

## CHAPTER - VIII

### WILDLIFE AND ECOLOGY

The general description of the size of the state, location, latitude and longitude has been detailed in the earlier chapter. From the wildlife diversity point of view the state can be divided into the following geographical regions, the description of which is given in brief:

#### **Shiwalik and outer Himalayan Region**

The Northern part of the state in Panchkula, Ambala and Yamunanagar districts fall in this category. The general topography of the region is undulating to steep hilly slopes with loose geological formation.



The Shiwalik hill system at places merges with the Himalayan hills. This region is very rich in flora and fauna of the general Shiwalik system. The main vegetation type in this region is of Sal (*Shorea robusta*) forests in the Kalesar valley, Darpur, Chiken, Nagli khol, Meharniwala and is of scrub in Sunder Bahadurpur forests. Sal in this region is found on gently sloping and valley parts. The steep hilly and undulating areas have mixed miscellaneous forests of *Anogeissus latifolia* and *Lannea coromandelica* species. In the flatish undulating terrain the main animal found is Cheetal, in parts Black buck, Red jungle fowl and Wild boar. In the hilly and steep miscellaneous forests, the combination of Sambhar, Kakkar, Wild boar, Leopard with Red jungle fowl, Kaleej pheasants is found. The area is rich in wildlife and the habitat in the last 20 years has not depleted any significantly. If at all, it has improved may be because of the Joint Forest Management adopted in the state. Wild dogs were found in Kalesar forests, which were exterminated under government orders on public demand.

### **The Indo-Gangetic Plains**

Vast area of the state falls in this category. The land is highly productive. The terrain is flatish and is predominantly under agricultural use. The original forest vegetation comprise Dhak, Shisham, *Acacia leucophloea*, *Acacia nilotica* with thorny shrub vegetation of *Capparis horrida*. Most of this area has been brought under cultivation. Lower parts of Ambala with the entire districts of Yamunanagar, Kurukshetra, Karnal, Panipat, Sonapat, Faridabad and Northern part of Jhajjar and Jind districts fall in this category. This area was once rich in wild animals, which are now confined only to very small pockets of forest vegetation left. Notable wild animal of this region is Black buck in Karnal, Panipat, Sonapat districts, even up to Jind district. Hog deer is found only in Saraswati Wildlife Sanctuary in the state. Nilgai is present throughout the state especially in and around block forests. The excessive use of pesticides in this agriculturally prosperous belt has adversely affected the wild animal population, especially the bird population.

### **The Thar Desert Region**

Parts of Jhajjar district and the districts of Rewari, Mahenderagarh, Hisar, Sirsa, Bhiwani fall in this category. The terrain basically is undulating and the soil is sandy. The vegetation comprises *Acacia nilotica*, *Prosopis cineraria*, *Acacia leucophloea* with shrubs of *Capparis aphylla*, *Calotropis procera*, *Zizyphus mauritiana* and *Salvadora oleoides*. The typical animal association of this region is of Chinkara and Monitor lizard. This area once supported a sizable lion population. The record of hunting of lions in Hisar are available.

### **The Aravali Hill System**

The North-Western tail of Aravali hills is in Delhi. A sizable part of this hilly system (estimated to around 60,000 hectare) falls in Haryana. The rocky hills of Aravalis which once supported a good forests of *Anogeissus pendula* have been highly degraded. Some stock of this vegetation is available even now. Some protection has been afforded to this vegetation during the project period of Aravali Afforestation Project. These hills which now support some Hyena, Jackal and Fox population had once supported Tiger population. The Panthers as well as tigers occasionally visit the area from the adjoining hills in Rajasthan.

### **Socio-economic Profile**

In the Shiwalik region, there are pockets predominantly inhabited by the Muslim community and Gujjars. Since the area does not support good agriculture, dependence of the local community on the forest and wildlife resources is probably the maximum in the state. The Gujjars rear cattle and practice grazing of animals in the forest. Some people indulge in illicit felling of Khair and other trees. The practice of construction of dams for harvesting of water and use of water for irrigation of agricultural lands in the gently rolling hills and adjoining plain areas is transforming the local economy. In pockets in this region also live the people belonging to 'Deh', 'Bangale', 'Shikligar', 'Bawaria' community who indulge in wild animal offences. These communities traditionally lived by hunting of wild animals, big and small.

Wild boar occurring in the forest causes damage to agriculture crop in this area. The people of this region have been representing and agitating to allow hunting of wild boar to prevent the damage to agricultural crops. However, if any such permission is issued to local people other animals will also be vulnerable to killing. Hence no such decision to allow hunting of wild boar has been taken in the state.

