

**MANAGEMENT PLAN  
FOR  
LALWAN COMMUNITY RESERVE  
(2018-19 to 2027-28)**

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## **PREFACE**

Lalwan community reserve is one of the protected Areas in Hoshiarpur district of Punjab State duly notified under Wildlife (Protection) Act, 1972. It is a government designed Protected Area where indigenous and local communities are seemed to be critical participants in its management and conservation development. The local panchayats are given due recognition as the site belongs to local people with their vested rights .since its inception , efforts to develop the comprehensive management of this Reserve are being done and its intersection with local panchayat and local communities of the area has resulted in the emergence of many issues. The present management plan is therefore outcome of such efforts that invariably deals with the problem of the area and strategies to safeguard the biodiversity of the new land of the protected area. The thanks are acknowledge to Sh. Kuldip Kumar PCCF/CWLW, Pb., Sh. T.Ganana Parkash I.F.S., C.F.(WL) Shiwalik Hill Circle, Sh. Neeraj Gupta P.F.S., D.F.O.(Head Quarter) and local field staff of both Forests and Wildlife Department. The thanks goes to panchayats Pardhan of local villages who have involved themselves in vernaculars in providing very useful information of this area.

## **EXECUTIVE SUMMARY**

Lalwan Community Reserve forms a part of Shiwalik Ranges of Garhshankar Wildlife Range in District Hoshiarpur. It is spread over an area of 3167 Acres 6 kanals. It was declared as Community Reserve vide Punjab Government notification no. 46/78/2007-Ft-V/6084 dated 22.6.2007 under section 36 A of wildlife (Protection) Act., 1972. The name of the Reserve is derived from the revenue village Lalwan which surrounds it. The Reserve is rich in fauna and flora and a number of seasonal natural springs and streams flow through its area. The Reserve needs a Management plan to deal with the problems of illicit felling of trees, poaching of wild animals, soil and water erosion, encroachment and water scarcity. The management plan aims at achieving following principal objectives.

- i. Protection of biodiversity of the area in general and wild life in particular.
- ii. Protection and improvement of the habitat of the Reserve.
- iii. Best possible management of soil and water resources.

The present Management Plan is developed for a period of 10 years.

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# **PART –I**

## **THE PROTECTED AREA: EXISTING SITUATION**

# Chapter-1

## INTRODUCTION TO THE AREA

**Lalwan Community Reserve forms a part of the Shiwalik Ranges of Garhshankar Wildlife Range in the District Hoshiarpur in Punjab.**

### 1.1 NAME, LOCATION, CONSTITUTION AND EXTEND

Lalwan Community Reserve is located between latitude 32°21'02.96" and longitude 76°08'55.55" at an altitude of 1380mts on and over the tract of revenue village Lalwan on Mahilpur- Jaijion road in district Hoshiarpur. It is a block forest having three well marked compartments divided by choe and kacha path. The total area is 3167 acre 6 Kanal and lies on Lalwan Village and is approachable from Mahilpur. It is 3km from jaijion and 14 km from Mahilpur. The entire area of this community Reserve is owned by the Lalwan village Panchayat. The location map of the reserve area is enclosed in annexure-1. The total area 3167 6 Kanals of the Village Lalwan under has been notified Section 36© of Wildlife (Protection) Act, 1972 (amended up to 2006) as Community Reserve for the purpose of protection and conserving the ecosystem vide Government of Punjab Notification No. 46/78/2007-Ft-V/6084 dated 22.06.2007 (Annexure-II). The area wise details of Lalwan Community Reserve:

Sr.No	Name of Village	Total area of Village	Agriculture Land	Forest area under Community Reserve(acres)
1	Lalwan	5567Acres	2499Acres 2 Kanal	3167 Acres 6 Kanal

## **1.2 APPROACHES AND ACCESS TO THE RESERVE**

The reserve is approachable by good network of roads. The reserve is approachable from the main road between Roopnagar to Hoshiarpur at Mahilpur (14 km) to reach Lalwan. The areas are as well connected in between by village road network (Annexure 111 attached. The reserve lies adjacent to strip forest from Mahilpur to Jaijon. Village road network map (Annexure-III)

## **1.3 SIGNIFICANCE OF THE LALWAN COMMUNITY RESERVE**

Lalwan lies in the Shiwalik belt of the state. Being adjacent to fragile ecosystem, the area too is bestowed with varieties of wild animals and birds.

The common birds that are found in the community reserve are White breasted kingfisher, Reo/Wattled lapwing, House Swift, Common Snipe, India Grey Hornbill, Hoopoe, Parakeets, Owl, Wagtail, Indian Robin, Woodpecker, Black Kite, Spotted dove, Pigeon, Shikra, Drongo and Egyptian Vulture to mention a few. The fauna including mammals and reptiles that are found in the dynamic ecosystem plays significant and important ecological, environmental, educational, ecotourism and development roles.

Common resident wild animals of the area are Sambar, Hog deer, Barking deer, Indian Pangolin and Wild Boar. The forest does play an important role in providing habitat for resident birds & animals as well as help in stabilization of local climate. It also plays Socio – Economic functions as local people are dependent on the forest products. The area has high potential for scientific research and ecotourism.

## **Chapter-2**

### **BACKGROUND INFORMATION AND ATTRIBUTES**

#### **2.1 BOUNDARIES**

- North – The agriculture land of village Chak Naryal, Ganguwal, Kothi, Maili, Janowal
- West – The agricultural land of village Jandiala
- South – The agriculture land of village Khanni, Poillan, Jallani, Kangar and villages from Himchal Pradesh viz. Polian, Kathar and Baliwal
- East – The Agriculture of village Badheran

#### **2.2 ROCK AND SOIL**

The plain area of the reserve is composed of alluvium intercepted by seasonal rivulets or choes. The soil derived from these formations are unstable and prone to erosion indicating the desirability of permanent vegetation especially on hill slopes. During monsoons, heavy flow loaded with sediments occur in these choes and may flow over the banks depositing the sediments in the vicinity. The deposits are mostly composed of sands. Majority reserve has Reddish Chestnut Soil. The carbonates are leached down to the lower layers. The soil is moderately acidic and neutral in reaction (ph 6.5 to 7.5) and is deficient in nitrogen and phosphorus. However, it is free of any accumulation of salt and calcium carbonate.



### **2.3 ALTITUDE/TERRAIN TYPES**

The terrain is more Hilly and divided by choes. Average elevation of reserve is 300 fts. There are two main Choes in the Community Reserve viz. Barkhandi Choe and Sarunda Choe. Barkhandi Choe is 6 km in length and 50 mts approx. in width. Sarunda Choe is 8 km in length and 50 mts approx. in width. Choes are perennial with maximum water flow in monsoon. There are depressions.

### **2.4 FOREST COVER IN LALWAN COMMUNITY RESERVE**

This area is mixed deciduous forest. The major tree species Acacia catechu, Dalbeziassissoo, Bombaxciba etc. List of tree species annexed in Annexure–I. During different season, there are seasonal herbs, shrubs and grasses available in this area, which provides desired habitats for different birds & animals. Detail annexed in Annexure – III.

### **2.5 CLIMATE**

The climate of the area is described as semi – arid.

#### **2.5.1 TEMPERATURE**

There are mainly three seasons i.e. summer, winter and rainy. The summer season falls between the months of April to June, the winter November to March and rainy July to September. In summer season the temperature touches 44<sup>0</sup>C or even sometimes crosses it. June is the hottest month and January is the coldest one. The

dust storm occurs in the month of May and June. During winter season the temperature falls as low as 4<sup>0</sup> C.

### **2.5.2 RAINFALL**

The souths–west monsoon generally arrives in the first week of July and continue up to the end of August. 70% of the rainfall occurs during the period. The winter rains are experienced during January and February. The average monthly rainfall recorded in the past ten years in the Tehsil is given in annexure – IV.

### **2.5.3 HUMIDITY, WIND AND DROUGHT**

The humidity reaches its maximum during pre-monsoon showers and during sowing season. The wind is moderate and drought situation is not experienced in the area.

## **2.6 WATER SUPPLY**

The reserve is located at the foot hills of Shiwalik Range of Hoshiarpur District. Natural streams and springs flow through the area almost throughout the year except during the peak months summer and winter. As a consequence, there is a scarcity of water during three months. However, there are plenty of water supplies during the months of rainy season. This heavy inflow of water normally goes waste as it runs quickly out of the reserve area through choes and streams. There is an acute need of managing the water supply in a beneficial manner.

## **2.7 WILDLIFE, STATUS DISTRIBUTION AND HABITAT**

### **2.7.1 HABITAT ATTRIBUTES AND VEGETATION**

Lalwan has mosaic of habitats. Maximum part of Lalwan is forests spread on shiwalik hills and plains. Some part is scrub forest and part is also marshland because of choes.

The vegetation is mixed dry deciduous type comprising tree naturally growing and artificially regenerated species like Shisham, Khair, Subabual, Acacia, Albezzia, Arjun, Butea, Teak, Neem, Kikar, Ficusspp etc. The grasses are elephant grass and dub grass. The weeds like lantana are coming up. The Department has planted species like Teak, Arjun, Subabul in the vacant patches of the area. The area has a mot of pressure from adjoining village for fodder and fuel wood. More grass lands are required to be developed for wildlife species like Sambar, Barking Deer, Hog Deer and Nilgai.

### **2.7.2 ANIMALS**

The faunal diversity includes Protozoans (84 species), Platylelminthes (47 species), Nematodes (140 species), Annelids (36 species), Arthropods (1206 species), Pisces (143 species) Amphibians (14 species), Reptiles (30 species), Aves (461 species) and Mammals (30 species).

Since the beginning of the 19<sup>th</sup> century ruthless destruction of wild life habitat has resulted in pronounced improvement and regression of wild animals. During the past the wild animals particularly the carnivores have been indiscriminately hunted and killed from this area to the point of extinction. Also the habitat of wild animals has been greatly affected by intensive agriculture, urbanization and construction of dams and canals. Now most of the land of the State has been cleared for cultivation leaving only about 5.76% under forests. Intensive agriculture on one hand depleted

then habitat of herbivores whereas on the other hand it favored rodent pests. The population of these pests has increased to alarming proportions. Also due to the depletion of their natural habitat and destruction of the natural predator, the herbivores are now raiding the standing crops of the forest neighboring communities. The Wild Life Protection Act, 1972 was enforced in Punjab State w.e.f.1/4/1975 to save the wild life. Many rare animals like Pangolins and Pythons, which are included in the international red data list of I.C.U.N, are found in this part of the Shiwaliks. Other 17 herbivores found in this region are Sambar, Barking deer, Hog deer wild pig and these included in schedule – III of Wild Life Protection Act, 1972. Leopard (Schedule – IV species of Wildlife Protection Act) sometimes migrates from Himchal Pradesh to Lalwan Community Reserve.

A great diversity of birds are also found in this too diverse region of the Shiwaliks. In the dense bushes, variety of bulbuls nests in good number. Blue tailed bee-eater, green bee-eater, blue throated barbet, red-rumped swallow and golden oriole are seen in the area. A large number of migratory bird also frequent these areas. The migratory birds such as Brown chiffchaff, Plain leaf warbler, yellow headed-wagtail, Rose finch, European bee-eater, grasshopper warbler, Siberian lesser whitethroat, Brambling and several Buntings are recorded from the area.

The range of wildlife in and around the Community Reserve area and detailed list of animals are given in annexure-VII.

