Maintenance and development of infrastructure

Objective

To develop and maintain management and protection infrastructure

Priority actions

a. Infrastructure development

Following infrastructure shall be developed and maintained during the management plan period to strengthen protection and management of the sanctuary.

Infrastructure development / maintenance	Location
Buildings	
Construction of staff quarters	Sarbal
Maintenance of staff quarter	Sonamarg
Watch towers	At strategic location
Shelter sheds	Poshpathri, Nawkan, Hapat gund
Anti-poaching camps	Rainure, Doorinar
Tourism Gate and Check-Post	Sarbal, Sonamarg
Basic amenities for tourists (toilet, drinking water, shelter sheds)	Thajwas, Sarbal
Nature Interpretation Centre with Tourist Information Centre	Sonamarg
Communication and mobility	
Wireless Network	One control room at Sonamarg, Two repeater stations and hand-held devices
Motorbike	Three
Four-wheeler patrolling vehicle	One
Research and Camping equipment	
Binoculars	10 pairs
Camera traps	25 pairs
GPS receiver	10 units
Tents	5
Sleeping bags	30

5.2.11 Administrative set-up and Human resources

The sanctuary shall be divided into two management units or blocks (Thajwas and Baltal), each headed by a Forester rank staff. The headquarters of these units shall be at Sonamarg and Sarbal. Each block should be divided into two beats, each headed by a Forest Guard. Two watchers / helpers will assist each Forest Guard. Additionally, casual and seasonal

labours shall be deployed in sufficient numbers to assist the permanent staff. Technical staff, such as Wireless Operator and Secretarial staff shall be posted for smooth functioning of the sanctuary management. One Range Officer shall be dedicated only to the sanctuary. The proposed strength of staff in sanctuary is given below;

Rank	Present strength	Proposed strength
Wildlife Warden	1	1
Range Officer	1 shared	1 dedicated
Forester	0	2
Deputy forester	1	2
Forest Guard	0	4
Watcher/ helper	2	4
Secretarial staff	0	1
Driver	0	1
Wireless Operator	0	1
Casual labours	7	10
Seasonal labours	0	15

5.2.12 Monitoring and evaluation

Monitoring and evaluation shall be a cross-cutting theme to be applied across all thematic areas to establish trends and changes. Monitoring of the processes and outcomes of management interventions will help in course correction and adaptive management. Additionally, the sanctuary management shall adopt appropriate ways and means to monitor the conditions of assets and infrastructure. Estimation of key wildlife population shall be conducted on yearly basis, each during the same period and employing the same technique.

The Wildlife Warden shall be responsible for monitoring of the implementation of the management plan prescriptions, while the Chief Wildlife Warden or an authorized person shall evaluate the effectiveness of the management prescriptions. Relevant Control Forms

(Adopted from Sawarkar, 2005²⁴) has been annexed with this document (*Annexure VII*). This information shall be analysed periodically (quarterly, annually, biennially etc.) at appropriate level (Compartment, Sector, Ranges, Sanctuary etc.) and interpretation be made. Following formats (indicative, need to be modified suitably based on local scenario) are prescribed for monitoring purposes.

- I. Restoration of Habitat
 - i. Weed Control, Initial Operation
 - ii. Weed Control, Subsequent Operation
 - iii. Soil conservation measures-Initial Operations and subsequent maintenance
 - iv. Planting, Sowing – Initial Operation
 - v. Response of plantings, sowings and subsequent operations
 - vi. Area under Protection/ Closure
- II. Animals
 - i. Measuring trends in populations
 - ii. New Records
 - iii. Mortality other than that attributable to an offence
 - iv. Mortality attributed to poaching or an act of vandalism
 - v. Predation on domestic livestock by wild carnivores
 - vi. Killing of human by wildlife or injury caused
 - vii. Wildlife damage to private or public property
- III. Plants
 - i. New records
 - ii. Disease and Mortality
 - iii. Illegal and legal collection
- IV. Grazing
 - i. Grazing of domestic livestock
- V. Inter-agency Programs
 - i. Agencies and Schemes (Government)
 - ii. Programs of NGOs
- VI. Construction/Maintenance of Infrastructure
 - i. Roads & Bridges
 - ii. Buildings
 - iii. Communication
 - iv. Vehicles
 - v. Manpower recruitment / Existing manpower
 - vi. Construction of boundaries, fences, trenches, exclosures, enclosures
- VII. Tourism
 - i. Visitors
 - ii. Use of tourist facilities – Lodging
 - iii. Eco-tourism – Partners

²⁴ Sawarkar, VB. (2005). A guide to Planning Wildlife Management in Protected Areas and Managed Landscapes. Wildlife Institute of India, Dehradun, India

- iv. Eco-tourism – Visitor aspirations
- VIII. Outbreak of fires
- IX. Offence cases detected
- X. Incentives and Rewards / Awards
- XI. Research projects
 - i. Under implementation through PA manpower with or without collaboration with other agencies
 - ii. Under implementation by other agencies
- XII. Survey and inventories
- XIII. The monitoring programme
- XIV. Eco-development programme
 - i. Targets and implementation
- XV. Progress of all strategies under the zone and theme plans
- XVI. A summary of allotment of funds, revenue and expenditure
- XVII. Connecting multi-agency programs in landscape based planning
- XVIII. Monitoring extent and quality of multi-agency programs

Part III BUDGET

Financial Layout

Para. No. in Part II of the Management Plan	Activities / Sub-activities	2020-21		2021-22		2022-23		2023-24		2024-25	
		Physical Target	Budget (Rs. in Lakh)	Physical Target	Budget (Rs. in Lakh)	Physical Target	Budget (Rs. in Lakh)	Physical Target	Budget (Rs. in Lakh)	Physical Target	Budget (Rs. in Lakh)
5.2.1	Habitat Management										
5.2.1.a	Livestock grazing control										
	Divert the route of graziers	20 labours for 2 months	2.7	20 labours for 2 months	2.7	20 labours for 2 months	2.7	20 labours for 2 months	2.7	10 labours for 2 months	2.7
	Control grazing by non-bonafide herders	10 labours for 4 months	2.7	10 labours for 4 months	2.7	10 labours for 4 months	2.7	10 labours for 4 months	2.7	10 labours for 4 months	2.7
	Identify non-bonafide herders and non-traditional herding practices	Lump-sum	1.00	Lump-sum	1.00						
	Alternate grazing grounds for herders					Lump-sum	2.00	Lump-sum	2.00		
5.2.1.b	Pasture development										

	Identify degraded pastures	1 survey	1.50								
	Nursery development and seeding			1 nursery	1.00	1 nursery	0.50	1 nursery	0.50		
	Restoration of pastures			50 ha	3.00	100 ha	5.00	100 ha	5.00	100 ha	5.00
	Protection of restored pastures			50 ha	1.00	100 ha	2.00	100 ha	2.00	100	2.00
5.2.1.c	Removal of unwanted plant species										
	Mapping of weed infested areas	Lump-sum	2.00								
	De-weeding operations (3-Year Cycle)			100 ha	2.00	100 ha	2.00	100 ha	2.00		
5.2.1.d	Soil-moisture conservation										
	Construction of structures for SMC	500 DRSM	5.50	500 DRSM	5.50	500 DRSM	5.50	500 DRSM	5.50	500 DRSM	5.50
5.2.1.e	Plantation and promotion of natural regeneration										
	Protection of regenerations	Lump-sum	2.20	Lump-sum	1.50	Lump-sum	1.50	Lump-sum	1.50	Lump-sum	1.50
	Plantation work			5000 saplings	6.00	5000 saplings	6.00				
5.2.1.f	Fire control										
	Creation and maintenance of fire lines	10 km	4.00	10 km	4.00	10 km	4.00	10 km	4.00	10 km	4.00
	Deployment of fire-watchers	10 watcher	2.70	10 watcher	2.70	10 watcher	2.70	10 watcher	2.70	10 watcher for 4	2.70

		for 4 months		for 4 months		for 4 months		for 4 months		months	
	Procurement of fire fighting equipment	Lump-sum	3.0			Lump-sum	3.0			Lump-sum	3.0
5.2.2	Protection										
5.2.2. a	Boundary demarcation and securement										
	Permanant RCC Boundary pillar construction	50 pillars	2.25	50 pillars	2.25						
	channelling	1000rft	14.0	1000rft	14.0	1000rft	14.0	1000rft	14.0	1000rft	14.0
5.2.2. b	Wildlife crime prevention										
	Construction and maintenance of patrolling paths	5 km	2.30	7 km	3.20	5 km	2.30	5 km	2.30	5 km	2.30
	Vehicle hiring and running cost for patrolling	Lump-sum	1.00	Lump-sum	1.00	Lump-sum	1.20	Lump-sum	1.20	Lump-sum	1.40
	Communication equipment for protection force	10 units of cellphones	0.70			10 units of cellphones	0.80				
	Hiring casual wagers for patrolling	10 persons for 6 months	4.05	10 persons for 6 months	4.05	10 persons for 6 months	4.05	10 persons for 6 months	4.05	10 persons for 6 months	4.05
5.2.2. c	Capacity building of staff										
	Wildlife crime prevention and patrolling training	Fresh training (2)	4.00	Refresher Training	1.00	Refresher Training (1)	1	Fresh Training (1)	2.00	Refresher Training (1)	1.00