**The Indo-Gangetic plain** areas belong predominantly to Hindu and Sikh communities. The main occupation of these people is agriculture. Damage to agricultural crops by Nilgai, which is found throughout the state, is viewed seriously and these people have been largely responsible for putting pressure on the government for taking the decision for allowing hunting of Nilgai.

**The Thar Desert Region** : These areas are dominated by Hindu community who have largely been against killing of animals. Notable amongst these are the Bishnois who are known to protect trees and animals. Because of the protection afforded by these people Black bucks, Chinkaras and other animals are still seen moving openly in the agricultural fields in these areas. Although these people complain about the loss to agricultural crop by Nilgai they have never come forward for killing of the animal any significantly. The 'Saperas', 'Bawarias' and people belonging to such smaller communities indulge in capturing of 'Goh' (Monitor lizard) and hunting of Sandas (Spiny tailed lizard) and also of Partridges which are supplied to Delhi.

**In the Aravali hills** especially in Gurgaon district, the predominant community is of Meos who are generally Muslims. These people indulge in hunting of Nilgai and capturing of migratory birds and other small animals.

Agriculture being not-a-very prosperous occupation in this region, the dependence of the local community on natural resources is substantial.

### **Ecological Profile**

The various ecosystems and the type of floral and faunal association occurring in the state are enumerated below: (an attempt has been made to make this list as exhaustive as possible but possibility of findings some other smaller associations can not be ruled out).

#### **Forest Eco-system**

- (a) The Shiwalik Sal forests of Kalesar Wildlife Sanctuary is characterized by Panther-Cheetal-Wild boar- Sambhar - Barking deer- Red Jungle Fowl-Peafowl - Blue jay – Hornbill – Treepie - Woodpeckers.



- (b) Chir Forests of Morni areas characterized by Panther-Wild boar-Barking deer-Red Jungle Fowl-Peafowl-Blue jay-Hornbill-Treepie-Woodpeckers.
- (c) Northern tropical mixed deciduous forests of Panchkula and Yamunanagar districts are characterized by Leopard-Sambhar-Barking deer- Ghoral- Wild boar- Nilgai- Jackal- Hare- Fox-Reptiles.

- (d) *Anogeissus pendula* forests of Aravalli hills in Gurgaon district are characterized by Panther (rare)- Hyena-Nilgai- Common langur- Hare- Jackal.
- (e) The Bamboo forests of Thadugarh forests in Panchkula district are characterized by Leopard-Sambhar- Barking deer- Wild boar- Porcupine- Red Jungle Fowl- Kaleej Pheasant.

In additions, Langur, Monkey, Porcupine, Partridges, Quails etc are common in these places.

- (f) *Salvadora* forests of Nimbi-Duloth of Mahenderagarh district with Capparis aphylla and Acacia senegal are characterized by Chinkara-Desert cat- Fox- Spiny tailed lizard .
- (g) *Comiphora* forests of Madhavgarh in Mahenderagarh district are characterized by Chinkara- Nilgai- Fox- Jackal- Hare- Monitor lizard- Spiny tailed lizard, Sandgrouses- Partridges, Quails.
- (h) *Sterculia* and *Acacia senegal* forests of Khol of Rewari district are characterized by Chinkara- Nilgai- Fox- Hare- Spiny tailed lizard –Partridges- Quails-Green pigeons- Peafowl.
- (i) *Phoenix* forests of Faridabad district characterized by Hyena- Nilgai- Jackal- Hare- Partridges- Quails.
- (j) *Prosopis cineraria* and *Tamarix articulata* forests of Mahendergarh district are characterized by Chinkara-Hyena- Nilgai- Hare- Jackal- Fox – Partridges- Quails- Peafowl.
- (k) *Acacia Jacquemontii- Gymnosporia - Bauhinia* –Bhood scrub forests in the foothills of Aravallis are characterized by Nilgai- Chinkara-Hare.

### **Grass Land Eco-systems**

Kans and Munj grass lands in the stream bed of Tangri in Panchkula- Ambala districts and in the stream bed of Sahibi river in Rewari district are characterized by Black buck-Partridges-Hare and Reptiles.

**Wetlands Ecosystems**

- (a) Wetland ecosystem of Sultanpur in Gurgaon district is the home of bird migration in Haryana. Pelicans, Flamingos, Comb ducks, Shovellers, Ibises, Geese and a large number of other water birds visit this Park in winter. Sarus crane breeds here.