### **2.7.3 OTHER FAUNA – IMPORTANT INVERTEBRATES, THEIR STATUS, DISTRIBUTION AND HABITAT**

The survey could not be carried out this period and therefore, this information is not available.

## **2.8 HUMAN ACTIVITIES**

Major human activities in the reserve are collection of fuel wood grass and fodder for cattle, cattle grazing etc there are more than 700 cattle in the village and graze in the reserve. Poor families do depend upon the reserve for seasonal collection of fuel wood.

### **2.8.1 ABOUT LALWAN**

Lalwan is a Village in Mahilpur Tehsil in Hoshiarpur District of Punjab State, India. It is located 31 KM towards East from District head quarters Hoshiarpur. 16 KM from Mahilpur. 111 KM from State capital Chandigarh Lalwan Pin code is 144530 and postal head office is Jaijon Jaijon ( 6 KM ), Rampur ( 7 KM ) , Harjiana (7 KM), Maili ( 7 KM ) , Jhanjowal ( 7 KM ) are the nearby Villages to Lalwan. Lalwan is surrounded by Mahilpur Tehsil towards west, Una Tehsil towards East, Garhshankar Tehsil towards South, Hoshiarpur-Ii Tehsil towards west Nangal, Hoshiarpur, Nawanshahr, Phagwara are the nearby Cities to Lalwan.

This Place is in the border of the Hoshiarpur District and Una District. Una District Haroli is East towards this place. Also it is in the Border of other district Nawanshahr . It is near to the Himachal Pradesh State Border.

#### **Lalwan 2011 Census Details**

Lalwan Local Language is Punjabi. Lalwan Village Total population is 1341 and number of houses are 270. Female Population is 47.2%. Village literacy rate is 71.4% and the Female Literacy rate is 31.3%.

## 2.8.2 POPULATION

<b>Census Parameter</b>	<b>Census Data</b>
Total Population	1341
Total No of Houses	270
Female Population %	47.2 % ( 633)
Total Literacy rate %	71.4 % ( 957)
Female Literacy rate	31.3 % ( 420)
Scheduled Tribes Population %	0.0 % ( 0)
Scheduled Caste Population %	53.6 % ( 719)
Working Population %	33.8 %
Child(0 -6) Population by 2011	148
Girl Child(0 -6) Population % by 2011	48.0 % ( 71)

## 2.8.3 POLLING STATIONS /BOOTHES NEAR LALWAN

- 1) Ges.Khanpur
- 2) Ges.Laksihan
- 3) Ges.Bilaspur
- 4) Ges.Rahalli
- 5) Ges. Kalupur

## **2.9 DEPENDENCY ON RESERVE**

As started above the major dependencies by the local people in the form of firewood collection, grazing and fodder are the actual requirement of the people which need to be addressed and rationalized through eco-development initiatives.

## **Chapter-3**

### **PRESENT MANAGEMENT AND PARTICES**

The community Reserve is notified for the first time and the forest are belong to Panchayat.

#### **3.1 PAST CONSERVAATION EFFORTS**

It was only after the Wildlife Division was created in March 2006, the first and foremost objective for the division was set to convince the people to conserve the wildlife. This time the traditional approach was thrown and “bottom up” participatory approach was followed. The meetings were convened in the villages presided by the present DFO with all conservationists and stakeholders having equal say. After a series of such village level meetings involving Sarpanch of the reserve and the socio engineering skills, the people were convinced about the benefits of conserving the ecosystem as it is today without depriving them the ownership and income from agriculture from the Panchayat community land or existing livelihood practices in the area. The provisions of 36(C) of the amended Wildlife Protection Act, 2002 (2006) was explained in detail and consensus was drawn for declaration of the Panchayat forest area into Community reserve in 2007. Thus the proposal have become a reality in June 2007 when the Government of Punjab after deliberations declared the “Lalwan Community Reserve”. Presently people are taking keen participation in meetings and awaiting keen on developing the area into a ecotourism area. The community reserve was a part of the Mahilpur Range of Garhshankar Forest Division. It was managed silviculturally as per working plan of the Forest Division. But due to its unique significance and its potential to become a good habitat for local Flora and Fauna, it was declared as a “Community Reserve” under Wildlife Protection Act,1972. Over the years the Forest Department has been



undertaking various interventions like artificial regenerations, soil conservation measures, removal of dead, dried and diseased trees and weed control measures etc. Fire control management was also done from time to time. However, there was no well-planned strategy for the management and protection from a Wildlife angle. Therefore, a comprehensive Management Plans urgently needed to tackle the problems faced by the Reserve and enhance its status to a level it deserves.

### **3.2 LEGAL STATUS AND LAND TENURE IN THE SURROUNDING AREA**

Legal status of the area is revenue land and entire of community Reserve falls under the ownership of Panchayat of village Lalwan.

### **3.3 CONSERVATION STRATEGIES AND EVALUATION**

To fulfill the objectives laid down in the Management Plan, a holistic strategy had to be developed. The strategy must include following prescriptions.

1. Boundary consolidation management.
2. Water management
3. Fire management
4. Hunting and Poaching management
5. Habitat improvement management
6. Soil Conservation Management
7. Management of Wildlife population through census and monitoring.
8. Wildlife health management.
9. Management of research activities and training
10. Training
11. Eco-tourism management.

### **3.4 MAJOR THREATS TO RESERVE PROBLEMS**

#### **1. Lack of demarcation/Susceptibility to encroachment**

The area of Reserve is not physically separated from the adjoining lands of villages as there is no boundary pillars on the ground indicating the demarcation. It is very difficult to ascertain the exact limits of Reserve. Therefore, the first and foremost strategy has to be the survey and demarcation of the total area so that the border lines between the Reserve and the adjoining the private areas become absolutely clear to all the concerned.

#### **2. Disturbed water regime of the area**

The reserve witnesses acute water scarcity during lean of peak of summer and winter. However, during rainy season the area usually gets plenty of rainfall. This skewed distribution of rain fall is a major impediment that affects wildlife population and distribution adversely. The habitat experiences long dry spells leading to mortality of plants and slow growth of trees. Therefore, the uniform availability of water throughout the year is the key strategy for the betterment of wildlife and its habitat.

#### **3. Area prone to fire**

The community Reserve area very prone to fire hazard particularly during summer. The fire creates havoc for wildlife population and they run outside of their natural habitat leading to enhanced man animal conflicts. The habitat also suffers a heavy loss as trees and grasses are burnt down causing an acute depletion of fodder for the animals.

#### **4. Inadequate Protection**

The herbivores of the Reserve have constant threat from hunters/poachers inside the Reserve and in the near vicinities.

#### **5. Fast spreading invasive species**

Due to intense biotic interface, the habitat of the Reserve area is in a degraded state and required urgent intervention for its restoration. Paucity of order, predominance of undesirable plant species Lantana Camara and obnoxious weeds and depleting crop density are some of the problems which have to be addressed immediately.

#### **6. Soil Erosion**

The soil of Shiwalik hills are acutely prone to various soil eroding factors like water, wind etc. in general. The area under Reserve is no exception.

#### **7. Lack of inventorization of the area**

Regular monitoring of wildlife population is mandatory to keep a check on growth of each and every type of animal species. It is important to ascertain sex ratio and distribution of age classes of a particular species. It also helps to predict future growth pattern. Addition or depletion of individual animals or type of animals can be known for better animal population management. This can also help to know health problems affecting the animal population.

### **3.5 EXESTING ADMINISTRATIVE SETUP**

The existing setup of wildlife administration is grossly under staffed in the district. There are no permanent check posts or nakas set up in the district to control wildlife crime. But only few temporary bakas are set up during winters due to the high possibilities of poaching that too are manned by daily wage labour. At present, there is provision for one Range Officer and one Wildlife Guard for the entire Garhshankar Wildlife Range. There is no need to strengthen the workforce in the Hoshiarpur Division.

### **3.6 EXISTING INFRASTRUCTURE**

#### **3.6.1 ROADS**

The reserve is well connected by public road networks from Mahilpur side. Roads are all weather and are maintained by PWD.

#### **3.6.2 TELE COMMUNICATION**

Presently no telecommunication network such as telephone or wireless is available with the staff in the reserve. There is only one telephone in DFO's office. The people and staff interact through mobiles phones.

#### **3.6.3 VEHICLE**

At present there is one Gypsy for D.F.O. and one Bolero Camper for range officer, Garhshankar is available with this division and is used extensively for Patrolling and wildlife protection, survey etc in the entire division. It is grossly inadequate to meet the requirements of wildlife protection in the Garhshankar range including the reserve one more rescue vehicle two tractors and trolley for Garhshankar range and Community Reserve.

### **3.6.4 BUILDINGS**

There are no buildings and office at present in the community reserve. This makes the protection and effective operationalization of other initiatives cumbersome. Permanent buildings are not created in the past nor were any funds allotted for the purpose also office for range officer is required at Garhshankar.

### **3.7 SUMMARY OF THREATS TO RESERVE AND WILDLIFE**

#### **MAJOR THREATS TO THE RESEVE ARE FROM FOLLOWING FACTORS**

- a) To preserve the ecology of the area.
- b) To enhance the wildlife population.
- c) To protect and enrich the habitat.
- d) To educated people about environment preservation through educative and re-creative measures and to ensure their participation for mutual benefits.
- e) To eliminate man – animal conflict.
- f) To improve the infrastructure.
- g) To build capacity of managers/personnel.
- h) To conduct fundamental research in biodiversity fields.

**PART – II**  
**THE PROPOSED MANAGEMENT**

# CHAPTER – 4

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

### **4.1 THE EXISTING SITUATION IN THE ZONE OF INFLUENCE**

#### **4.1.1 Villages In and Around The Reserve**

Through there are no human settlements inside the reserve area, the reserve surrounded by various villages, but Lalwan villages is closed vicinity of the reserve. More than half people of this village landless & seasonal laborer. The land acquisition is in few Landlords' hand. So, there is lack alternate employment for local landless and poor compelling them to engage in activities which put pressures on the natural resources of the reserve.

#### **4.1.2 Relationship With Reserve**

The relationship of local people with the reserve is very intense particularly due to associated livelihood. Give details of Lalwan village family holding, profession etc.

#### **4.1.3 The State Of Peoples Economy**

#### **4.1.4 Vocations, Land Use of Reserve And Its Products**

The present land use in the reserve is annexed in the annexure. Out of total area of 5667 acres of the village Lalwan, 3167 acres 6 kannal area is under Community Reserve. The details are given annexure – VIII. The main crops of the area are wheat, paddy, sugarcane and other vegetables.

#### **4.1.5 Implications of the Land Use and Resource Dependency**

Forests, in Punjab are disappearing at an alarming rate because of population explosion, industrial developments and other anthropogenic factors. These, in turn, have induced changes in the land – use patterns such as diverting woodlands for agricultural purposes. For the development and management of forests it has become essential to understand the interplay between human activities and ecological responses that cause wetland degradation. An interdisciplinary approach of merging social, economic and environmental factors is required to achieve the goal of conservation the country like India where the use of natural resources has been part of traditions and culture of the majority of rural population from ancient time.

#### **4.1.6 Reserve Practices and Their Implications For People**

The existing resource use in the reserve needs careful monitoring and rationalization asking into board the needs of the local people. These activities have implications on the livelihoods of local people and therefore, an integrated approach of conservation & development is must.