				(1)							
5.2.2.d	Coordination with other enforcement agencies										
	Holding stakeholder workshops	1 Worksh op	0.50	1 Worksh op	0.50	1 Worksho p	0.60	1 Worksh op	0.60	1 Workshop	0.70
5.2.3	Restoration of the wild medicinal plants										
5.2.3.a	Facilitate natural regeneration										
	Survey to identify sites	1 survey	2.00								
	Measures to reduce threats and ensure protection			1 consulta tion with herders	1.00	Protectio n enclosure constructi on	1.00	Protecti on enclosur e mainten ance	1.00	Protection enclosure maintenanc e	1.00
5.2.3.b	Assisted regeneration of medicinal plant										
	Site identification for plantation of targeted medicinal plant	1 survey	0.50								
	Establishing and maintaining a temporary nursery			1 nursery	2.00	1 nursery	1.00	1 nursery	1.0 0		
	Plantation and post-plantation care					Lump- sum	5.00	Lump- sum	3.00	Lump-sum	2.00
5.2.4	Management of human-wildlife interface										
5.2.4.a	Situation analysis										
	Primary and secondary survey for	1 survey	1.00								

	documentation of human-wildlife conflict cases										
5.2.4. b	Preventive measures										
	Organizing awareness drives among locals and visitors	2 Awareness camps	1.00	2 Awareness camps	1.10	2 Awareness camps	1.20	2 Awareness camps	1.30	2 awareness camps	1.40
	Improving garbage disposal facilities near conflict sites	2 sites	3.00	2 sites	0.75	2 sites	0.75	2 sites	0.75	2 sites	0.75
	Constituting and training local youths as Primary Response Team (PRT)	2 PRTs	1.20	4 PRTs	2.50	4 PRTS	2.00	4 PRTs	1.50	4 PRTs	1.50
5.2.4. c	Reactive measures										
	Procurement and maintenance of animal rescue equipment (Tranquilizing gun, trap cages, transportation cages etc.) for Rapid Response Team (RRT)	Lump-sum	10.00	Lump-sum	3.00	Lump-sum	3.00	Lump-sum	3.00	Lump-sum	3.0
	Procurement and maintenance of rescue vehicle	1 vehicle	15.00	Lump-sum	1.00	Lump-sum	1.00	Lump-sum	1.00	Lump-sum	1.00
	Training of staff to improve their capacity	1 training	2.0	refresher	1.0		1.0		1.0	1 training	2.0
	Operational cost of handling conflict	Lump sum	1.0	Lump sum	1.0	Lump sum	1.0	Lump sum	1.0	Lump sum	1.0

5.2.5 Eco-development											
5.2.5.a	EDC and micro-planning										
	Formation of village level eco-development committees and preparation of micro-plans	2 villages	2.00	2 villages	2.00						
	Entry-point activities	2 villages	3.00	2 villages	3.00						
	Implementation of select prescriptions of the eco-development micro-plan			2 villages	4.00	4 villages	8.00	4 villages	6.50	4 villages	6.50
5.2.6	Eco-tourism										
5.2.6.a	Eco-tourism planning										
	Mapping of eco-tourism zone	Two eco-tourism sites	1.00								
	Eco-tourism plan	1 plan	1.00								
5.2.6.b	Involving locals in eco-tourism										
	Constitution of eco-tourism societies	Lump-sum	1.00								
	Capacity building of eco-tourism society members			1 training	1.00	1 training	0.75	1 training	0.75	1 training	0.50
	Establishing and maintaining homestays			3 Home stays	1.50	3 Home stays	0.75	3 Home stays	0.75		

5.2.7	Tourism and Pilgrimage										
	Hold meetings with stakeholders to regulate the Dhabas/langar inside the Sanctuary	Lump-sum	0.20	Lump-sum	0.20	Lump-sum	0.30	Lump-sum	0.30	Lump-sum	0.40
	Garbage disposal	Lump-sum	2.00	Lump-sum	1.00	Lump-sum	1.00	Lump-sum	1.00	Lump-sum	1.00
	Monitor the activities of pilgrims and reduce chances of conflicts	2 camps	2.50	2 camps	1.50	2 camps	1.60	2 camps	1.70	2 camps	1.80
5.2.8	Research and Monitoring										
	Annual monitoring of threatened species	Lump-sum	3.00	Lump-sum	3.50	Lump-sum	4.00	Lump-sum	4.50	Lump-sum	5.00
	Assessment of habitat degradation			Lump-sum	4.00	Lump-sum	3.00				
	Study on the impact of livestock grazing pressure on alpine pastures and mountain ungulates	Lump-sum	4.00	Lump-sum	4.50	Lump-sum	5.00				
	Update information on the major threats	Lump-sum	1.00	Lump-sum	2.00						
	Mapping resource use	Lump-sum	2.00								
	Inventory of biodiversity	Lump-sum	2.00	Lump-sum	2.00	Lump-sum	1.00				
5.2.9	Extension and awareness										
	Develop and maintain a dedicated website for sanctuary	Lump-sum	2.00	Lump-sum	0.25	Lump-sum	0.25	Lump-sum	0.25	Lump-sum	0.25

	Printing and displaying publicity material	Lump-sum	2.00	Lump-sum	2.00	Lump-sum	2.50	Lump-sum	2.50	Lump-sum	3.00
	Observing Foundation Day of the WLS	1 event	0.50	1 event	0.50	1 event	0.50	1 event	0.50	1 event	0.50
	Conducting guided tour for local schools students	4 tours	1.00	4 tours	1.00	4 tours	1.00	4 tours	1.00	4 tours	1.00
	Displays at the 'Nature Interpretation Centre'	Lump-sum	5.00	Lump-sum	0.50	Lump-sum	2.00	Lump-sum	0.50	Lump-sum	2.00
	Information hoardings	1	0.8	1	0.8	1	0.8	1	0.8	1	0.8
5.2.10	Maintenance and development of infrastructure										
5.2.10.a	Infrastructure development										
	Construction of staff quarters at Sarbal	1	20.0								
	Maintenance of staff quarter	Lump-sum	7.00	Lump-sum	1.0	Lump-sum	1.0	Lump-sum	1.0	Lump-sum	1.0
	Construction of watch tower	1	6.00	1	6.00						
	Maintenance of inspection hut thajwas	Lump-sum	7.00	Lump-sum	1.0	Lump-sum	1.0	Lump-sum	1.0	Lump-sum	1.0
	Construction of shelter sheds	1	2.00	1	2.00	1	2.00				
	Construction of anti-poaching camps	2	4.00	2	4.00						
	Tourist Gate and Check-Post	1	3.00	1	3.00						
	Basic amenities for tourists	One site	5.00	One site	5.00						

	Building of the Nature Interpretation Centre with Tourist Information Centre	1					40.00				
	Foot bridges	2	10.0		2	10.0		2	10.0		
	Maintenance of existing footbridges	2	4.0								
5.2.10. b	Communication and mobility										
	Motorbike	2	1.60	1	0.80						
	Four-wheeler patrolling vehicle									1	8.00
	Battery operated carts	1	16.0			1	16.0				
	Snow scooter			1	16.0						
5.2.10. c	Research and Camping equipment										
	Binoculars	5 pairs	0.60								
	Camera traps	10	2.25	10	2.25						
	GPS receiver	5 units	1.00								
	Tents	5	0.50								
	Sleeping bags	10	0.50	10	0.50						
	Drones	2	3.00					2	3.00		
	Uniform including jackets	40 people @5000	2.0	40 people @5000	2.0	40 people@5000	2.0	40 people@5000	2.0	40 people@5000	2.0
Total			224.25		144.0		170.9		101.6		97.7

ANNEXURES

Annexure I. Notification of Baltal-Thajwas Wildlife Sanctuary

GOVERNMENT OF JAMMU AND KASHMIR
CIVIL SECRET: FOREST DEPARTMENT
(WILDLIFE PROTECTION)

NOTIFICATION

JAMMU, THE 16th JAN, 1987

SUBJECT :- Whereas, it appears to the Government that the area specified in Annexure "A" to this Notification, has adequate ecological, faunal, floral, geomorphological significance for purposes of protecting, propagating and developing wildlife or its environment.

Now, therefore, in exercise of the powers conferred by section 17 of the Jammu and Kashmir Wildlife (protection) Act, 1973, the Government hereby declare the said area as a sanctuary.

By Order of the Government of Jammu and Kashmir.

Sd/-
(H. R. Gupta)

Secretary to Government.

NO: Jsv/44/San/1987/17

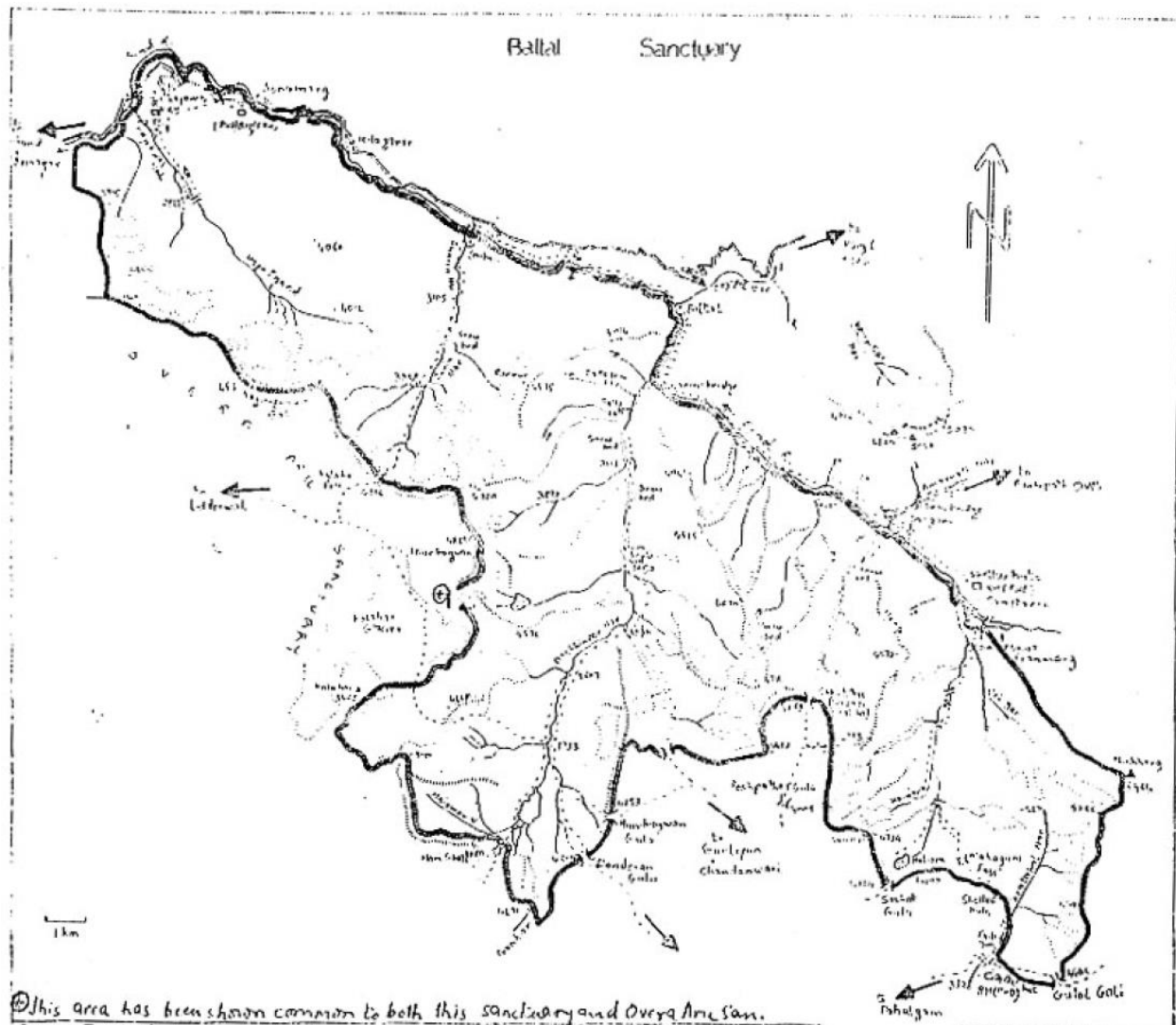
Dated: 19.3.1987

Copy for information and necessary action to these:-

1. Secretary to Government, Law Department
2. Secretary to Government, Revenue Department
3. Chief Wildlife Warden, Srinagar
4. Deputy Commissioner of the concerned District
5. Manager Government presses for favour of Publication in Government Gazette.
6. Stock File.