# **Chapter – 5**

## **MANAGEMENT PLAN OBJECTIVES AND TRATEGIES**

### **5.1 OBJECTIVE OF MANAGEMENT**

Lalwan Community Reserve lies on the revenue land village Lalwan and is managed according to the prescriptions of Working Plan of the Garhshankar Forest Division. There was no individual management plan for this area. After the area was declared as Community Reserve, it is mandatory to envelope a scientific management plan exclusively pertaining to it. Management Plan can identify the real threats and problems objectively and can formulate exact solution to each of these. The working Plan of the Garhshankar Forest Division dealt mainly with habitat issues. In this management plan, the general approach has been oriented from a wildlife perspective. As a guiding document present management plan will focus on the following objectives:-

1. To protect and conserve the fragile ecology of the Reserve and create eco – friendly environment in and around the reserve by promoting various livelihood opportunities and through eco – development by active participation of people and stake holders to make them partners in conservation development.
2. To promote the eco - tourism and create conservation awareness in and around the community reserve area.
3. To facilitate the Research, training and capacity building of communities and staff and strengthening social engineering skills.

## **5.2 CONSTRAINTS IN ACHIEVING THE OBJECTIVES**

The community Reserve falls in panchayati area of Lalwan village panchayat. These areas are generally considered as unproductive wastelands in public perception till now. As Punjab agrarian state and 84% of the geographical area is under intensive agriculture, there is an immense urge from the village panchayats to convert Forest into income generating or Productive agricultural fields. Relisting the above management objectives become difficult task due to the following constraints enlisted objectives wise.

### **5.2.1 CONSTRAINTS IN ACHIEVING THE OBJECTIVES**

- I. The Community Reserve falls in Lalwan Village Panchayat and is fragmented at present. The ecosystem is interspersed with agricultural fields. The people of the reserve are not very much conscious about the biodiversity of the area. The openness of the Reserve and lack of awareness among local people makes the area susceptible to exploitation.
- II. The existing staff in the division is grossly inadequate and are not trained in social engineering and participatory skills. The infrastructure development is very poor. The local people for their livelihood are dependent upon their either on agriculture or very poor marginal farmers sell their produce in the market to earn profit.
- III. There has been a general negative attitude among public with regard to conservation of ecosystem and its benefits. Efforts in the past have failed to convince them for conservation.
- IV. The funds allotted to the division is grossly inadequate for effective operation and conservation of wildlife of the district including the community Reserve.
- V. There are no check posts/special nakas present in the reserve area for effective protection of the reserve. Due to lack of basic infrastructure such as

patrolling vehicles, communication facilities such as wireless/telephone, it is difficult to pass the information pertaining to poachers. The offenders are highly equipped. They in no time disappear from scene of crime.

- VI. Presently the department has no building or guards huts in the reserve area. This makes the effective protection a difficult task.
- VII. There is no provision for secret services fund for rewards to informers for collection, dissemination of intelligence gathering about wildlife crime or poaching of birds in the area.
- VIII. Periodic scare about spread of bird flu in another threat in the area. The division is ill equipped in terms of staff, funds infrastructure in the likely event of bird flu in the reserve.
- IX. This is reserve in inhabited by people who keep domestic cattle with them. Over a period of time the population of stray dogs have gone up. They stray dogs are cause of nuisance not only to people of this area but to the wild animals also.
- X. The success of any protected lies in the establishment of scientific database of its inventory existing there in. the reserve has been never put under scientific analysis and monitoring. Therefore no database has been formed so far. This is probably due to lack of untrained scientific manpower available with this division, lack of initiative in this regard and overall lack of commitment in terms of funds. This is one of the cause which teats hindrance in protection and preservation of the Reserve.
- XI. The reserve is declared by the Government and the prohibition/regulations of certain activities is in the Wildlife Protection Act are to be informed by the field staff in coordination with local people.
- XII. Promoting ecotourism require cautious approach in terms of carrying disturbance to the ecosystem and various other factors. Presently there are no

facilities of stay, tour around the reserve and explain about the Animals birds in the villages.

- XIII. There is always a threat of outsiders grabbing away the economic benefits arising out of the resources by the management committee is to be exercised.
- XIV. Creation of requisite infrastructure and other facilities of communication, roads and facilities of Animals bird watching require huge investments by the stakeholders to be supplemented by the government for initial support.
- XV. Adequate team building and capacity building exercise need interdepartmental coordination and cooperation in all endeavors.
- XVI. Research priorities need to be set in collaboration with research institutions in the field of biodiversity conservation and avifauna studies. Presently no scientific research organizations are working in the reserve area.
- XVII. Identification of critical field and applied research topics and undertaking of research no time bound manner is an immense need. This requires adequate scientific impetus, periodic wildlife census and specific studies.
- XVIII. Training on various skills for the staff especially the socio – engineering skills protection of ecosystem, bird flu, etc. require specialized courses to be designed at various institutions.
- XIX. School and college children require exposure visits for creation of awareness, publication of posters, booklets, etc. There is inadequate representation in the form of eco – clubs and green crops in the adjoining areas of the reserve.
- XX. The committees, village level eco – development committees, Community Reserve management committees require capacity building training for managing reserve affairs, maintenance of records and accounts on day to day basis. This require services of staff trained in social skills and the division is lacking at present.

# **Chapter-6**

## **THE MANAGEMENT STRATEGIES**

### **6.1 PROTECTION**

#### **6.1.1 Wildlife Protection**

In order to effectively protect the ecosystem in future. It is proposed to engage labor on watch and ward duty at eight designed places for the purpose of anti-poaching camps, mobile patrolling and manning check posts to be established for this purpose At least 10 persons are required t be engaged on this important duty for all round protection duty in and around the reserve. Presently one forest ranger (WL) and on wildlife guard is working in this reserve in addition to looking after other wildlife issues, court cases and protection in the entire. Garhshankar Wildlife Range Spreading up to whole SBS Nagar (Nwanshahr). , Tractor, Trolley, Tanker, Two Numbers Fire Tender (4x4), Rescue Vehicle and firefighting instruments are required to be purchased for fire protection.

#### **6.1.2 Boundary Demarcation**

#### **6.1.3 Survey of Landscapes/Maintenance And Monitoring**

#### **6.1.4 Construction of Guards Huts**

The reserve is established new and there are no departmental buildings in or nearby the area. This makes the operation by field grass root level staff serving in the area difficult. The effective protection can be strengthened only if Forest Guard/Wildlife Guard Huts with bare minimum facilities are constructed at Lalwan.

### **6.1.5 Establishing Anti Poaching Camps.**

During winter months during October till march it is proposed to establish anti-poaching camps at eight locations to be manned by at least four s four labor day s night they will help in patrolling manning check posts in addition to ant poaching and watch and ward duties during the season. The services of ex-service men retired from the reserve area can also be utilized for the purposes if adequate trained labor is not available. For the purposes of establishing anti-poaching camps it is also proposed to procure tents bags and other necessary equipments for the labour serving in this important duty.

### **6.1.6 Establishing Check Posts**

As the protection measures especially during winter require constant watch, it is proposed to have six check posts in the reserve. These checks posts will be constructed using tin sheets on a temporary basis to be operated only during winter season and easily removable way. Tee checks posts also require to be manned by Daily wage labour on round the clock basis during six months (October-March) by at least four & four labour during the day and night on shift basis. Nay suspicious movement of poachers will be intimated to the control room to be set up either in any of the Guard hut interpretation centre will be acted upon immediately.

## **6.2 HABITAT IMPROVEMENT**

### **6.2.1 Weed Control and Removal**

All must 60% of the reserve Is heavily infested with weeds such as lantana etc. in almost all the locations and throughout the reserve. The systematic and periodic removal of the weeds is to be undertaken on priority basis for maintaining the integrity of the ecosystem. It is proposed to undertake the task manually in all the Ten years of the plantation period.

### **6.2.2 Water Management**

The seasonal and perennial water stream will be harnessed with check dams. Ponds and water holes will be constructed. Two submersible deep water bore are required to be constructed for water holes and fore Tenders; two pumps also required to carry water from one place water holes. One tractor and tanker is required to take water from pump to Packa/kacha water hole.

### **6.2.3 Plantation of Fruit And Fodder Species**

Fruit bearing trees like Jamman, Ala, Mango, Mulbary (Shahtoot), Pipal, Bohar, Ber, Amrud (Guvava), Kadam, Gullar and Citrus atc. Will be planted. More grass lands will be developed. Salt licks will be provided in the Community Reserve.

### **6.2.4 Wildlife Health**

The habitat of the Reserve will be made free from stray cattle to avoid contagious diseases and vaccination of livestock within 5 km. of the reserve will be ensured every year. A shelter home, cages and dispensary will be established.

## **6.3 ECO-TOURISM, EXTENSION AND EDUCATION STRATEGIES**

### **6.3.1 Nature Interpretation Centre**

Wildlife interpretation fulfills needs of awareness creation among public, visitors and school children. As this reserve has enormous potential of attracting tourists both domestic and international in future, there is an immense need to create an interpretation centre in the Reserve. It would be worthwhile to create this important infrastructure from the departmental side for the purpose of wildlife interpretation. The same can also be utilized as community hall for training the women and youth on income Generating activities and other workshops. Four rooms on the first floor and one hall in the ground floor are proposed to be constructed with all facilities such as screens, audio visuals, models and other facilities. The rooms would also serve as temporary rest rooms purpose for the tourists and the rent would be deposited with the Reserve Management Committee funds.

### **6.3.2 Construction of Watch Towers**

Creating vantage point in the form of watch towers not only helps in protection and quicker communication in the event of any attempts of poaching, but also serves the purposes of bird watching, monitoring the movements of birds and ecotourism, Hence it is proposed to construct three watch towers at Lalwan appropriate selected place.

## **6.4 COMMUNICATION & TRANSPORTATION**

As the quick communication and rapid response on an emergency, rescue of stray wild animals and poaching threats is the key, there is an immense need for strengthening the communication network and transportation facilities of the Wildlife Division immediately. The division is presently having only one



telephone connections and usage has become reliable, common and economical, it is proposed to have ten mobile connections instead of any other means of communication. The division is presently having only one gypsy and one bolero camper for Garhshankar Range is limitedly used for patrolling, survey, protection and other works relating the wilding protection, timely rescue of stray wildlife and mobile patrolling inadequate and in effective. In order to strengthen the patrolling and protection work it is proposed to acquire a Rescue vehicle. The reserve is infested with weeds and as per the requirement of plantation and other operations, it is proposed immediately purchase a tractor, Trolley, Tanker and necessary equipments.

## **6.5 EQUIPMNETS**

In order to strengthen the wildlife protection, scientific studies, interpretation center and the Division Office, it is proposed to procure the equipments such as binoculars, Field scope, computers and laptops 4 nos., printers and scanners, photocopier, fax , GPS, laser range finder, silent generator, photography equipments, plasma screens, touch screens for interpretation centre, Multimedia and slide projectors, speaker etc.

## **Chapter-7**

### **ECOTOURISM AND ENVIRONMENTAL AWARENESS**

Ecotourism is defined by IUCN as “environmentally responsible travel and visitation to relatively undisturbed natural areas in order to enjoy and appreciate nature that promotes conservation, has low visitor impact and provides for beneficially active socio – economic involvement of local population”.

The main characteristics of the ecotourism activity should be:

- ❖ It promotes positive environmental ethics and fosters preferred behavior in its participants.
- ❖ It does not degrade the resource.
- ❖ It concentrates on intrinsic rather than extrinsic values.
- ❖ It is oriented around the environment in question and not around man.
- ❖ It must benefit the wildlife and environment.
- ❖ It provides first hand encounter with the natural environment.
- ❖ It actively involves the local communities in the tourism process.
- ❖ Its level of gratification is measured in terms of education and appreciation.
- ❖ It involves considerable preparation and demands in depth knowledge on the part of both leaders and participants.

Most importantly, it is intended to benefit the stakeholders of Wildlife Conservation especially in the present context, the Protected area belongs to people and it promotes the livelihood and economy of the local people in and around the Lalwan Community Reserve.

## **7.1 ECOTOURISM POTENTIAL OF THE DISTRICTT**

Lalwan Community Reserve is spread across only one village forest, close to the District town of Hoshiarpur. The reserve has been on the verge of extinction due to inadequate emphasis placed on protecting this rare bird habitat and indeed a State heritage. The state administration in the past has conveyed their inability to have this area declared under protected area network, as the land in question is owned by Panchayat, which were unwilling or un cooperative in the matter.

It is matter of great satisfaction that the Panchayat land in question has been declared as Community Reserve after convincing the local Panchayat to support the conservation effort in this Natural habitat as it is ultimately in their own long term internet.

## **7.2 MAKING OF CAMPING AND PROVISION OF TENTS AND BASIC AMENITIES**

At present, there are no buildings, hotels and other facilities for stay nearby for the tourists visiting the area. Hence it is proposed to have temporary camping and tents for the visiting tourists for the next 10 years. It will boost ecotourism in the area and it is seasonal activity.

## **7.3 DEVELOPMENT OF A NATURE TRAIL FOR TOURISTS**

The paths in the community reserve ecosystem are be developed as Nature trails for the visiting tourists to visit and enjoy the Animals & Birds sighting. It is also important to have wooden hut inside the reserve in selected locations for resting and it will be added attraction for the tourists.

#### **7.4 TRAINING TO LOCAL VILLAGE LEVEL ECOTOURISM GUIDES AND PROVIDING TOURISM KITS**

The ecotourism in any bird area require correct identification of flora & fauna and its ecological importance. Hence it is proposed to develop Field Guide for the Local eco guides for their easy use in English. The Local village youth will be trained in identification and they will be provided with basic equipments and kits such as Binoculars, and Telescopes, Field scopes etc. and a book on birds. The fields guide for identification on the birds and it importance will be developed during the plan period.

#### **7.5 DEVELOPMENT OF EDUCATION MATERIAL**

It is proposed to develop education material in the form of pamphlets, posters, Boards, hoarding and other booklets about the reserve to serve as environmental education material for the benefit of Communities, visitors and Schools children. It will be developed by the department itself as per need.

#### **7.6 WORKSHOPS/SLIDE SHOWS IN VILLAGES/SCHOOLS**

Various lectures on environment and its benefits, birds' diversity and field workshops need to be conducted in the reserve village and in the interpretation centre. Slide shows and Power Point presentations will also be held in the schools.

## **7.7 CELEBRATION OF SPECIAL DAYS, OUTREACH PROGRAMMES EXPOSURE VISITS TO THE RESERVE**

Various environment and Forestry related days such as Van Maha Ustav, Wild Life week, World Environment day, World Wetland day and other important events will be celebrated in village and schools.

## **7.8 DOCUMENTATION AND FILM MAKING**

As the documentation of all the works are important from time to time, it is proposed to engage specialists in the field of photograph and video making for films. It is also proposed to create a feature film about the reserve and the bird's diversity every year. The various other developmental activities also need to be documented from time to time. The records need to be maintained and the community Reserve management committee will be trained for this purpose.

# **Chapter – 8**

## **ECO-DEVELOPMENT**

Eco–development is a multi–disciplinary and multi–stakeholder led collaborative strategy, currently being adopted to link the conservation values of wildlife protected areas with the livelihood and development aspirations of the local communities. The success of the this programme essentially depends upon the ability of the planers to understand the complex issue involved in eco-development through rational use of natural resources by means of appropriate technology. It promotes the active participation of local stakeholders of the ecosystem. In the present Community Reserve it is imperative for implementing the eco – development programmes as the land in question is a common property resource owned by Lalwan village panchayat.

### **8.1 IDENTIFICATION OF VILLAGE THROUGH PRA, RRA AND DETAILED SURVEY USING SOCIAL STAFF**

Participatory Rural Appraisal and Rapid Rural Appraisal techniques need to be used in the village falling in the Community Reserve area to identify the problems of the village ecosystems and other issues for developing site specific and need based Eco development project. Since, this require high degree of social skills, it is proposed to engage the services of Social staff such as facilitator and village level motivators in each village for survey of the reserve villages. The survey will include as requisite social and other information required for the development of project. Various PRA and RRA Map will be prepared for the project.

## **8.2 PREPARATION OF THE DETAILED ECO DEVELOPMENT PROJECT DOCUMENT**

The Eco development project incorporating all activities will be prepared after the detailed survey undertaken by the social staff as per need and site specific treatments. This project document will be discussed in the management committee meeting for approval before final submission.

## **8.3 FORMING ECODEVELOPMENT COMMITTEES (EDC) BY ENGAGING VILLAGE LEVEL MOTIVATORS AND ACILITATORS**

The Eco development committees will be formed in village with a general house and executive committee to be elected by the Punjab Forest Department and Eco development by Government of India will be followed in constituting the committees. This work also involves social engineering skills in forming committees, conflict resolution if any from time to time, hence it is proposed to avail the services of a facilitator and village level motivators.

## **8.4 CATTLE VACCINATION & STARY DOG SONTROL**

It is mandatory for vaccination the cattle for disease control in and around the protected areas. The cattle population in the village falling in the reserve in enclosed. The stray dog population is also a menace and endangers the animals during winter season. Hence control of Stray Cattle, Stray Dog population and monkeys are proposed.

## **8.5 INTRODUCTION OF AGRO-FORESTRY SPECIES IN FARMLANDS**

In order to promote agro forestry and farm forestry as part of diversification and increase tree cover in the reserve village. It is proposed to distribute fruit, fuel, fodder and other trees to farmers free of cost. As the area is having high potential for agro forestry, this activity is proposed.

## **8.6 PROMOTION OF IGA'S**

Self Help group will be formed in the village as part of Eco development activity and they will be trained in various income Generating Activities with provision of some corpus fund for starting the activity. Women and educated youth will be motivated and various need based and marketable activities will be undertaken after providing training.



## **Chapter – 9**

### **ORGANIZATION AND ADMINISTRATION OF LALWAN COMMUNITY RESERVE**

As the area is constituted as Community Reserve any measure to manage, administer and improve the protected area require consensus and approval from the local stakeholders.

The community reserve has a legal sanctity under amended Wildlife Protection Act 2006. Hence, in order to strengthen the people's active participation in the day to day management of the reserve, a series of committees are proposed to be constituted. The management is legally required under the Wildlife Protection Act, 2006

#### **9.1 CONSTITUTION OF LALWAN COMMUNITY RESERVE MANAGEMENT COMMITTEE**

Under section 36 (D) of Wildlife Protection Act, 1972 (amended up to 2006), the state government has constituted a management committee to manage the affairs of the community reserve. The sections are reproduced below:-

- 1) The State Government shall constitute a Community Reserve management committee, which shall be the authority responsible for conserving, maintain and managing the community reserve.
- 2) The committee shall consist of five representatives nominated by the Village Panchayat or where such Panchayat does not exist by the members of the Gram Sabha and one representative of the State Forests or Wildlife Department under whose jurisdiction the community reserve is located.

- 3) The committee shall be the competent authority to prepare and implement the management plan for the community reserve and to take steps to ensure the protection of Wildlife and its habitat in the reserve.
- 4) The committee shall elect a Chairman, who shall also be the Honorary Wild Life Warden on the community reserve.
- 5) The committee shall regulate its own procedure including the quorum.

As the Lalwan Community Reserve falls in Lalwan village Panchayat lands and the village need representation. Punjab Government vide his notification no. 46/782007-Ft/689 Chandigarh, dated 27/01/2009 has constituted the following committee for conserving, maintaining and managing the Lalwan Community Reserve.

The committee will elect its chairman on rotation on one year basis. The terms and conditions of the committee will have to be decided at the time of constitution by the state government. The committee will deliberate upon the management issues, expenditure and revenue from the reserve and will be final authority for decision making. The proceedings, decision making and planning including the quorum will be decided by the committee itself. Importantly, any revenue arising out of eco – tourism and other major activities will be maintained by the committee and will be utilized for the development of the reserve and the villages of the Community Reserve on 50:50 basis. The revenue from the trees of the strip forests of the strip forests of the adjoining reserve area will be shared with the community reserve management committee at the time of harvest as per the Punjab Apportionment of tree rules, 2005.

## **9.2 CONSTITUTION OF VILLAGE ECODEVELOPMENT COMMITTEES**

The village level eco–development committees are formed with purpose of implementing any future eco - development projects. This committee is proposed on the lines of joint Forest Management guidelines issued by Government of Punjab. Also the Forest Development agency and Eco–development agency project guidelines issued by National Forestation and Eco- development Board. Government of India are kept in mind in constituting the committees. The constitution of the committee will be decided at the time of preparation of detailed Eco development project for the Lalwan Community Reserve.

Divisional Forest Officer (Wildlife) would be approving authority for village level eco-development committees. The Forest/ Wildlife Guard of the reserve will be member secretary of the committee.

The quorum and other issues regarding frequency of meetings and decisions will be placed before the Lalwan Management Committee for approval. The project works will be approved on detailed estimates prepared and submitted to Divisional Forest Officer (Wildlife).

## **9.3 INVOLVEMENT OF OTHER ORGANIZATION AND Ngo's**

The involvement of the reputed Non-Government Organization on the Wildlife Conservation work in the reserve to boost the people's participation in conservation work will be encouraged. The NGO's and other interested individuals can contribute much to the development and management of the Community Reserve.

## 9.4 REVIEW OF ADMINISTRATION SET UP FOR RESERVE

The present set up looking after the entire Hoshiarpur Wildlife Division is grossly understaffed. The division is having jurisdiction over the entire Hoshiarpur & Nawanshahr district including the Lalwan Community Reserve. The Community Reserve falls in Garhshankar Wildlife Range, which is presently looked after by range Officer (Wildlife) and assisted by one Wildlife Guard. There are no Range assistants and supporting staff at the moment. Hence in order to strengthen and streamline the Reserve management work the following administrative set up is proposed. The setup is the bare minimum requirement for effective protection and successful management of the Community Reserve.

### REORGANISATION

The Community Reserve will be made into a range with one block of two beats each. Under the new set up following new posts will have to be created:-

1) Forest Ranger	-	1
2) Dy Forest Ranger/Forester	-	1
3) Clerk	-	1
4) Driver/Operator	-	2
5) Wireless Operator	-	4
6) Forest Guard	-	2
7) Peon	-	1
8) Chowkidaar	-	1
9) Watch/Ward	-	12

# Chapter – 10

## LANTANA CAMARA MANAGEMENT

### 10.1 GROUND STORY MANAGEMENT

In view of increasing density of invasive weeds like Lantana and Parthenium, it is important to manage crop composition of ground story with objectives to decrease the domain of invasive weeds and to change the crop composition of ground story by replacing invasive weeds with traditionally occurring/cultivated ground story valuable spp.