(Hamid-Allah)
Deputy Secretary to Government
Forest Department

Printed 17/3



©This area has been shown common to both this sanctuary and Overa Arisan.

Source: Topo Sheet 43 N/8. Surveyed in 1962. Second edition. Feb. 1976.
43 N/7. Surveyed in 1915-16. Third edition. Feb. 1982.

Map Made by :

Survey of National Parks and Sanctuaries
Indian Institute of Public Administration

**GOVERNMENT OF JAMMU AND KASHMIR
CIVIL SECTRERIATE FOREST DEPARTMENT
(WILDLIFE PROTECTION)**

NOTIFICATION

DATED, THE 19-03-1987

SRO) 156:- Whereas, it appears to the Government that the area specified in Annexure "A" to this Notification, has adequate ecological, faunal, floral, geomorphological significance for purpose of protecting, propagating and developing Wildlife or its environment.

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

By order of the Government of Jammu and Kashmir.

S/d
(N.R Gupta)
Secretary to Government

No. FSV/WL/SAN/Baltal/87

Dated 19-3-1987

Copy for information and necessary action to the:-

1. Secretary to Government, Law Department.
2. Secretary to Government, Revenue Department.
3. Chief Wildlife Warden, Srinagar.
4. Deputy Commissioner of the concerned District.
5. Manager Government presses for favour of publication in Government Gazette.
6. Stock file.

(Hamid-ullah)
Deputy Secretary to Government
Forest Department

Annexure II. Checklist of mammals in Baltal-Thajwas WLS

Sl. No.	Common English Name	Scientific Name	Family
1.	Siberian Ibex	<i>Capra sibirica</i>	Bovidae
2.	Himalayan Wolf	<i>Canis himalayensis</i>	Canidae
3.	Red Fox (Kashmir Hill Fox)	<i>Vulpes vulpes</i>	Canidae
4.	Kashmir Gray Langur	<i>Semnopithecus ajax</i>	Cercopithecidae
5.	Himalayan Muskdeer	<i>Moschus chrysogaster</i>	Cervidae
6.	Kashmir Stag or Hangul	<i>Cervus elaph hanglu</i>	Cervidae
7.	Snow Leopard	<i>Panthera uncia</i>	Felidae
8.	Leopard	<i>Panthera pardus</i>	Felidae
9.	Leopard Cat	<i>Felis bengalensis</i>	Felidae
10.	Ermine (Stoat)	<i>Martes erminea</i>	Mustelidae
11.	Yellow throated Marten	<i>Martes flavigula</i>	Mustelidae
12.	Royle's Pika (Himalayan Mouse-Hare)	<i>Ochtona roylei</i>	Ochotonidae
13.	Himalayan Marmot	<i>Marmota himalayana</i>	Sciuridae
14.	Himalayan Marmot	<i>Marmota babok himalayana</i>	Sciuridae
15.	Brown Bear	<i>Ursus arctos</i>	Ursidae
16.	Asiatic Black Bear	<i>Ursus thibetanus</i>	Ursidae

Annexure III. Checklist of birds in Baltal-Thajwas WLS

Sl. No.	Common English Name	Scientific Name	Family
1.	Himalayan Snowcock	<i>Tetraogallus himalayensis</i>	Phasianidae
2.	Chukar Partridge	<i>Alectoris chukar</i>	Phasianidae
3.	Snow Partridge	<i>Lerwa lerwa</i>	Phasianidae
4.	Koklass Pheasant	<i>Pucrasia macrolopha</i>	Phasianidae
5.	Himalayan Monal	<i>Lophophorus impejanus</i>	Phasianidae
6.	Grey Heron	<i>Ardea cinerea</i>	Ardeidae
7.	Common Kestrel	<i>Falco tinnunculus</i>	Falconidae
8.	Eurasian Hobby	<i>Falco Subbuteo</i>	Falconidae
9.	Peregrine Falcon	<i>Falco peregrinus</i>	Falconidae
10.	Black Kite	<i>Milvus migrans</i>	Accipitridae
11.	Bearded Vulture/Lammergeier	<i>Gypaetus barbatus</i>	Accipitridae
12.	Egyptian Vulture	<i>Neophron percnopterus</i>	Accipitridae
13.	Himalayan Griffon	<i>Gyps himalayensis</i>	Accipitridae
14.	Eurasian Griffon	<i>Gyps fulvus</i>	Accipitridae
15.	Shikra	<i>Accipiter badius</i>	Accipitridae
16.	Eurasian Sparrow hawk	<i>Accipiter nisus</i>	Accipitridae
17.	Golden Eagle	<i>Aquila chrysaetos</i>	Accipitridae
18.	Green Sandpiper	<i>Tringa ochropus</i>	Scolopacidae
19.	Common Sandpiper	<i>Actitis hypoleucos</i>	Scolopacidae
20.	Rock Pigeon	<i>Columba livia</i>	Columbidae
21.	Snow Pigeon	<i>Columba leuconota</i>	Columbidae
22.	Oriental Turtle Dove	<i>Streptopelia orientalis</i>	Columbidae
23.	Eurasian Collared Dove	<i>Streptopelia decaocto</i>	Columbidae
24.	Eurasian Cuckoo	<i>Cuculus canorus</i>	Cuculidae
25.	Barn Owl	<i>Tyto alba</i>	Tytonidae
26.	Eurasian Eagle-Owl	<i>Bubo bubo</i>	Strigidae
27.	Long-eared Owl	<i>Asio otus</i>	Strigidae
28.	Common Swift	<i>Apus apus</i>	Apodidae
29.	Little Swift	<i>Apus affinis</i>	Apodidae
30.	European Roller	<i>Coracias garrulus</i>	Coraciidae
31.	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	Alcedinidae
32.	Common Kingfisher	<i>Alcedo atthis</i>	Alcedinidae
33.	European Bee-eater	<i>Merops apiaster</i>	Meropidae
34.	Common Hoopoe	<i>Upupa epops</i>	Upupidae
35.	Himalayan Woodpecker	<i>Dendrocopos himalayensis</i>	Picidae

36.	Scaly-bellied Woodpecker	<i>Picus squamatus</i>	Picidae
37.	Grey-headed Woodpecker	<i>Picus canus</i>	Picidae
38.	Long-tailed Minivet	<i>Pericrocotus ethologus</i>	Campephagidae
39.	Scarlet Minivet	<i>Pericrocotus flammeus</i>	Campephagidae
40.	Long-tailed Shrike	<i>Lanius schach</i>	Laniidae
41.	Eurasian Golden Oriole	<i>Oriolus oriolus</i>	Oriolidae
42.	Ashy Drongo	<i>Dicrurus leucophaeus</i>	Dicruridae
43.	White-browed Fantail	<i>Rhipidura aureola</i>	Rhipiduridae
44.	Paradise-flycatcher	<i>Terpsiphone paradisi</i>	Monarchidae
45.	Black-headed Jay	<i>Garrulus lanceolatus</i>	Corvidae
46.	Yellow-billed Blue Magpie	<i>Urocissa flavirostris</i>	Corvidae
47.	Eurasian Nutcracker	<i>Nucifraga caryocatactes</i>	Corvidae
48.	Red-billed Chough	<i>Pyrrhocorax pyrrhocorax</i>	Corvidae
49.	Eurasian Jackdaw	<i>Corvus monedula</i>	Corvidae
50.	Large-billed Crow	<i>Corvus macrorhynchos</i>	Corvidae
51.	Common Raven	<i>Corvus corax</i>	Corvidae
52.	Great Tit	<i>Parus major</i>	Paridae
53.	Green-backed Tit	<i>Parus monticolus</i>	Paridae
54.	Rufous-naped Tit	<i>Parus rufonuchalis</i>	Paridae
55.	Spot-winged Tit	<i>Parus melanolophus</i>	Paridae
56.	Barn Swallow	<i>Hirundo rustica</i>	Hirundinidae
57.	Wire-tailed Swallow	<i>Hirundo smithii</i>	Hirundinidae
58.	Eurasian Crag Martin	<i>Ptyonoprogne rupestris</i>	Hirundinidae
59.	Northern House Martin	<i>Delichon urbicum</i>	Hirundinidae
60.	Crested Lark	<i>Galerida cristata</i>	Alaudidae
61.	Eurasian Skylark	<i>Alauda arvensis</i>	Alaudidae
62.	White-cheeked Bulbul	<i>Pycnonotus leucogenys</i>	Pycnonotidae
63.	Black Bulbul	<i>Hypsipetes leucocephalus</i>	Pycnonotidae
64.	Plain Leaf Warbler	<i>Phylloscopus neglectus</i>	Sylviidae
65.	Tickell's Leaf Warbler	<i>Phylloscopus affinis</i>	Sylviidae
66.	Yellow-browed Warbler	<i>Phylloscopus inornatus</i>	Sylviidae
67.	Greenish Warbler	<i>Phylloscopus trochiloides</i>	Sylviidae
68.	Large-billed Leaf Warbler	<i>Phylloscopus magnirostris</i>	Sylviidae
69.	Lesser Whitethroat	<i>Sylvia curruca</i>	Sylviidae
70.	Variiegated Laughing-thrush	<i>Garrulax variegatus</i>	Timaliidae
71.	Streaked Laughing-thrush	<i>Garrulax lineatus</i>	Timaliidae
72.	Oriental White-eye	<i>Zosterops palpebrosus</i>	Zosteropidae
73.	Winter Wren	<i>Troglodytes troglodytes</i>	Troglodytidae