1. Supplementary artificial regeneration with suitable valuable spp will also be useful for soil and moisture regime. For better salve cultural substitution of Lantana by other appropriate species site specific planning and treatment should be done.
2. Soil beds will be prepared along contours and planted with tufts or seed broadcasting.
3. Sowing of grasses will be done in Community Reserves. Suitable fodder spp.which can compete with Lantana include Napier grass, Guinea grass, Desmanthus, Cenchrusspp. etc.
4. Other appropriate spp. including lemon grass, citronella, palmarosa, vetiver and medicinal herbs like chasku, kalmegh, ashwagandha, tulsi, agave, aloe- vera, kaunch etc. could also be planted as a part of forest floor/understorey management.
5. Bamboo, Subabul and other tree species may also be planted in close spacing for suppression of Lantana.

## **10.2 LANTANA MANAGEMENT/LANTANA HARVEST RULES**

Lantana management is a critical issue which needs attention in Community Reserves areas. Being an invasive alien weed which has covered very large tracts of Shiwalik in last few decades the problem needs to be addressed urgently. Therefore for Lantana removal/harvest from any site following rules are made:

1. Lantana eradication/removal has to be done carefully. Therefore Lantana will not be burnt for clearing of site for plantation Community Reserves.
2. Uprooting or stubbing should be done in phased manner and simultaneously plantation work will be done with fast growing species.
3. Lantana can also be cut /stubbed in a careful manner from such areas which are required for earthwork for plantation and improving the quality of ground cover.
4. Heavy machinery will not be allowed to be used to harvest Lantana.
5. No large scale Lantana cutting/stubbing will be done during fire season (16 April-15July) except as a part of advance earthwork for planting.

# **Chapter-11**

## **BUDGETS & SHECDULE OF NEW EXPENDITURE**

### **10.1 THE PLAN BUDGET**

As the recommended in previous Para for a comprehensive management of the Lalwan Community Reserves following interventions are needed. Descriptions are given in two columns, one dealing with the quantity of works the other with approximate amounts. The management plan is prepared for ten years from 2018-19 to 2027-28. The year-wise phasing can be done by the Community Reserves Range officer according their priorities:-

### Budget Proposals – Lalwan Community

Sr. No.	Description of Works	Proposed Details	Year-wise Phasing of the Financial forecast in lakhs .										Grand Total in Lakhs.	
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10		
<b>1.Survey and Demarcation</b>														
1.1	Survey and Mapping	The Lalwan community reserve will be surveyed and mapped	-	2.00	2.00	2.00	-	-	-	-	-	-	<b>6.00</b>	
1.2	Installation of boundary pillars	Lalwan community reserve boundary will be demarcated using boundary pillars	-	-	2.00	2.00	2.00	2.00	2.00	2.00	2.00	-	-	<b>12.00</b>
1.3	Boundary /trenching/ Boundary Pillar	The Lalwan community reserve will be fenced with chain link fence including Toe wall	-	40.00	40.00	40.00	40.00	40.00	40.00	-	-	-	-	<b>200.00</b>
	<b>Total</b>		-	<b>42.00</b>	<b>44.00</b>	<b>44.00</b>	<b>42.00</b>	<b>42.00</b>	<b>42.00</b>	<b>2.00</b>	<b>2.00</b>	-	-	<b>218.00</b>



## 2. Provision of Water

2.1	Purchase of submersible motor/pump sets including for deep bore	Two new sets will be purchased	-	6.00	6.00	-	-	-	-	-	-	-	<b>12.00</b>
	<b>Total</b>		-	<b>6.00</b>	<b>6.00</b>	-	-	-	-	-	-	-	<b>12.00</b>

## 3. Infrastructure Development

3.1	Purchase of LCV (Rescue Vehicle)	One LCV will be purchased	-	15.00	-	-	-	-	-	-	-	-	<b>15.00</b>
3.2	Purchase of Fire Fighting tools	Fire fighting equipments will be purchased including fire tender	-	-	20.00	5.00	-	-	10.00	2.50	-	-	<b>37.50</b>
3.3	Purchase of binoculars	8x40 magnification	-	-	3.00	-	-	-	-	-	-	-	<b>3.00</b>
3.4	Purchase of Computer & other Data Collecting Equipments	Computer and its accessories, range finder shall be purchased	-	-	1.00	-	-	-	1.00	-	-	-	<b>2.00</b>

3.5	Purchase of Evidence Collecting Equipments/Kits	To deal with offenders, evidence collecting equipments shall be purchased	-	1.00	1.00	1.00	-	-	1.00	1.00	-	-	<b>5.00</b>
3.6	Purchase of Tranquilizing Gun & Medicines		-	6.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	<b>14.00</b>
	<b>Total</b>		-	<b>22.00</b>	<b>26.00</b>	<b>7.00</b>	<b>1.00</b>	<b>1.00</b>	<b>13.00</b>	<b>4.50</b>	<b>1.00</b>	<b>1.00</b>	<b>176.50</b>

#### 4. Communication

4.1	Purchase of Mobiles	Mobile phones for guards and Range officers	-	1.00	-	-	-	-	1.00	-	-	-	<b>2.00</b>
4.2	GPS (Global Positioning System)		-	0.30	0.30	0.30	-	-	-	-	-	-	<b>0.90</b>
	<b>Total</b>		-	-	<b>1.30</b>	<b>0.30</b>	<b>0.30</b>	-	-	<b>1.00</b>	-	-	<b>2.90</b>

### 5. Transportation

5.1	Purchase of Tractor with Trolley & accessories	Purchase of Tractor with Trolley & accessories for trans location of injured animals etc.	-	10.00	10.00	-	-	-	-	-	-	-	-	<b>20.00</b>
5.2	Purchase of Tankers		-	5.00	-	-	-	-	-	-	-	-	-	<b>5.00</b>
5.3	Purchase of Motorcycle		-	-	4.00	-	-	-	-	-	-	-	-	<b>4.00</b>
	<b>Total</b>		-	<b>15.00</b>	<b>14.00</b>	-	-	-	-	-	-	-	-	<b>29.00</b>

### 6. Miscellaneous

6.1	Development of solar powered lighting		-	4.00	4.00	4.00	-	-	-	-	-	-	-	<b>12.00</b>
6.2	Development of toilet facilities		-	4.00	2.00	2.00	-	-	-	-	-	-	-	<b>8.00</b>
6.3	Construction of watch tower		-	4.00	4.00	-	-	-	-	-	-	-	-	<b>8.00</b>
6.4	Construction of Check Barriers with Search Lights		-	6.00	6.00	-	-	-	-	-	-	-	-	<b>12.00</b>
6.5	Making Transporting Cages & Pinjras		3.00	3.00	3.00	3.00	3.00	-	-	-	-	-	-	<b>15.00</b>
6.6	Feeding of Sick & Young Wild Animals & Birds		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	<b>20.00</b>
6.7	Purchase of Furniture Etc. for Office		-	2.00	2.00	1.00	-	-	-	-	-	-	-	<b>5.00</b>
6.8	Purchase of Electric Generator		-	8.00	-	-	-	-	-	-	-	-	-	<b>8.00</b>

	<b>Total</b>		<b>5.00</b>	<b>33.00</b>	<b>23.00</b>	<b>12.00</b>	<b>5.00</b>	<b>2.00</b>	<b>2.00</b>	<b>2.00</b>	<b>2.00</b>	<b>2.00</b>	<b>88.00</b>
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### 7. Habitat Improvement

7.1	Lantana Camara etc.Eradication		20.00	12.00	12.00	12.00	2.00	5.00	5.00	5.00	5.00	5.00	<b>200.00</b>
7.2	Removal of Invasive weeds/Re-lantana cutting etc.	Removal of weed will be carried out	4.00	4.40	4.80	5.20	5.60	6.00	6.40	6.80	7.20	7.60	<b>40.00</b>
7.3	Augmenting fodder resources	Augmenting fodder for wild animals to be held for treatment	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	<b>20.00</b>
7.4	Construction of dry masonry check dams		-	5.00	5.00	5.00	5.00	5.00	-	-	-	-	<b>25.00</b>
7.5	Development of Salt Licks		0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	<b>1.00</b>
7.6	Plantation of indigenous/Fruit species	Plantation of indigenous /Fruit species will be carried out in phased manner	-	-	24.00	-	24.00	10.00	10.00	10.00	10.00	10.00	<b>98.00</b>
7.7	Water hole	Pacca water holes will be made	-	5.00	5.00	5.00	5.00	-	-	2.00	2.00	2.00	<b>26.00</b>
7.8	Creation & Maintenance of fire lines	Improvement of path all along the periphery for patrolling and inspection	-	5.00	5.00	5.00	5.00	5.00	2.00	2.00	2.00	2.00	<b>33.00</b>
	<b>Total</b>		<b>26.10</b>	<b>41.10</b>	<b>65.10</b>	<b>41.10</b>	<b>65.10</b>	<b>46.10</b>	<b>38.10</b>	<b>40.10</b>	<b>40.10</b>	<b>40.10</b>	<b>443.00</b>

### 8. Wildlife Intervention

8.1	Wildlife Census		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	<b>20.00</b>
8.2	Making Rescue enclosure cum rescue area for animal shelter with Veterinary Facility	Making Rescue enclosure cum rescue area for animal shelter with Veterinary Facility shall be established ( size 10 mtr x 10 mtr)	15.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	<b>60.00</b>
8.3	Immunization of livestock and other livestock development works		4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	<b>40.00</b>
	<b>Total</b>		<b>21.00</b>	<b>11.00</b>	<b>11.00</b>	<b>11.00</b>	<b>11.00</b>	<b>11.00</b>	<b>11.00</b>	<b>11.00</b>	<b>11.00</b>	<b>11.00</b>	<b>11.00</b>	<b>120.00</b>

### 9. Eco Tourism, Interpretation & awareness

9.1	Development of Interpretation center		-	10.00	10.00	10.00	-	-	-	-	-	-	-	<b>30.00</b>
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9.2	Purchase of Mobile van		-	15.00	-	-	-	-	-	-	-	-	<b>15.00</b>
9.3	Purchase of Books slides & Film etc.		3.00	3.00	3.00	3.00	3.00	2.00	2.00	1.00	1.00	1.00	<b>22.00</b>
9.4	Signage's, boards, Awarness, nature camps, publicity material machine heights etc.		5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	<b>50.00</b>
	<b>Total</b>		<b>8.00</b>	<b>33.00</b>	<b>18.00</b>	<b>18.00</b>	<b>8.00</b>	<b>7.00</b>	<b>7.00</b>	<b>6.00</b>	<b>6.00</b>	<b>6.00</b>	<b>117.00</b>

#### 10. Construction of Buildings & Roads

10.1	Construction of Guards Quarter		10.00	10.00	-	-	-	-	-	-	-	-	<b>20.00</b>
10.2	Construction of Wildlife Range Office cum Residence		-	15.00	-	-	-	-	-	-	-	-	<b>15.00</b>
10.3	Construction & Setting up of Inspection hut		20.00	10.00	5.00	-	-	-	-	-	-	-	<b>35.00</b>
10.4	Construction of Check Posts and Maintenance Cost		-	5.00	5.00	0.50	0.50	0.50	0.50	0.20	0.20	0.20	<b>12.60</b>
10.5	Construction & Maintenance of Roads & Inspection Paths		-	5.00	5.00	5.00	5.00	2.50	2.50	2.50	2.50	2.50	<b>32.50</b>
	<b>Total</b>		<b>30.00</b>	<b>45.00</b>	<b>15.00</b>	<b>5.50</b>	<b>5.50</b>	<b>3.00</b>	<b>3.00</b>	<b>2.70</b>	<b>2.70</b>	<b>2.70</b>	<b>115.10</b>