74.	Kashmir Nuthatch	<i>Sitta cashmirensis</i>	Sittidae
75.	Chestnut-bellied Nuthatch	<i>Sitta castanea</i>	Sittidae
76.	Wall creeper	<i>Tichodroma muraria</i>	Sittidae
77.	Bar-tailed Tree creeper	<i>Certhia himalayana</i>	Certhiidae
78.	Common Myna	<i>Acridotheres tristis</i>	Sturnidae
79.	Himalayan Whistling Thrush	<i>Myophonus caeruleus</i>	Turdidae
80.	Tickell's Thrush	<i>Turdus unicolor</i>	Turdidae
81.	Eurasian Blackbird	<i>Turdus merula</i>	Turdidae
82.	Mistle Thrush	<i>Turdus viscivorus</i>	Turdidae
83.	Blue Rock Thrush	<i>Monticola solitarius</i>	Turdidae
84.	White-tailed Rubythroat	<i>Luscinia pectoralis</i>	Muscicapidae
85.	Orange-flanked Bush Robin	<i>Luscinia cyanura</i>	Muscicapidae
86.	Black Redstart	<i>Phoenicurus ochruros</i>	Muscicapidae
87.	Blue-fronted Redstart	<i>Phoenicurus frontalis</i>	Muscicapidae
88.	Plumbeous Water Redstart	<i>Rhyacornis fuliginosa</i>	Muscicapidae
89.	White-capped Water Redstart	<i>Chaimarrornis leucocephalus</i>	Muscicapidae
90.	Little Forktail	<i>Enicurus scouleri</i>	Muscicapidae
91.	Spotted Forktail	<i>Enicurus maculatus</i>	Muscicapidae
92.	Common Stonechat	<i>Saxicola torquatus</i>	Muscicapidae
93.	Pied Bushchat	<i>Saxicola caprata</i>	Muscicapidae
94.	Grey Bushchat	<i>Saxicola ferreus</i>	Muscicapidae
95.	Desert Wheatear	<i>Oenanthe deserti</i>	Muscicapidae
96.	Blue Rock Thrush	<i>Monticola solitarius</i>	Muscicapidae
97.	Kashmir Flycatcher	<i>Ficedula subrubra</i>	Muscicapidae
98.	Ultramarine Flycatcher	<i>Ficedula superciliaris</i>	Muscicapidae
99.	Slaty-blue Flycatcher	<i>Ficedula tricolor</i>	Muscicapidae
100.	Asian Verditer Flycatcher	<i>Eumyias thalassinus</i>	Muscicapidae
101.	White-throated Dipper	<i>Cinclus cinclus</i>	Cinclidae
102.	Brown Dipper	<i>Cinclus pallasii</i>	Cinclidae
103.	House Sparrow	<i>Passer domesticus</i>	Passeridae
104.	Russet Sparrow	<i>Passer rutilans</i>	Passeridae
105.	Eurasian Tree Sparrow	<i>Passer montanus</i>	Passeridae
106.	Alpine Accentor	<i>Prunella collaris</i>	Prunellidae
107.	Rufous-breasted Accentor	<i>Prunella strophiata</i>	Prunellidae
108.	Black-Throated Accentor	<i>Prunella atrogularis</i>	Prunellidae
109.	Yellow Wagtail	<i>Motacilla flava</i>	Motacillidae
110.	Citrine Wagtail	<i>Motacilla citreola</i>	Motacillidae
111.	Grey Wagtail	<i>Motacilla cinerea</i>	Motacillidae
112.	White Wagtail	<i>Motacilla alba</i>	Motacillidae
113.	Upland Pipit	<i>Anthus sylvanus</i>	Motacillidae
114.	Brambling	<i>Fringilla montifringilla</i>	Fringillidae

115.	Yellow-breasted Greenfinch	<i>Carduelis spinoides</i>	Fringillidae
116.	European Goldfinch	<i>Carduelis carduelis</i>	Fringillidae
117.	Common Rosefinch	<i>Carpodacus erythrinus</i>	Fringillidae
118.	Orange Bullfinch	<i>Pyrrhula aurantiaca</i>	Fringillidae
119.	Black-and-yellow Grosbeak	<i>Mycerobas icteroides</i>	Fringillidae
120.	Crested Bunting	<i>Melophus lathami</i>	Emberizidae
121.	Rock Bunting	<i>Emberiza cia</i>	Emberizidae
122.	Ibisbill	<i>Ibidorhyncha struthersii</i>	Ibidorhynchidae

Annexure IV. Plant Species of Baltal-Thajwas WLS

S.no	Scientific Name	S.no	Scientific Name
1	<i>Betula utilis</i>	34	<i>Phlomis bracteosa</i>
2	<i>Abies pindrow</i>	35	<i>Phololims sp</i>
3	<i>Picea smithiana</i>	36	<i>Picrorhiza kurroa</i>
4	<i>Pinus wallichiana</i>	37	<i>Pleurospermum candollei</i>
5	<i>Maple</i>	38	<i>Pleurospermum candollei</i>
6	<i>Rosa webbiana</i>	39	<i>Podophyllum hexandrum</i>
7	<i>Salix flabellaris</i>	40	<i>Potentilla sp</i>
8	<i>Lonicera spinose</i>	41	<i>Potentilla atosanguinea</i>
9	<i>Lonicera myrtillus</i>	42	<i>Ranunculus sp</i>
10	<i>Juniperus squamata</i>	43	<i>Rhodiola sp.</i>
11	<i>Aconitum chasmanthum</i>	44	<i>Rhododendron anthopogon</i>
12	<i>Ajuga parviflora</i>	45	<i>Sambucus wightiana</i>
13	<i>Anaphalis sp</i>	46	<i>Saxifraga sp.</i>
14	<i>Anaphlis sp</i>	47	<i>Sebaldia cuneata</i>
15	<i>Anaphlis sp</i>	48	<i>Sedum sp.</i>
16	<i>Androsace mucronifolia</i>	49	<i>Swertia petiolata</i>
17	<i>Artemisia sp</i>	50	<i>Taraxicum officinale</i>
18	<i>Asplenium sp</i>	51	<i>Trifolium pratense</i>
19	<i>Asplenium sp</i>	52	<i>Verbascum thapsus</i>
20	<i>Bergenia ciliatia</i>	53	<i>Waldehimia sp.</i>
21	<i>Clinopodium umbrosium</i>	54	<i>Acer ceasium</i>
22	<i>Corydalis crassifolia</i>	55	<i>Aconitium violeacium</i>
23	<i>Corydalis govaniana</i>	56	<i>Alium sp</i>
24	<i>Corydalis sp</i>	57	<i>Cirsium wallichii</i>
25	<i>Epilobium hirsutum</i>	58	<i>Geranium neplensis</i>
26	<i>Epilobium hirsutum</i>	59	<i>Myosotis sp</i>
27	<i>Epilobium sp</i>	60	<i>Nepeta sp</i>
28	<i>Geranium pratense</i>	61	<i>Potentilla nepalensis.</i>
29	<i>Geum sp</i>	62	<i>Rheum webbanium</i>
30	<i>Geum sp</i>	63	<i>Saxifraga</i>
31	<i>Mentha sp</i>	64	<i>Senecio chrysanthemoides</i>
32	<i>Oxygria dignyeaia</i>	65	<i>Thymus linearis</i>
33	<i>Phlomis bracteosa</i>		

Annexure V. Format of village level eco-development microplan

Chapter 1

Introduction

- a. Concept and need of eco –development in brief
- b. Brief details of Baltal-Thajwas WLS
- c. Knowledge and attitude of villagers towards wildlife conservation (based on socio – economic and attitude survey)
- d. Reasons behind selection of the village for eco – development and expected support from the villagers
- e. Method being adopted to prepare the micro - plan
- f. Details of the activities undertaken in the village to prepare the plan

Chapter 2

Description of the village

- a. Location
- b. Infrastructure
- c. Brief history
- d. Population and community structure
- e. Resources (all the above details have been collected in field survey and PRA)
- f. Economic status
- g. Traditional institutions, if any and their role in present context

Chapter 3

Community – Wildlife Sanctuary relationship

- a. Positive and negative impacts of sanctuary on the community
- b. Human – wildlife conflict
- c. Positive and negative impacts of community on the sanctuary
- d. Major dependency

Chapter 4

Needs and problems

- a. List of needs and problems in various sectors viz. Forest, NTFP, water, land, vocation etc.

- b. List of action oriented solutions to the above problems
- c. Prioritization of action
- d. Action Plan on the basis of priority.

Based on these, a Working Action Plan will be prepared in consultation with all stakeholders.

Chapter 5

Working Action Plan

- a. Activity
- b. Location
- c. Volume / extent
- d. Budget
- e. Season of execution
- f. Duration
- g. Contribution of implementer and beneficiary
- h. Management of the facility / asset created
- i. Expected return to the stakeholders and community fund
- j. Benefit Sharing Mechanism – In case of earning from the activity. (Villagers have agreed to contribute one third of the benefit to community fund, one third amount will be re-circulated in the same activity, if desired and the rest portion will go to the beneficiary).
- k. Success indicator

Chapter 6

Institutional Mechanism

- a. Formation of EDCs and other committees to accomplish the action plan
- b. Functioning of the committees
- c. Methods of Book keeping, problem solving, monitoring and evaluation

Chapter 7

Villagers' responsibility towards conservation

- a. Responsibility to control forest fire, and
- b. Forest and wildlife offences

POLICY

FOR

ECO-TOURISM IN FOREST AND

WILDLIFE AREAS



GOVERNMENT OF INDIA

MINISTRY OF ENVIRONMENT FOREST AND

CLIMATE CHANGE

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE
POLICY FOR ECO-TOURISM IN FOREST AND WILDLIFE AREAS

1. BACKGROUND

Eco-tourism may be defined as '**responsible travel to natural areas that conserves the environment and improves the well-being of local people**' (*TIES*). Forests and wildlife are elements of nature and inseparable parts of the environment. Because of the intricate nature of interface between nature and human beings, nature conservation must entail participation of people as a non negotiable component. The participation in this endeavour includes not only the forest fringe dwellers, but also those who may be living away from the forests. Eco-tourism may be developed in wildlife conservation areas designated as Protected Areas (PAs) – Wildlife Sanctuaries, National Parks, Conservation Reserves and Community Reserves., and also in areas outside designated protected Areas, which may include, forests, mangroves, Sacred Groves, mud flats, wetlands, rivers, etc. Appreciation of the various elements of nature, their direct and indirect impact on our survival and intangible services provided by those are of paramount. Visitation to such pristine Areas would facilitate direct appreciation and understanding of the nature. Eco-tourism, when practiced appropriately, besides educating the visitors can also provide livelihood opportunities for the local communities. Hence, there is felt need to develop a model of eco-tourism that is responsible and compatible with sensitivities of the management objectives of the landscapes. However, the objective primarily being for preservation, it is of prime importance that the profile of the natural features are not compromised due to the impact of eco-tourism activities.

2. GOAL

Promoting better understanding of nature and wildlife conservation while generating income and opportunities for the local communities.

3. OBJECTIVES

The following are the broad objectives of the Eco-tourism policy:

- i. Adopting low impact nature tourism which ensures ecological integrity
- ii. Promoting biodiversity richness and heritage values of India's wilderness
- iii. Engaging local communities and developing mechanisms with a view of enriching the local economy and promoting sustainable use of indigenous materials
- iv. Establishing partnerships with all stakeholders for developing and promoting nature tourism.

4. GUIDING PRINCIPLES FOR ECOTOURISM

(i) Eco-tourism Plan: Eco-tourism facilitation within the forest and wildlife areas will be a part of the management/ working plan of the unit. The eco-tourism plan will provide for identified locations/ routes for visitation, permissible activities, permissible time for visit and means of travel. Delineation of inviolate space in the area and seasonal requirements will be specified in the Plan. States may develop benchmarks/ standardized criteria based on site specificity, for adoption of best practices in eco-tourism.

(ii) Eco-tourism zone: Demarcation of areas for tourist visitation, whether within core or buffer or both will depend upon the management requirements and shall be decided based on the target species, their behavioural and habitat characteristics. To maintain ecological integrity, protection of breeding areas and other sensitive sites are necessary. Therefore, those should be excluded from eco-tourism activities. Finalisation of tourism packages, identification of tourism routes, etc. will be done by the respective Protected Area Manager/ DFO in consultation with the State Chief Wildlife Warden.

(iii) Community Participation: It is essential that management of eco-tourism facilitates primarily vests on the local communities as the principal stakeholders. Thus, the benefits flowing from the visitation in the area must also accrue to the local communities by way of livelihood opportunities arising from eco-tourism. This will reinforce their interface and sense of ownership.

Buffer areas, private lands, revenue lands and Reserve Forests around PAs that have good wildlife habitat will be developed for eco-tourism to reduce pressure on sensitive “core” areas and to enhance local benefits.

(iv) Infrastructure development:

Natural profile and ecological integrity of forest and wildlife areas, along with their wildlife/ biodiversity values shall be maintained. Infrastructure for eco-tourism will be so designed that those merge with the ambient environment. These will utilise local resources and avoid use of cement concrete as far as possible.

The activities will be eco-friendly and no permanent structures will be established in violation of Forest (Conservation) Act, 1980.

Considering that the local livelihood improvement is one of the expected outcomes of eco-tourism, homestead based hospitality enterprises will be encouraged.

Construction works like permanent buildings for camps, camping complexes with lodging/ boarding structures, helipads, new roads, tourist bungalows/ commercial lodges etc for eco-tourism purpose shall not be allowed without clearance under Forest (Conservation) Act.

Infrastructure outside Protected Areas will also be developed in eco-friendly manner so that those merge with the surroundings. The extent of infrastructure those will be developed will be limited to the carrying capacity of the area.

5. IMPLEMENTATION STRATEGY

The following are the broad framework for implementation of the Eco-tourism policy:

Strategy i: Identification of potential sites: Each State may identify areas for eco-tourism within the Protected Areas, in pristine areas rich in biodiversity or of aesthetic significance through a participatory process involving stakeholders, particularly the local communities.

Strategy ii: Assessment of Carrying Capacity: Carrying capacities of visitors and vehicles those may be allowed to enter inside the identified area will be assessed and ceiling on number of visitors/vehicles those may allowed to enter the area at any given time, will be fixed. Carrying capacity assessment will cover:

- Number of Persons visiting the PA at different points of time
- Number of Vehicles/boats, etc. entering the PA
- Infrastructure
- Duration of the visits
- Duration of exposure of the PA to Eco-tourism activities

An illustrative calculation of carrying capacity, as worked out in the 'Guidelines for tourism in Tiger Reserves' is at ANNEXURE.

Strategy iii: Capacity building: Field functionaries will be imparted specialized training on Eco-tourism activities. Capacities of local communities will be built to act as nature guides and to provide hospitality management services. This may include training to discharge specialized tasks such as tourist guides, natural science interpreters, patrol partners for protection work, entrepreneurs for small scale homestead based hospitality industry, small business operators (like souvenir shops, equipments for hire, photography etc).

The State Governments may charge a conservation fee for overall eco-development. The conservation fee may be decided based on the number of persons visiting the facility, the duration of operation of the facility (seasonal or year round) and on a luxury classification system such as home stay to high-end. The rate of conservation fee and tourist facility strata will be determined by the State Government and the funds, so collected will be

earmarked to address local livelihood development issues, human wildlife conflict management and conservation through eco-development.

Strategy iv: Sharing of Revenue benefits: Considering that eco-tourism is an economic activity, it is important that the eco-tourism plan incorporates a feasible revenue sharing mechanism for the stakeholders.

Provision will be made for establishment of foundations, either for each of the identified area or an umbrella Foundation to cover multiple areas. The funds accrued from eco-tourism activities in the Foundations will be utilised for community development, and running of eco-tourism facilities.

An indicative model for sharing of revenue is as under:

- 40% for payment of remuneration to local community directly involved in running eco-tourism facilities;
- 40% for maintenance of the Eco-tourism facilities
- 10% as incentive to local Eco Development Committee (EDC) or Village Level Forest Management Committee
- 10% as revenue to Government

Strategy v: Monitoring: Eco-tourism plans will invariably include a dynamic monitoring mechanism, covering number of tourists visiting and the pattern, their level of satisfaction, involvement of local people, scope for improvement, etc. This will facilitate prediction of growth and preparation for management of the growth of eco-tourism in terms of visitation management, growth of hospitality facilities in neighbourhood, need for security arrangements for the area and so on.

Strategy vi: Education and Interpretation: For effective use of the eco-tourism potential of the area, the management has to work on an effective education and interpretation plan. The visitors must be sensitized on the significance of conservation and expected behavioural requirements while they are within the pristine area. For this purpose an effective communication plan is essential which must include providing crucial information to the tourists to appreciate the eco-system services and intangible benefits

provided by the area. It will be a good idea to put in place electronic visual tools, well equipped interpretation centre, appropriate signages, audiovisual presentation centers, interactive learning tools, safety protocol and information material on the area for the visitors.

Strategy vii: Interface with District/ State Administration:

Within National Parks, Sanctuaries and Reserved or Protected Forests: Collaboration and coordination amongst the Central and State Government Departments, EDCs, forest dwellers, local communities and civil society institutions will bring about synergy for effective eco-tourism management. States/ District/ Protected Area Steering Committees may be set up.

A local level committee may look like:

Park Manager/ the Divisional Forest Officer- Chair

Honorary Wildlife Warden- Member

Representative of Tourism Department-Member

Representative of Local Panchayat- Member

Representative of Local Communities- Member

Wildlife Experts- Member

Forest Range Officer- Member Secretary.

Mandate:

- To oversee implementation of the eco-tourism strategies and guidelines with respect to the concerned area and make recommendations to the Eco-tourism Board and State/UT Government, wherever necessary;
- To advise local communities on issues relating to development of eco-tourism in areas outside Protected Areas
- To monitor the activities of tour operators and ensure that they follow all safety norms, rules and procedures and do not cause any damage or disturbance to the eco-tourism resources and activities;
- To ensure that the revenue from eco-tourism flow to the local communities.

The State Board for Wildlife may take review of the Tourism activities in the State and make suggestions appropriately.

In case of Conservation Reserves and Community Reserves, the Management Committees constituted under Section 36B and 36D of the Wild Life (Protection) Act, 1972 will advise on activities including tourism in Conservation and Community Reserves and will be in consonance with this policy for eco-tourism in Protected Areas.

The State Board for Wildlife would take review of the Tourism activities in the State and make suggestions appropriately.

There are many Protected Areas with shrines or religious places located within. The tour operators, drivers and shrine controlling authorities need to be given an exposure on the value of forest ecosystems and their ecological services, along with the training to inculcate do's and don'ts during visits of pilgrims into forests and PAs. Cooperation of the local administration will be solicited in line with the mechanisms indicated above.

Strategy viii: Institutional mechanism for implementation: Each State/UT may establish an Eco-Tourism Development Board to advise the State/UT on the eco-tourism modalities and for overseeing the implementation of the policy. The Board would ensure that objectives of this Policy are attained. The State/UT would also ensure adequate Technical and Financial support to the Board. In case of any dispute, the decision of the management of Protected Areas shall prevail.

Enabling provisions for management of eco-tourism within protected areas:

The legal provisions available within the Wild Life (Protection) Act, 1972 for facilitating this include section 29, 30, 33, 33B, 35 (6), 38-O and 64 which provide powers to the state governments to frame rules for carrying out provisions of the Act, and to the Chief Wild Life Wardens to regulate activities within the PAs. The powers for approval of Management plan of a PA are vested with Chief Wild Life Warden. In case of Conservation Reserves and Community Reserves, the powers vested in the respective management committees provide enabling environment for formulation of management plan including the eco-tourism planning within.