### 11. Research & Training

11.1	Training ( In-house, external, exposure visits inland as well as abroad		3.00	3.00	3.00	3.00	3.00	3.00	2.00	2.00	2.00	2.00	2.00	<b>25.00</b>
11.2	Research		3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	<b>30.00</b>
	<b>Total</b>		<b>6.00</b>	<b>6.00</b>	<b>6.00</b>	<b>6.00</b>	<b>6.00</b>	<b>6.00</b>	<b>5.00</b>	<b>5.00</b>	<b>5.00</b>	<b>5.00</b>	<b>5.00</b>	<b>55.00</b>

### 12. Eco-development works

12.1	Eco-development works		15.00	15.00	15.00	15.00	15.00	15.00	15.00	10.00	10.00	10.00	<b>135.00</b>
12.2	Entry Point Activities		5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	<b>50.00</b>
	<b>Total</b>		<b>20.00</b>	<b>20.00</b>	<b>20.00</b>	<b>20.00</b>	<b>20.00</b>	<b>20.00</b>	<b>20.00</b>	<b>15.00</b>	<b>15.00</b>	<b>15.00</b>	<b>185.00</b>

### 13. Operation & Maintenance

13.1	O & M Costs		5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	<b>50.00</b>
	<b>Total</b>		<b>5.00</b>	<b>5.00</b>	<b>5.00</b>	<b>5.00</b>	<b>5.00</b>	<b>5.00</b>	<b>5.00</b>	<b>5.00</b>	<b>5.00</b>	<b>5.00</b>	<b>50.00</b>

#### 14. Contingency

14.1	Contingency		10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	100.00
	<b>Total</b>		<b>10.00</b>	<b>10.00</b>	<b>10.00</b>	<b>10.00</b>	<b>10.00</b>	<b>10.00</b>	<b>10.00</b>	<b>10.00</b>	<b>10.00</b>	<b>10.00</b>	<b>100.00</b>
	<b>Grand Total</b>		<b>131.1</b>	<b>290.4</b>	<b>263.4</b>	<b>179.9</b>	<b>178.6</b>	<b>152.1</b>	<b>117.1</b>	<b>103.3</b>	<b>97.8</b>	<b>97.8</b>	<b>1611.5</b>

Note : The above budget document is based on current market rates. It will take into account inflation factor and the prevalent daily wages rate at the time of execution of works for purposes of budget control.



# **PART-III**

## **ANNEXURE**

## ANNEXURE – I

### MAIN TREE SPECIES IN LALWAN COMMUNITY RESERVE

<b>Sr. No.</b>	<b>COMMON NAME</b>	<b>SPECIES</b>
1	Khair	Acaica Catechu
2	Shisham	Dalibargia Sisso
3	Semul	Bombax Ceiba
4	Neem	Azadirachata indica
5	Amaltas	Cassia fistula
6	Eucalyptus	Eucalyptus teriticronis
7	Phulai	Acacia Modesta
8	Kikar	Acacia nilotica
9	Mango	Magnifera indica
10	Dek	Melia azadirchta
11	Mulberry	Morus indica
12	Bamboo	Dendrocalamus Sstrictus
13	Pipal	Ficus religiosa

## ANNEXURE – II

### HERB AND SHRUB SPECIES OF LALWAN COMMUNITY RESERVE

<b>Sr. No.</b>	<b>COMMON NAME</b>	<b>SPECIES</b>
1	Malha	<i>Zizyphus mauritiana</i>
2	Garuna	<i>Carrisa Spinorum</i>
3	Bhang	<i>Cannabis Sativa</i>
4	Phulbhuti	<i>Lantana Camara</i>
5	Bhabar grass	<i>Eulaliopsis Binnata</i>
6	Kana	<i>Erianthus Munia</i>
7	Kahi	<i>Saccharum spontaneum</i>
8	Basuta	<i>Asatoda vasica</i>

## ANNEXURE – III

### FAUNA IN LALWAN COMMUNITY RESERVE

#### List of Amphibians

S.No	Order Anura	Species Name	Common name
1	Family bufonidae	Bufomelanostictus	Asian Common Toad
2	Family ranidae	Ranatigrina	Lndian bull frog
3		hoplobatrachustigrinus	Asian bull frog
4		limnonecteslimnocharis	Lndian cricket frog

#### Sources:

- Battish, S.K. 1984-86. Some anurans from Punjab., Deptt. Of Zoology, PAU, Ludhiana
- Dhllion, S.S.1991-96 Analytical studies on the Aquatic Ecosystems of Punjab: Final Technical Report.
- Punjab Environment Information Web Portal. Envies Centre, Punjab.-  
[http://www.punervis.nic.in/bd\\_list.htm](http://www.punervis.nic.in/bd_list.htm)

## I. LIST OF REPTILES

S.NO.	SPECIES NAME	COMMON NAME
1	Bungaruscaeruleus	Common Krait
2	Chamaeleozeylanicus	Indian Chameleon
3	Lycodonstraintus	Northern Wolf Snake
4	Najanaja	Spectacled Cobra
5	Natrixpiscator	Checkered Keelback
6	Python molurus	Indian Rock Python
7	Varanusbenghalensis	Bangal Monitor
8	Varanusflavescens	Yellow Monitor
9	Varanus monitor	Monitor Lizard
10	Viperarusselli	Russell's Viper

Sources:

TERI. 2001. Biodiversity of the Punjab, Punjab.

Punjab Environment Information Web Portal. Envis Centre, Punjab.

[http://www.pinervis.nic.in/bd\\_list.htm](http://www.pinervis.nic.in/bd_list.htm)

## II. LIST OF BIRDS

S.No.	Species Name	English Name
	<b>Order Ciconiiformes</b>	
	<b>Family Ardeidae</b>	
1	Ardea Alba modesta	Eastern Large Egret
2	Ardeacinerearectirostris	Eastern Grey Heron
3	Ardeapurpureamanilensis	Eastern Purple Heron
4	Ardeolagrayiigrayii	Indian Pond Heron
5	Babulcus ibis coromandus	Cattle Egret
6	Casmerodiusalbus	Great Egret
7	Egretta gazetta gazetta	Little Egret
8	Egretta intermedia inter media	Smaller or Median Egret
9	Mesophoyx inter media	Intermediate Egret
	<b>Family Threskiornithidae</b>	
10	Plegadis falcinellus falcinellus	Glossy Lbis
11	Pseudibis papillosa papillosa	Indian Black Lbis
	<b>Order Falconiformes</b>	
	<b>Family Accipitridae</b>	
12	Accipiter badius	Indian Shikra
13	Accipiter Nisus nisosimilis	Asiatic Sparrow- Hawk
14	Aquila Clanga	Greater Spotted Eagle
15	Aquila heliaca	Imperial Eagle
16	Aquila pomarinahastata	Lesser Spotted Eagle
17	Aquila Rapaxvindhiana	Tawny Eagle
18	Aquila Rapaxnipalensis	Eastern Steppe Eagle

19	Buteorufinus	Upland Buzzard
20	Buteorufinusrufinus	Long Legged Buzzard
21	Circaetusgalliusgallicus	Short-toed Eagle
22	Cirus Pygargurs	Montagu's harrier
23	Elanuscaeruleus vociferous	Blackwinged Kite
24	Hieraaetusfasciatus	Boneli's Eagle
25	Istinaetusmalayensis	Black Eagle
26	Milvusmigransgovinda	Pariah Kita
27	Neophronpercnopteruspercnopterus	Egyptian of Scavenger Vulture
	<b>Family Falconidae</b>	
28	Falco Subbuteosubbuteo	Hobby
29	Falco tinnunculustinnunculus	European Kestrel
	<b>Order Galliformes</b>	
	Family Phasianidae	
30	Francolinusfroncolinusasiae	Indian Black Partirdge
31	Francolinuspondicerianusinterpositus	North Indian Grey Partridge
32	Gallus gallusmurghi	Indian Red Jungle Fowl
33	Lophuraleucomelana	White Crested kalji Pheasant
34	Pavocristatus	Indian pea Fowl
	<b>Family Ralidae</b>	
35	Amaurornisphoenicurusphonencurus	Indian white Breasted Water Hen
36	Gallinulachlorophusindica	Indian Moorhen
	<b>Family Charadriidae</b>	
37	Tringahypoleucos	Common Sandpiper
38	Vanellusindicusindicus	Red Wattled Lapwing
39	Vaneellusmalabaricus	Yellow Wattled Lapwing

	<b>Order Colubiforms</b>	
	<b>Family Columbidae</b>	
40	Columba Liviaintermedia	Indian Blue Rock Pigeon
41	Streptopeliachinensissuratensis	Indian Spotted Dove
42	Streptopeliadecaocpodcaocto	Indian Ring Dove
43	Streptopeliatranquebaric a	Indian Red Turtle-Dove
44	Treronphoenicoptera	Bengal Green Pigeon
45	Streptopeliaoreintalis	Westernn Turtle-Dove
46	Streptopeliasenegalensis camboyensis	Indian Little Brown Dove or Senegal Dove
47	Streptopeliaturtur	Turtule-Dove
	<b>Order Psittaciforms</b>	
	<b>Family Psittacidae</b>	
48	Psittaculacyanocephalabenghalensis	Northern Blossom headed Parakeet
49	Psittaculaeutapria	Alexandrine Parakeet
50	Psittaculaeupatrianipalensis	Large Indian Parakeet
51	Psittaculahimalayana	Himalayan Slaty Headed Parakeet
52	Psittaculakrameri Borealis	Northern Roseringed Parakeet
	<b>Order Cucliformes</b>	
	<b>Family Cuculidae</b>	
53	Clamatorjacobinusserratus	Pied crested cuckoo
54	Cuculusmicropterusmicropterus	Indian cuckoo
55	Centropussinensissnesis	Common crow pheasant or



		coucal
56	Cuculus various	Common hawk cuckoo or brain fever bird
57	Eudynamysscolopacea	Indian koel
	<b>Order strigiformes</b>	
	<b>Family strigidae</b>	
58	Athenebrama	Spotted ouulet
59	Otusbakkamoenaplumipes	Punjab collard scops owl
60	Otusscops	scops owl
61	Tyto alba stertens	Indian Brown Owl
	<b>Order caprimulgiformes</b>	
	<b>Family caprimulgidae</b>	
62	Caprimulgusasiaticus	Indian little Nightjar
63	Caprimulgusindicus	Indian jungle Nightjar
64	Caprimulgusmarurusalbonotatus	Indian long tailed Nightjar
	<b>Order apodiformes</b>	
	<b>Family apodidae</b>	
65	Apusaffinis	Indian house Swift
66	Apus Melba	Alpine Swift
67	Collocaliabervirostris	Himalayan Swiftlet
68	Cypsiurusparvusbatasiensis	Indian palm swift
	<b>Order Coraciiformes</b>	
	<b>Family Alcedinidae</b>	
69	Halcyon smyrnensis	White breasted kingfisher
	<b>Family Meropidae</b>	
70	Meropslesehenaulti	Chestnutheaded Bee- Eater