ESTIMATION OF CARRYING CAPACITY
(Model Calculation, Example: Kanha Tiger Reserve)

(a) **Physical Carrying Capacity (PCC):** This is the “maximum number of visitors that can physically fit into a defined space, over a particular time”. It is expressed as:

$$PCC = A \times V/a \times Rf$$

Where, A = available area for public use

V/a = one visitor / M²

Rf = rotation factor (number of visits per day)

In order to measure the PCC to Kanha, the following criteria must be taken into account:
Only vehicular movements on forest roads are permitted

The “standing area” is not relevant, but “closeness” between vehicles is important

There is a required distance of at least 500 m (^{1/2} km.) between 2 vehicles to avoid dust (2 vehicles / km.)

At least 3 ½ hours are needed for a single park excursion

The PA is open to tourists for 9 months in a year and 9 hours per day

Linear road lengths within the tourist zone are more relevant than area, and the total lengths are:

Kanha	107.20 km.
Kisli	72.56 km.
Mukki	103 km.
Total	282.76 or 283 km.

Due to constant vehicular use, the entire road length of 283 km. is prone to erosion, out of which around 90 km. is affected more

$$\text{Rotation Factor (Rf)} = \frac{\text{Opening period}}{\text{Average time of one visit}}$$

$$\begin{aligned} \text{Physical Carrying Capacity (PCC)} &= 283 \text{ km.} \times 2 \text{ vehicles / km.} \times 2.6 \\ &= 1471.6 \text{ or } 1472 \text{ visits / day} \end{aligned}$$

(b) **Real Carrying Capacity (RCC):** RCC is the maximum permissible number of visits to a site, once the “reductive factors” (corrective) derived from the particular characteristics of the site have been applied to the PCC. These “reductive factors” (corrective) are based on biophysical, environmental, ecological, social and management variables.

$$RCC = PCC - Cf_1 - Cf_2 \text{ ----- } Cf_n,$$

Where Cf is a corrective factor expressed as a percentage. Thus, the formula for calculating RCC is:

$$RCC = PCC \times \frac{100 - Cf_1}{100} \times \frac{100 - Cf_2}{100} \times \dots \times \frac{100 - Cf_n}{100}$$

Corrective Factors are “site-specific”, and are expressed in percentage as below:

$$Cf = \frac{M_l}{M_t} \times 100$$

Where: Cf = corrective factor

M_l = limiting magnitude of the variable

M_t = total magnitude of the variable

- (i) **Road erosion:** Here the susceptibility of the site is taken into account.

Total road length = 283 km. (M_t)

Medium erosion sink = 50 km. (weighting factor: 2)

High erosion risk = 40 km. (weighting factor: 3)

$M_l = 50 \times 2 + 40 \times 3 = 100 + 120 = 220$ km.

$M_t = 283$ km.

$$Cfe = \frac{220}{283} \times 100 = 77.8 \text{ or } 78\%$$

- (ii) **Disturbance to Wildlife:** Here, species that are prone to disturbance owing to visitation are considered. The Central Indian barasingha, a highly endangered, endemic species found only in Kanha has a courtship period of about 1 month in winter, during which it is extremely sensitive to disturbance. Likewise, the peak courtship activity for spotted deer lasts for two months before the onset of regular monsoon. As far as tigers are concerned, newborns are seen between March and May and also during the rains; hence an average value of two months in a year can be considered as the matter phase.

$$\text{Corrector Factor (Cf)} = \frac{\text{limiting months / year}}{100 \text{ 12 months / year}} \times$$

Corrective Factor for barasingha

$$Cf w_1 = \frac{1}{9} \times 100 = 11.1\%$$

Corrective Factor for spotted deer

$$Cf w_2 = \frac{2}{9} \times 100 = 22.2\%$$

Corrective Factor for tiger

$$Cf w_2 = \frac{2}{9} \times 100 = 22.2\%$$

Overall corrective factor for disturbance of wildlife in Kanha National Park = $Cf w = Cf_1 + Cf_2 + Cf_3$
 $= 11.1 + 22.2 + 22.2 = 55.5$ or 55%

- (iii) **Temporary Closing of Roads:** For maintenance or other managerial reasons, visitation to certain roads may be temporary restricted within the Protected Area. The Corrective Factor in this regard is calculated as:

$$Cf_t = \frac{\text{limiting weeks / year}}{100 \text{ total weeks / year}} \times$$

In Kanha, an average value of 2 limiting weeks per year may be considered as the “limiting weeks”, and thus the corrective factor works out to:

$$Cf_t = \frac{2 \text{ weeks / year}}{\text{weeks / year}} \times 100 = 5.5\%$$

Computation of RCC

$$RCC = 1472 \times \frac{100-78}{100} \times \frac{100-55}{100} \times \frac{100-5.5}{100}$$

$$= 1472 (0.22 \times 0.45 \times 0.95)$$
$$= 138.4 \text{ or } 138 \text{ visits / day}$$

(c) **Effective Permissible Carrying Capacity (ECC):** ECC is the maximum number of visitors that a site can sustain, given the management capacity (MC) available. ECC is obtained by multiplying the real carrying capacity (RCC) with the management capacity (MC). MC is defined as the sum of conditions that PA administration requires if it is to carry out its functions at the optimum level. Limitations in management like lack of staff and infrastructure limit the RCC.

For Kanha, owing to the paucity of staff the MC is around 30%. Hence, $ECC = 138 \times 0.30 = 41.4$ or 40 vehicles / day.

Thus, the Effective Permissible Carrying Capacity on any single day is only 40 vehicles, which should be allowed entry as below:

(Forenoon) = 25 vehicles (inclusive of both entry points)

(Afternoon) = 15 vehicles (inclusive of both entry points)

During peak season (winter months), the staff strength may be increased (only 10%) by deploying “special duty” personnel; this would enhance the ECC to 55 vehicles per day. Further, increase in the number of vehicles would lead to deleterious effects on the habitat.

Annexure VII. Control Forms

I. i. Restoration of Habitat: Weed Control, Initial Operation

Sr. no	Location & name of site	Year	Extent of area(ha)	Species of weed	Operation	Total cost	Cost per ha	Remarks
1	2	3	4	5	6	7	8	9

Note:

Location:

Operation:

Remarks:

By compartment, site name or land feature

Uprooting, cutting, burning, ploughing, manual or by using animals or machinery

Measure of success and/or problem faced.

I. ii. Restoration of Habitat: WEED Control, Subsequent Operation

Sr. no	Location & name of site	Year	Extent of area(ha)	Complete or partial coverage	Species of weed	Operation	Total cost	Cost per ha	Remarks
1	2	3	4	5	6	7	8	9	10

Note: Location: By compartment, site name or land feature
Operation: Uprooting, cutting, burning, ploughing, manual or by using animals or machinery.
Remarks: Percent cover of weed/s before operation, problems, if any

**I. iii. Restoration of Habitat: Soil Conservation Measures- Initial Operation
And Subsequent Maintenance**

Sr. no	Location & name of site	Year	Extent of area(ha)	Area treated	Operation	Total cost	Cost per ha	Remarks
1	2	3	4	5	6	7	8	9

Note:

Location:	By compartments, name of site or landmarks.
Extent of area:	Total area identified for such treatment. In case of streams or gullies, the length involved.
Area Treated:	If linear feature then quote length; otherwise area.
Operation:	Structures involved such as gully plugs, trench-cum-mound, terracing, spurs and bunds etc. quote quantity nos. and cmt. of earthwork.
Remarks:	Mention if initial work or maintenance.

I. iv. Restoration of Habitat: Planting, Sowing – Initial Operation

Sr. no	Location	Year	Extent of area(ha)	Species	Planting stock	Spacing	Operation	Total cost	Cost per ha	Remarks
1	2	3	4	5	6	7	8	9	10	11

Note: Location: By compartments, or landmarks and describe the site factors e.g. vegetation cover, soil, perturbations etc.
Planting Stock: Kind and condition e.g. root shoot, naked root seedling, seedlings in polythene bags, age or average size.
Operation: Mention site preparation if any, crowbar holes, pits and pit size, trench, seed sowing (rate), tussock planting (norms), protection measures.
Remarks: Mention operational problems if any.

I. v. Restoration of Habitat: Response of Plantings, Sowing and Subsequent Operations

Sr. no	Location	Year	Extent of area(ha)	Species	Survival%	Casualty replacement	Operation	Total cost	Cost per ha	Remarks
1	2	3	4	5	6	7	8	9	10	11

Note: Location: By compartments, or landmarks.

Casualty replacement: Mention planting stock by species, number & kind (polythene bag, root shoot, rhizome etc.).

Operations: Planting, sowing technique, protection measures.

Remarks: Operational problems, protection problems, any other useful information.

Assess & mention survival percentage & growth before taking up casualty replacement.

I. vi. Restoration of Habitat: Area under Protection/Closure

Sr. no	Location	Year	Extent of area(ha)	Description of site	Regulations or protection measures	Response	Remarks
1	2	3	4	5	6	7	8

Note:

Location:	By compartment or landmarks
Description of site:	% tree, shrub, ground cover, main species, impact of factors causing perturbations.
Regulations &:	Social fencing, power or other kind of fencing, enforced protection by patrolling, protection measures fire protection etc.
Response:	To be recorded annually. Consider trend of regeneration, vegetation cover, change in structure and composition, wildlife use index.
Remarks:	State problems or any other useful information, including alternatives if area is being used by people for specific purposes.

II. i. Animals: Measuring Trends in Populations (Year)

Sr. No	Species	Population estimation methodology	Adult		Sub-adults		Yearlings	Fawns	Cubs	Total	Remarks
			Male	Female	Male	Female					
1	2	3	4	5	6	7	8	9	10	11	12

Note: Population: e.g. pugmark, line transect, scan, roadside counts etc., area covered, sampling intensity, estimation data treatment, extrapolation where involved. In case of indices of density or dung count mention those figures under the remarks' column; use details as pertinent. Describe age classes for each species.

Remarks: Operational problems, protection problems, any other useful information.
Indices of density or dung count details to be recorded here.

II. ii. Animals: New Records

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

Note: Animals will include vertebrates and invertebrates.

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

Number, age, sex etc: As applicable to vertebrates.

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

Remarks: Any other useful information.

II. iii. Animals: Mortality other than that Attributable to an Offence

Sr. no	Species	Location	Year	Sex& age	Number	Discovered in what condition	Cause of mortality	Remarks
1	2	3	4	5	6	7	8	9

Note:

Location: By compartment, landmark etc.

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

Discovered in what condition: Carcass, complete or partial. Skull or any other recognizable remains collected where only some remains of an animal are found.

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

Remarks: Any other useful information.

II. iv. Animals: Mortality Attributed to Poaching or an act of Vandalism

Sr. No	Species	Location	Cause of Mortality				Remarks
1	2	3	Number	Sex	Age	Class	5
			4				

Note:

Location: By compartments or landmarks.

Cause of mortality: Whether the animal was intact or remains found, article or trophy to be recorded. Cause if known e.g. animal snared, shot or poisoned etc.

Remarks: Any other useful information, especially matters of illegal trade.

II. v. Animals: Predation on Domestic Livestock by Wild Carnivores

Sr. no	Range	Month	Category of livestock killed	Location	Numbers	Ex gratia payment (Rs.)	Carnivore involved	No. of cases undecided	Remarks
1	2	3	4	5	6	7	8	9	10

Note:
poultry etc.

Category of livestock killed: Buffalo, cow, bullock (adult, sub-adult, calf), camel, horse, donkey, sheep, goat,

Location:

Comptt. no. or landmark where killed and the village of the owner.

Carnivore involved:

Indicate species responsible for the kill if identity is confirmed.

No. of cases undecided:

Either in progress or dropped.

Remarks:

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

II. vi. Animals: Killing of a Human by Wildlife or Injury caused

Sr. no	Range	Month	No. of incidents	No. of people killed sex& age	Location circumstances &species	No. of people injured sex& age	Location circumstances &species	Ex gratia payment (Rs.)
1	2	3	4	5	6	7	8	9

Note:

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

II. vii. Animals: Wildlife Damage to Private or Public Property

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

Note:

Location: By comptt. no., village survey no., name of village or landmark.

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

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

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

III. i. Plants: New Records

Sr. no	Family	Species	Years	Location	Habitat	Status	Remarks
1	2	3	4	5	6	7	8

Note: Habitat: Description by vegetation associates at various levels, % canopy closure if relevant, soil/site, microhabitat elements such as higher level of moisture, woody debris or humus etc.
 Status: A broad idea on its frequency, national status e.g. endangered, rare, endemic etc.
 Remarks: Any specific information.

III ii. Plants: Disease and Mortality

Sr. no	Species	Location	Year	Particulars of disease morbidity and mortality	Area affected	Remarks
1	2	3	4	5	6	7

Note:

Location: By compartment or landmarks.

Particulars of disease: In case of trees, the mortality by diameter classes and number, symptoms, insect pest activity or any other external indicators if visible, none if not seen. No mortality but infestation detected, mention that as morbidity.

Area affected: In hectares.

Remarks: Any specific environmental condition or site factors you may suspect as being related to the problem or any other useful information.

III iii. Plants: Illegal and Legal Collection

Sr. no	Species	Years	Location	Details of material	Habitat	Status	Remarks
1	2	3	4	5	6	7	8

Note: Location: By compartments or landmarks.
 Details of material: To include timber, firewood, bamboo, NWPs. Plants collected could be of local significance or of tradesignificance on a national or international scale. Distinguish between legal and illegal activity in the remarks' column.
 Quantity: In appropriation units.
 Trade particulars: What is traded ? Portions, partially processed or processed material and where are the major trade centres, known or suspected to be ?
 Remarks: Any other useful information. Legal collection applies to PA, if permitted for research; to TUZ or to the buffer zone.

IV. Grazing of Domestic Livestock

Sr. no	Grazing unit no.	List of villages in the unit	Village wise listed population of cattle	Capacity of the unit (cattle units) and number of cattle grazed	Total cattle units grazed		Remarks
					Legal	Illegal	
1	2	3	4	5	6	7	8

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

V.i. Inter-Agency Programs: Agencies and Schemes

Sr. no	No. of agency	Central or State	Number and name of scheme operated	Physical and financial targets		Area& Location	Remarks
				Given	Achieved		
1	2	3	4	5	6	7	8

Note: Name of the scheme: To include all activities in the Govt. sector, i.e. construction, use of resources, development processes etc. mention names of schemes, projects or normal operations. This will address all departments in the management area and those activities outside but capable of influencing the management area.
 Remarks: Success, adverse impacts, incompatibility with PA management objectives or failures should be mentioned. Detailed notes too go in the PA book.

V. ii. Programs of NGOs

Sr. no	No. of agency	HQ location	Number of scheme operated	Physical and financial targets		Area& Location	Remarks
				Given	Achieved		
1	2	3	4	5	6	7	8

Note: Remarks: Success or adverse impacts, incompatibility with PA management objectives or failures should be mentioned. Detailed notes to go in the PA book. These programs and activities could be within the management area or those that are outside the management area but are capable of influencing the state of the management area - either complementing the efforts or adversely impacting.

VI. i. Construction*/Maintenance* Of Infrastructure: Roads & Bridges

Sr. no	Category	Range	Surface	Name & Number	Length covered (km)	Cross drainage works, bridges or culverts with types	Total costs and status
1	2	3	4	5	6	7	8

Note: Category of road: National highway, State highway, district road etc. public road, forest road or open only to managers should be stated.

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

Name or number: As the case may be.

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

Bridge type: Wooden trestle, suspension, metal multi span, masonry arch etc.

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

Strike out which is not applicable. Use separate forms as required; for construction & for maintenance details.

VI. ii. Construction*/Maintenance* Of Infrastructure: Buildings

Sr. no	Range	Nature of the building	Location	Type of construction	Numbers	Total cost	Status
1	2	3	4	5	6	7	8

Note: Nature of the building: e.g. residential, office, store, chauki, watch tower, tourist facility, hide, barrier, patrolling camp (temporary or permanent) etc.

Location: By compartment or village or landmark as appropriate.

Type of construction: Masonry (brick/stone), log or wooden, metal, local material etc.

Status: Completed or ongoing.

*: Strike out which is not applicable. Use separate forms as required; for construction and for maintenance details.

VI. iii. Development*/Maintenance* Of Infrastructure: Communication

Sr. no	Range	Type of facility	Location	Number	Cost	Advantage gained	Remarks
1	2	3	4	5	6	7	8

Note:

Type of facility: e.g. telephone, wireless.

Location: Staff Hq location, village, landmark etc.

Advantage gained: Area served, staff locations connected etc.

Remarks: Record status - complete, ongoing, functional, non-functional.

*: Strike out that is not applicable. Use separate forms as required, for new facility and maintenance.

VI. iv. Development*/Maintenance* Of Infrastructure: Vehicles

Sr. no	Kind of vehicle	Number	HQ if any	Intended use	Cost	Remarks
1	2	3	4	5	6	7

Note:

Kind of vehicle: Jeep, trailer, tractor, truck, minibus, tanker, motorcycle, bicycle, boat (paddle or motor), launch, car, riding elephant, ponies, etc.

Intended use: Management support, patrolling/anti-poaching, tourism etc.

Remarks: Any other useful information. Mention written off vehicles, retired or dead animals.

*: Strike out the inapplicable. Use separate forms as required to indicate acquisition, maintenance.

VI. v. Development of Infrastructure: Manpower Recruitment*/Existing Manpower*

Sr. no	Category of post	Number	Status		Scale of pay	Intended deployment/deployed as	Remarks
			Recruited	Vacant			
1	2	3	4	5	6	7	8

Note: Status: Permanent, temporary, contractual.
Intended deployment: State purpose e.g. conservation education, research, antipoaching, etc as applicable.
Remarks: Any other useful information. New recruits within the year should be mentioned. This will also include officers & staff obtained on transfer/ deputation. Likewise changes due to personnel going out on transfer, deputation, retirement, removal, resignation, death should be reflected in this column.
*: Strike off that which is not applicable. Accordingly, use additional forms. One for recruitment and one for the existing manpower.

VI. vi. Developing Infrastructure: Construction of Boundaries, Fences, Cpts, Epts, Exclosures, Enclosures

Sr. no	Category of construction	Range	Location	Length (meters)	Number	Specifications	Remarks
1	2	3	4	5	6	7	8

Note: Category: Kind of boundary e.g. compitt, block, zone etc. In case of fences: power fence, others.

Location: By compartment or suitable landmark.

Numbers: In case of exclosures, enclosures, number of pillars etc. as applicable.

Specifications: As applicable to the construction: dry rubble, chain link, local material, height, area, depth, width etc.

Remarks: Any other relevant information.

*: Strike out that is inapplicable. Use a form each for maintenance of existing features and for new features.

VII. i. Tourism: Visitors

Total number of visitors all categories:

Name of complex:

Total revenue earned:

Sr. no	The category of visitors by month & number					Indian			No. day visitors	No. staying overnight and revenue
	Adult			Children	Foreigner	Rural	Urban	Revenue		
	Month	Male	Female							
1	2	3	4	5	6	7	8	9	10	11

Note: Columns 2 to 5 will be written in three successive lines for the month pertinent, one below the other. First line information pertains to foreign tourists. Put a tick (☑) in col. 6. Second and third line details rural and urban tourists respectively. Put a tick (☑) in Col. 7, Column 8 as applicable.

VII. ii. Tourism: Use of Tourist Facilities – Lodging

Name of complex:

Class of accommodation:

Capacity (beds):

Sr. no	Month	Month capacity	Occupancy (beds/month)		Total occupancy during the month (beds/month)
			Foreign	Indian	
1	2	3	4	5	6

Note: Class of: Classify accommodation as per tariff slabs and if applicable, might include different rate

Accommodation structure for the same set viz. for Indians and foreign tourists. The highest class for example will be I for AC rooms, IV for tents etc. Use a fresh form for each class of accommodation.

Month Capacity: Number of days in a month x total number of beds available in that class per night halt.