71	Meropsorientalis	Indian small Green Bee- Eater
72	Meropsphilippinus	Green Bee Eater
	<b>Family Coraciidae</b>	
73	Caraciasbenghalensis	European Roller or Blue Jay
74	Meropssuperciliosus	Indian Roller
	<b>Family Upupidae</b>	
75	Upupaepops	European Hoopoe
	<b>Family Bucerotidae</b>	
76	Tockusbirostris	Grey Hornbill
	<b>Order paciformes</b>	
	<b>Family capitonidae</b>	
77	Megalaimaasiatica	Blue Throated Barbet
78	Megalaimahaemacephalaidica	Crimson Breasted barbet or Coppersmith Barbet
79	Megalaimazeylanicacaniceps	Northern Green Barbet
80	Megalaimaimazeylanica	Large Green Barbet
	<b>Family Picidae</b>	
81	Dicoidemahrattensis	Yellow Crowned Woodpecker
82	Dinopiunbenghalense	Black RumpedFlameback
83	Picoidesmacei	Fulvous Breasted peid Woodpecker
84	Picusmyrmecophoneus	Little Scaly Bellied Green Woodpecker
	<b>Order Passeriformes</b>	
	<b>Family Aluadidae</b>	
85	Eremopterixnigricepsaffinis	Black Crowned Finch lark

86	Galeridacristatachendoola	Indian Crested Lark
87	Mirafrajavanicacantillans	Singing Bush lark
	<b>Family Hirundinidae</b>	
88	Hirundodauricaerythroptygia	Indian Striated or Red Rumped Swallow
89	Hirundosmithiifilifera	Indian wire Tailed Swallow
90	Ripariapaludicola	Plain Sand Martin
	<b>Family Laniidae</b>	
91	laniuscristatuscristatus	Brown shrike
92	Laniusexcubitor	Indian grey shrike
93	Laniusschacherythronotus	Rufous backed shrike
94	Laniustephonotus	Grey backed or Tibetan shrike
95	Laniusvittatusvittatus	Indian bay backed shrike
	<b>Family oriolidae</b>	
96	orioluschinensisdiffusus	Eastern black naped oriole
97	oriolusorioluskundoo	Indian golden oriole
	<b>Family dicruridae</b>	
98	Dicrurusadsimilisalbirictus	North Indian black drongo or king crow
99	Dicrurushottentottus	Hair crested or spangled drongo
100	Dicrurusleucophaeus	Grey or ashy drongo
101	Dicrurusmacrocerus	Black drongo
	<b>Family sturnidae</b>	
102	Acriditharesginginianus	Bank Myna
103	Acriditharesfuscus	Northern Jungle Myna
104	Acriditharestrististristis	Indian Myna or Common Myna

105	Corvusmacrorhynchosculminatus	Indian jungle Crow
106	Corvussplendenssplendens	Indian House Crow
107	Sturnus Contra Contra	Indian id Myna
108	Sturnuspagadarum	Black headed or brahminy Myna
109	Sturnusroseus	Rosy Starling or Rosy pastor
110	Sturnussturninus	Brahminy Starling
111	Sturnus vulgaris poltaratskyi	Finsch's or Common Indian Starling
112	Sturnus vulgaris porphyronotus	Central Asian Straling
	<b>Family Corvidae</b>	
113	Dendrocittavagavundapallida	Western Tree Pie
	<b>Family Campenthagidae</b>	
114	Corocinamelanopteramelanoptera	Black headed Cuckoo Shrinke
115	Corocinamelaschistos	Smaller Grey Cuckoo Shrike
116	Corocinanovaehaollandiae	Large Cukcoo Shrike
117	Pericrocotuscinnamomeusperegrinus	Northern Small Minivet
118	Pericrocotuserythropygiuserythropygius	White Bellied Minivet
119	Pericrocotusethyologusfavillaceus	West Himalayan Long Tailed Minivet
120	Pericrocotusflammeusspeciosus	North Indian Scarlet Minivet
	<b>Family Pycnontidae</b>	
121	Hypsipetesmadagascariensis	Black Bulbul
122	Pycnonotuscaferintermedius	Punjab Red Vented Bulbul
123	Pycnonotusjocosusabuensis	Rajasthan Red Whiskered Bulbul
124	Pycnonotusleucogenysleucogenys	White Cheeked Bulbul

	<b>Family Muscicapidae</b>	
125	Chrysomansinensehypoleucum	Western Yellow Eyed babbler
126	Pellorneumruficeptspunctatum	Western Spotted Babbler
127	Pnoepygaaalbiventer	Scalybreasted Wreb- Babbler
128	Pomatorhinsureythrogenyserythrogenys	West Himalayan Rusty Cheeked Scimitar
129	Turdoidescaudatuscaudatus	Common Babbler
130	Turdoidesearleiarlei	Western Striated Babbler
131	Turdoidesmalcolmi	Large Grey Babbler
	<b>Family Muscicapidae</b>	
132	Cuticicapaceylonensis	Grey Headed Flycatcherr
133	Dumetiahyperythrahyperythra	Ruffous Bellied Babbler
134	Ficedulaparvaparva	Red Throated Flycatcher
135	Muscicapalatriostris	Brown flycatcher
136	Terpsiphoneparadisi	Paradise Flycatcher
137	Terpsiphoneparadisileucogaster	West Himalayan Paradise Flycatcher
	<b>Family Sylviinae</b>	
138	Acrocephalusagricola	PaddyfieldWarbler
139	Cettiacetti	Cett's Bush Warbler
140	Cettiadiphone	Pale Footed Bush Warblerr
141	Cisticolajuncidiscurusitans	Streaked Fantail Warbler
142	Locustellanaevia	Grasshopper Warbler
143	Megaluruspalustoklao	Straited Marsh Warbler
144	Orthotomussutorisguzuratus	Indian Tailor Bird
145	Phylloscopuscollybitatristis	Brown Chif Chaff

146	Priniasocialis	Plain Prinia
	<b>Family Turdinae</b>	
147	Cercomelafusca	Brown Rock Chat
148	Chaimarronisleucocephalus	River Chat or White Capped Red Start
149	Copsychussaularissaularis	Indian Magpie Robin
150	Copsychussaularis	Magpie Robin
151	Saxicolaferra	Dark Grey Bush Chat
152	Saxicolasturninus	Pied Bush Chat
153	Saxicolatorquatamaura	West Siberian Collared Bush Chat or Stone Chat
	<b>Family Paridae</b>	
154	Aegithalosnivegularis	White Throated Tit
	<b>Family Motacillidae</b>	
155	Anthusrufulus	Paddy Field Pipit
156	Anthussylvanus	Upland Pipit
157	Anthussylvanus	Inian White Wagtail
	<b>Family Dicaeidae</b>	
158	Dicaeum Agile Agile	Indian thick Billed Flower Pecker
	<b>Family nectariniidae</b>	
159	Nectariniaasiaticaasiatica	Indian Purple Sunbird
	<b>Family Zosteropidae</b>	
160	Zosterospalperbrosapalperbrosa	Indian White Eye
	<b>Family Ploceidae</b>	
161	Estrildaamandavaamandava	Red Munia or Avadavat

162	Passer domesticusindicus	Indian house Sparrow
163	Ploceusmanyarflaviceps	Indian Streaked Weaver Bird
164	Ploceusphilipinusphilipinus	Indian Baya or Weaver Bird
	<b>Family Frintilliade</b>	
165	Carapodacuserythrinusroseatus	Indian Rose Finch
	<b>Family Emberizidae</b>	
166	Emberizastewarti	White capped Bunting
167	Melophuslathami	Crested Bunting

**Sources:**

- State of the environment in Punjab. 1982. A first status report. Govt. of Punjab, Deptt. Of Science, technology and Environment. (Status report on Wildlife and its decline in Punjab by; A.S.Randhawa).
- Raja, M. Dhillon, S.S. Dar, M.L. and Radhawa, A.S. 1986. Wildlife ecosystem of Punjab and its conservation plan. Punjab.
- Punjab Environment information Web Portal. Envis Centre, Punjab.

[http://www.punenvis.nic.in/bd\\_list.htm](http://www.punenvis.nic.in/bd_list.htm)

### III. LIST OF MAMMALS

S.NO.	SPECIES NAME	COMMON NAME
1	Axis Porcinus	Hog Deer
2	Bandicotabenhgalensis	Indian mole Rat
3	Muntiacusmuntjak	Barking Deer
4	Boselaphustragocamelus	Nilgai or Blue Bull
5	Canisaureus	Jackal
6	Felischaus	Jungle Cat
7	Funambuluspennanti	Striped Squirrel
8	Herpestesauopunctatus	Small Indian Mongoose
9	Herpestesedwardsi	Common Maongoose
10	Hystricindica Indian Porcupine	Indian Porsupine
11	lepusnigricollis	Indian Hare
12	Macacamulatta	Rhesus Macaque
13	Maniscrassicaudata	Indian pangolin
14	Paradoxurus hermaphroditus	Common Palm Civet or toddy Cat
15	Pantherapardus	Common Leopard
16	Pteropus giganteus	Flying Fox
17	Rattusrattus	Common House or black Rat
18	Rousttusleschenulti	Fulvous Fruit Bat
19	Susscrofa	Indian Wild Boar
20	Viverriculaindica	Small Indian Civet
21	Vulpesbenghalensis	Indian Fox



22	Cervus Unicolor	Sambar
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**Source:**

Lamba, B.S.1984. Status of Wild mammals in Punjab. In Status of wildlife in Punjab (Eds. Atwal, A.S., Bains, S.S. and Dhindsa, Ms.). the Indian Ecological Society, Ludhiana.

Punjab environemtn information Web Portal. Envis Cetre, Punjab.-

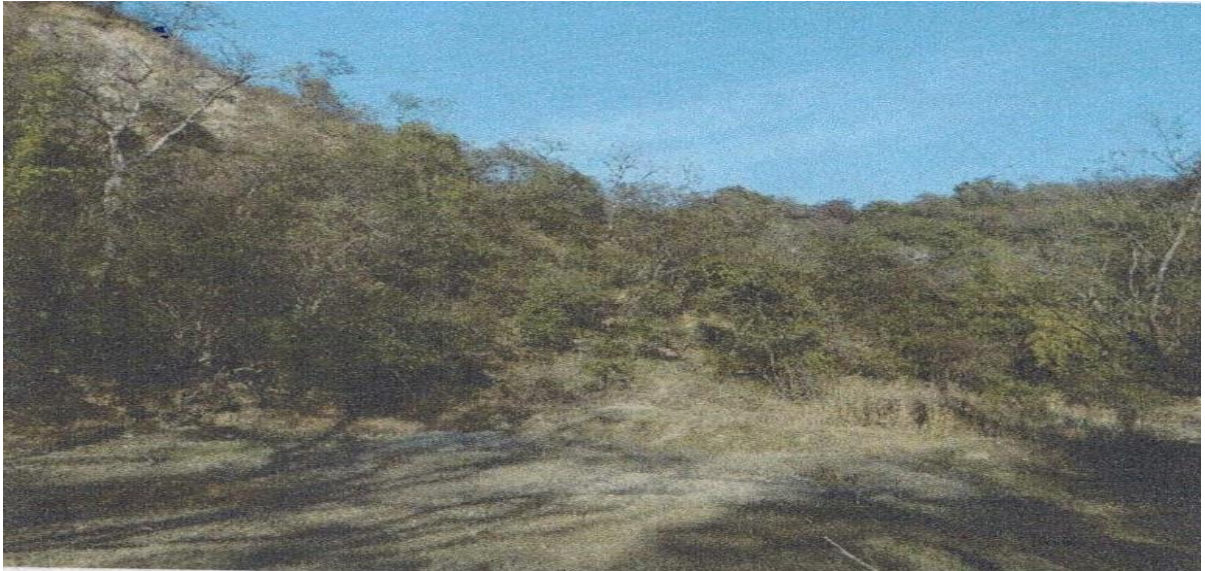
<Http://www.punenvis.nic.in/bd list.htm>

## ANNEXURE – IV

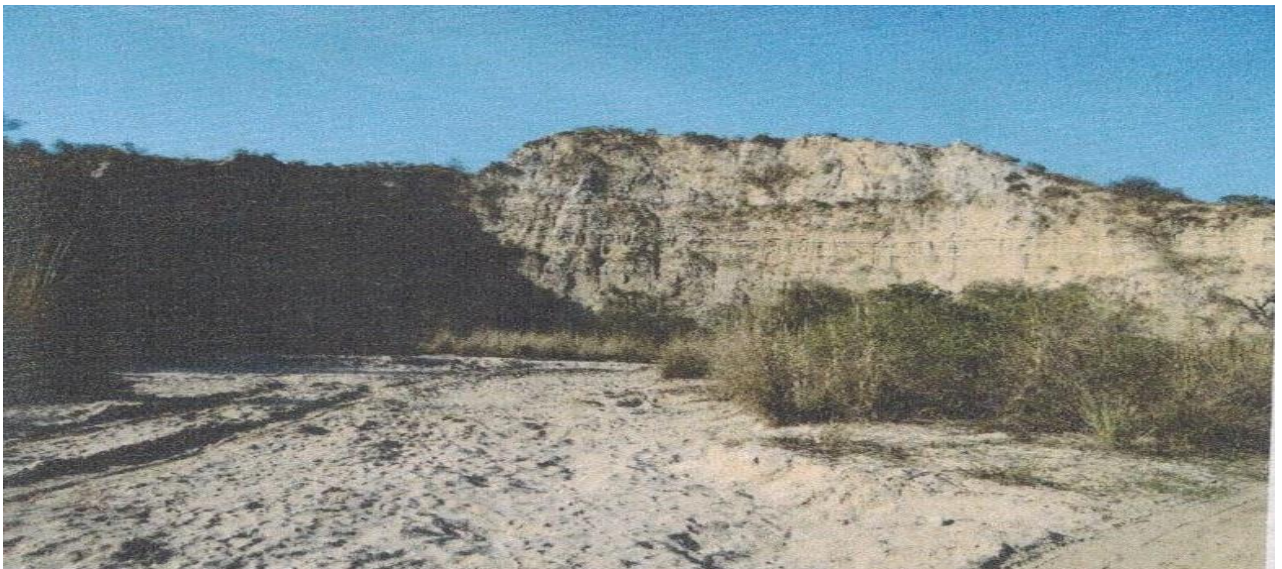
### RAINFALL DATA RECORDED AT HOSHIARPUR FOR THE LAST NINE YEARS (2008-2017)

<b>(Monthly Rainfall data in mm)</b>										
<b>Month</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
January	15.2	12.6	4.3	4.1	98.2	9.3	41.4	14.7	6.49	19.0
February	7.7	20.7	14.8	47.0	3.8	65.5	46.2	66.4	11.6	23.0
March	00	15.4	2.8	9.	9.0	12.7	29.8	94.2	75.2	6.0
April	26.7	23.9	1.4	12.7	21.6	6.8	24.2	30.7	10.21	8.0
May	7.8	3.5	19.3	10.7	00	1.2	23.2	18.4	63.72	29.0
June	182.7	9.0	35.5	143.4	3.2	166.4	48.9	50.5	32.89	135.0
July	94.0	321.5	226.8	153.9	92.8	135.3	144.4	221.5	185.0	124.0
August	425.4	198.9	165.2	177.6	89.5	194.2	98.2	148.4	175.24	108.0
September	42.2	67.1	109.4	124.0	121.2	45.2	66.9	132.7	8.17	26.0
October	29.3	4.5	33.1	00	00	805	00	13.1	00	00
November	00	19.4	00	00	00	4.7	00	00	0.4	00
December	00	00	26.4	5.9	9.4	25.4	11.7	1.0	2.4	00
<b>Total</b>	<b>831.2</b>	<b>668.6</b>	<b>679.0</b>	<b>688.3</b>	<b>448.7</b>	<b>1471.7</b>	<b>535.0</b>	<b>791.6</b>	<b>571.32</b>	<b>478.0</b>

**ANNEXURE –V**  
**PICTURE GALLERY**

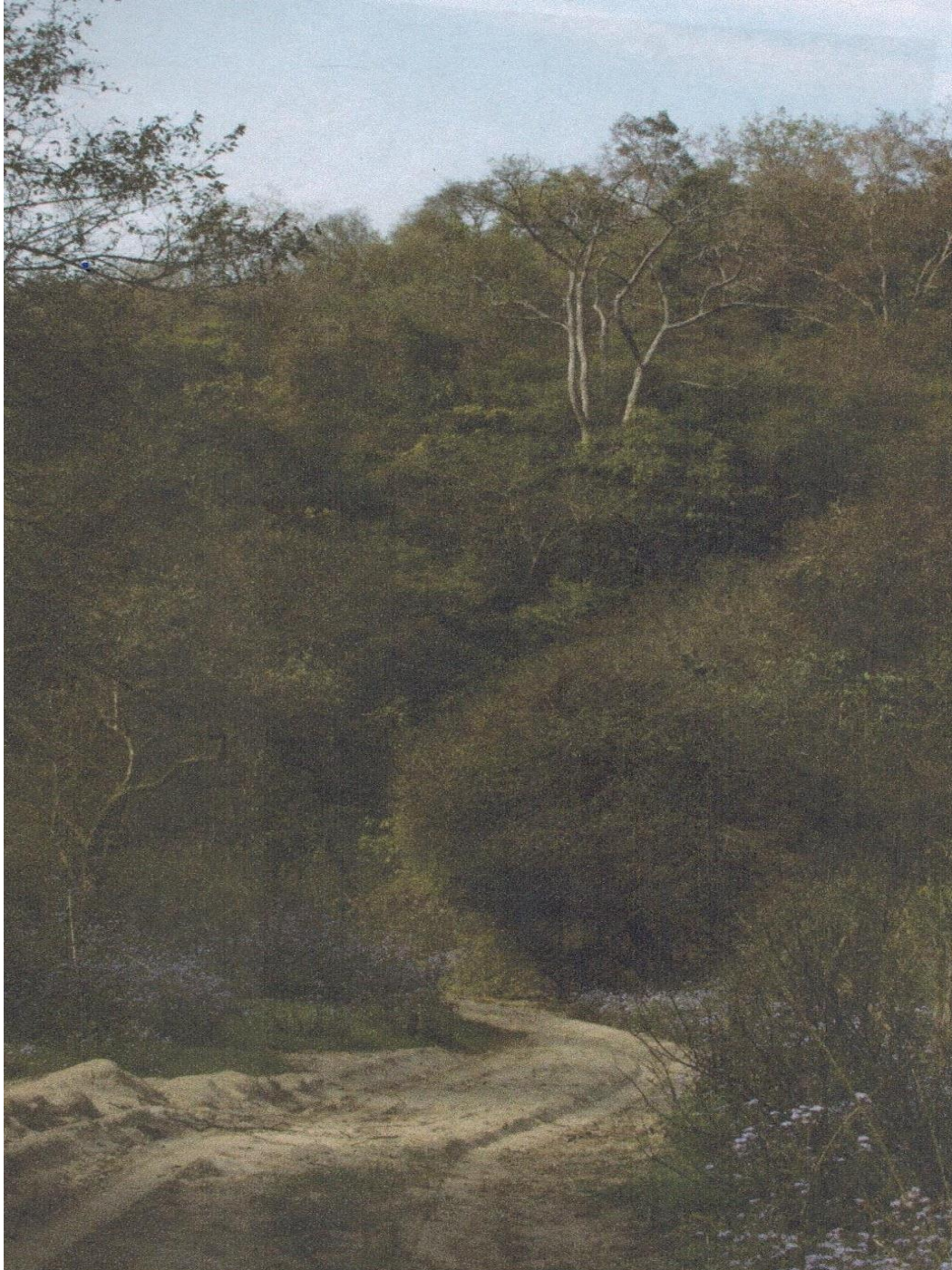


Lalwan Community Reserve





## Lalwan Community Reserve





## Lalwan Community Reserve



Local communities collecting fodder from Lalwan Community Reserve

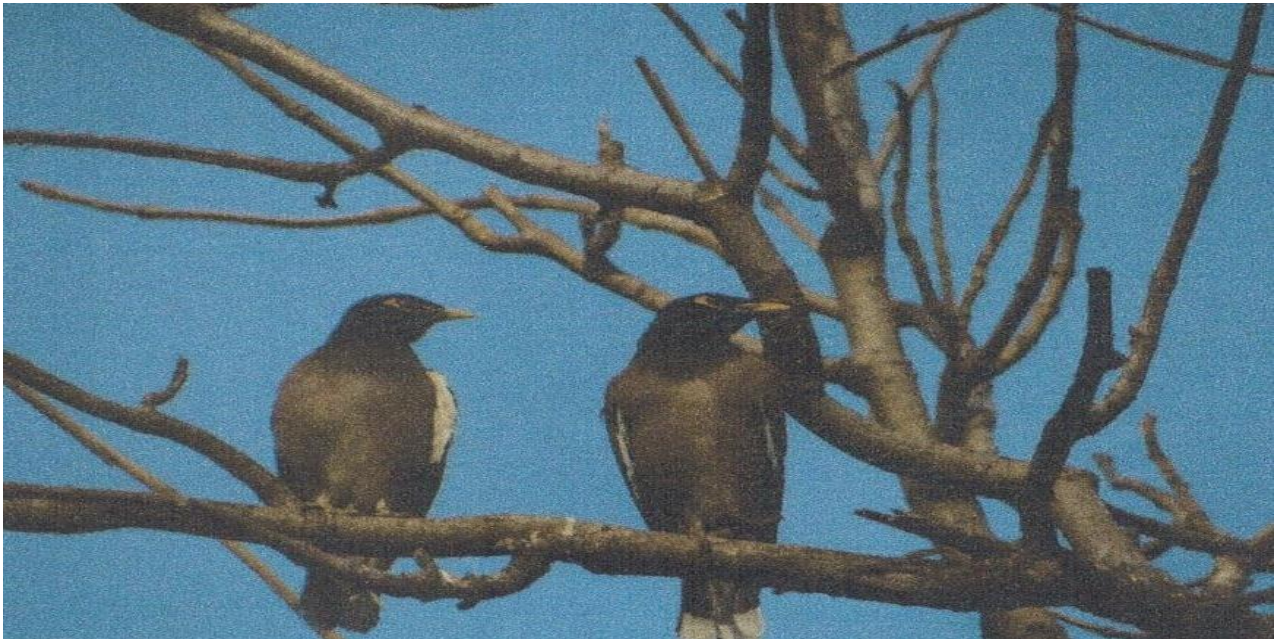




Leopard Pugmark



Black Bulbul



Common Myna





Green Pigeon



Pied Bushchat





Laughing Dove



Egyptian Vulture





Orange Marsh Dart



Red-Wattled Lapwing





Striped Tiger



Yellow Pansy