VII. iii. Eco-Tourism - Partners

Sr. no	Identify of Eco tourism entrepreneur	Infrastructures	Programs	Investment	Kind and extent of benefits to local people	Benefit to PA & resources
1	2	3	4	5	6	7

VII.iv. Eco-Tourism: Visitor Aspirations

Visitor category	Number	Interested in									
Adults Male Female Children Foreigners Male Female Children		Plants	Bird watching	Animal sighting	Photography	Sketching	Scenic place	Cultural/ Historical sites	Pilgrimage	Trekking	Others
1	2	3	4	5	6	7	8	9	10	11	12

Note : 8.4 (A) is for urban population

8.4 (B) is for rural population

Create separate forms 8.4 (A) & 8.4 (B) that are otherwise identical

VIII. Outbreak Of Fires

Sr. No	Range	Location	Extent (ha)	Dates		Reasons	Estimated loss	Remarks
				Detected	Controlled			
1	2	3	4	5		6	7	8

Note : Location : By compartments

Reasons : Established or suspected

Estimated loss: e.g. number of trees damaged, stacked firewood/timber/bamboo destroyed/damaged by volume and cost, wild animals dead, particulars of sensitive sites affected, other property or life destroyed.

Remarks : State particularly problems encountered in detection and suppression and any other useful information. State also whether the extent of fire has been mapped.

IX. Offence Cases Detected

Sr. No	Range	Category	Numbers	Number of cases decided		Number of cases under process	Number of cases compounded	Remarks
				Successful	Failure			
1	2	3	4	5	6	7	8	9

Note: Category : e.g. illegal cutting of trees, illegal firewood, illegal NWP, poaching, encroachment, illegal cattle grazing etc. category should be modified by letters of alphabet.

Remarks : Any other useful information. This should also include the number of cases pending decision with the department.

* : The cases under column 8 pertain to area of non-PA status under management which do not involve an endangered species (Schedule-I).

X. Incentives and Rewards/Awards

Sr. No.	Range	Number of recipients: incentives/reward for detecting offences	No. of recipients award for outstanding service	Kind of award	Number of recipients	Remarks
1	2	3	4	5	6	7

Note: Kind of award : e.g. a medal like the Shaurya Chakra, any other such awards instituted by the State or Central Government. Includes citations, extra increments etc.

Remarks : Any other useful information. If an award carries cash, mention the amount.

**XI. i. Research Projects under Implementation Through PA Manpower With Or Without Collaboration
With Other Agencies**

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

Note: Completed : State date of completion and the status of the project report.

Ongoing : State since when the project is under operation and expected period of completion.

New : State the date of commencement and duration.

Status : State the progress towards achievement of objectives; or project which has been dropped or held in abeyance etc.

Remarks : Any other relevant information. If the project is in collaboration with any other agency or is a contractual arrangement, state the situation and the name of the collaborating agency. If animal/plant specimens are being collected state authority and where the collections are being housed.

XI. ii. Research Projects under Implementation By Other Agencies

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

Note: Completed : State date of completion and the status of the project report.

Ongoing : State since when the project is under operation and expected period of completion.

New : State the date of commencement and duration.

Status : State the progress towards achievement of objectives, or project which has been dropped or held in abeyance etc.

Remarks : Any other relevant information. State the name of the agency. If animal/plant species are being collected, state authority and where the collections are being housed.

XII. Survey and Inventories

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

Note: Completed State date of completion of field work and the status of the report.

Ongoing: State since when is it under operation and when is it expected to be completed.

New: State the date of commencement and duration.

By PA personnel: Will include collaboration or contractual arrangement. State the case as relevant.

Other agency: State the name of the agency.

Remarks: If specimen of plants/animals are being collected, state where the collection is being housed and authority.
Any other useful information.

XIII. The Monitoring Programme

Sr. No.	Title of the programme	Date of initiation	Responsible agency	Technique	Status of collaboration and analysis of data	Remarks
1	2	3	4	5	6	7

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

Status of Collaboration : Write only if applicable.

XIV.i. Eco-development Programme and Implementation Year

Sr. No	Nature of the programme	Sector (Central/State) or NGO sponsored	Target set		Achievement		Village (Buffer/enclaved)	Remarks
			Physical	Financial	Physical	Financial		
1	2	3	4	5	6	7	8	9

Note:

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

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

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

XV. Progress of All Strategies under the Zone and Theme Plans Year

Sr. No	Zone/Theme	Nature of strategy	Target as per schedule of operations/APO*		Achievement		Location	Remarks
			Physical	Financial	Physical	Financial		
1	2	3	4	5	6	7	8	9

Note: Zone/Theme plan: Mention title.

Nature of strategy: e.g. demarcation of boundary, creation of artificial water source, salt lick, maintenance of water sources (desilting), cutting and burning of Fireline, prescribed burning, weed control, immunization of cattle, maintenance of nature trails, setting up wayside exhibits, recruitment of staff, number of villages translocated, settled on new sites etc.

Location: Where pertinent, mention location e.g. weed control in comptt. 105, 111, 117.

Remarks: State problems, failures and reasons thereof, shortfall and reason, deviations if any and reasons, non-implementation with reasons etc.

*APO: (Annual Plan of Operations). Under Col.4 & 5, each column will have two figures. First the figure as per the schedule of operations in the plan and next to it in the same column the figure as per APO. If they differ it amounts to a deviation.

XVI. A Summary of Allotment of Funds, Revenue and Expenditure Year

Sr. No	Plan/non- plan/any other grant	Sector Central/State/other	Allotment received		Expenditure Incurred		Revenue realised	Remarks
			Non- recurrent	Recurrent	Non- recurrent	Recurrent		
1	2	3	4	5	6	7	8	9

Note: Explain under expenditure, over expenditure, savings and surrenders. State the extent of demand for the year as per the schedule of operations/APO in the remark's column.

XVII. Connecting Multi-Agency Programs In Landscape Based Planning Partners During Year:

Sr. No.	District	Sector/Central/State/ Other (Specify)	Agency & Work area/speciality	Program coverage	Agreed input and mechanism	Financial implications /investment & source
1	2	3	4	5	6	7

Note: Col 4: Main agency agenda e.g. livestock production, health, education, irrigation etc.

Col. 5: Indicate by either administrative unit e.g. tehsil, or number of villages i.e. target

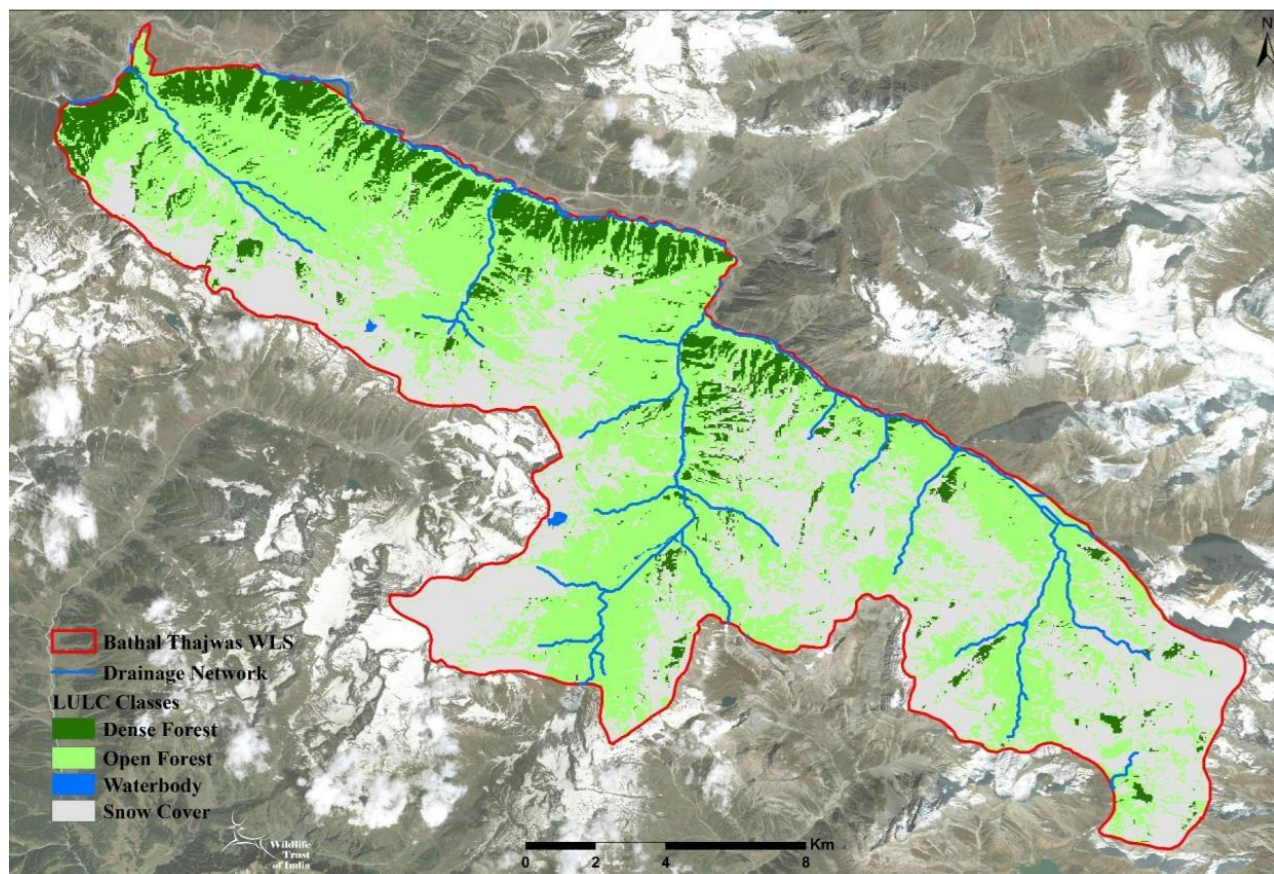
Col. 6: what has the agency agreed on to deliver? How? through agency plan/ scheme?

XVIII. Monitoring Extent and Quality Of Multi-Agency Programs Year

Sr. No.	District	Sector/Central/State/ Other (Specify)	Agency	Objectives & targets	Achievement & standard	Constraints	Extent of Investment	Remarks
1	2	3	4	5	6	7	8	9

Note: Col 6. The standard of achievement to be based on (i) verification of targets (ii) perception of satisfaction of people and their own assessment

Col. 7 (i) as reported by agency (ii) as perceived by people concerned



Management Plan of Baltal-Thajwas Wildlife Sanctuary (2020-25) prepared by Wildlife Trust of India for Department of Wildlife Protection, Jammu & Kashmir