- (b) Wetland ecosystem of Bhindawas in Jhajjar district is characterized by large number of migratory birds .

**Desert Ecosystem**

These are semi arid ecosystems like those in Bhiwani, Rewari and Mahenderagarh districts. These are characterized by the presence of Chinkara-Desert fox-Hyena.

**Mountain Ecosystem**

This has been covered under forested hill ecosystems.

**Riverian Ecosystem**

This is present along the Yamuna and Ghaggar rivers and is characterized by Otters (now rare), Tortoise- Black buck.

**Brief history of changes in land use**

The state of Haryana was formed after the trifurcation of the erstwhile Punjab state.

The south and South-Eastern part of the erstwhile Punjab came into existence as Haryana state on 1st November, 1966. This part of the erstwhile Punjab was relatively under- developed. And therefore, the efforts of the early administration of the state was to develop the state in all the sectors of the economy. These developments have brought about a lot of change in the land use and water resource consumption and have changed the face of the earlier landscape. These changes have had negative impact on the biodiversity of the state.

For the development of agriculture sector, large scale conversion of waste lands was undertaken. The reduction in the waste lands have meant reduction of biodiversity, both floral and associated faunal diversity, in the state. For improving the agricultural production especially under the green revolution, a wide network of canal was laid out in various parts of the state. The construction of this canal network and the embankments have changed the natural flow of water resulting into changes in the floral and faunal diversity. Because of the seepage through these canals especially in the sandy areas, the area under water logged conditions in a narrow belt along these canals has increased over years. The construction of Hathni Kund Barrage and channeling of river water causing reduced flow through the river bed of Yamuna have meant the consequent changes in the floral and aquatic life along the Yamuna river in the state.

The availability of better technology for irrigation in the form of sprinkler irrigation have resulted into the conversion of substantial extent of area in the South and South-Western sandy part of the state into agricultural fields. This conversion of waste lands in the desert conditions have adversely affected the flora and fauna of the desert part of the state. Further, because of the available irrigation large areas in the foothills of Aravalis, which are basically



undulating sandy deposits have been bulldozed either for converting these areas into agricultural fields or for human habitation (especially near Gurgaon) . This loss of undulating sandy dunes in the foothills of Aravali hills has especially resulted into the loss of habitat of the endangered Chinkaras in the state.

The colonization of Aravali hills has been greatly responsible for the loss of biodiversity in the region. Faridabad and Gurgaon have come under the expanding population pressure of the metropolis of Delhi resulting into colonization and habitat destruction of the fringe of Aravalis in the state.

In the Shiwalik hills the increasing pressure of population from Chandigarh and adjoining areas have resulted into the ingress of human population into the adjoining forest areas. Whereas the people have been sensitized towards forest protection through the mechanism of Joint Forest Management especially through the construction of water harvesting dams in the foothills, they are relatively less sensitive towards the protection of wild animals. Forests may have survived in the vicinity of this population but the increasing human pressure is reducing the wild animal population. Otters which were common in Ghaggar near Panchkula about 20 years ago, are very rare to be found anywhere in the state (There are unconfirmed reports of the presence of Otters in the Jansui Head Works near Ambala). With the increasing population of Chandigarh and the increasing demand for facility of forest recreation the adjoining forests are under great pressure and time is not too far when the animal population in the forests near Panchkula would be greatly depleted.

For increasing the area under cultivation the small depressions which used to accumulate water during monsoons and which used to attract a host of migratory birds during winter have been leveled. Because of the large scale developmental activities in the catchment area of Sultanpur National Park the run-off to the lake from the catchment has practically becomes zero resulting into the drying of the lake (Some efforts have been made to rejuvenate the lake system by putting 60 cm. diameter pipe line from Kaliawas to Sultanpur lake and recharging the lake for attracting winter migratory birds).

The Jhajjar sub- branch which used to feed the Khaparwas water body (a wildlife sanctuary) has been abandoned making the water body a dry depression. The area under the water bodies in the state has reduced considerably and conservation of these wetlands in the future appears gloomy.

The village common lands, shamlat and panchayat lands in the vicinity of the villages also used to harbor a host of wildlife. The banis (the tree



vegetation of *Salvadora* species) which used to harbor reptiles have disappeared under the developmental activities. Large areas of these common lands have been brought under cultivation for giving 'Pattas' to the poor to generate income to the panchayat lands.



A substantial part of these common lands has also been brought under plantation by the Forest Department.

Quarrying and mining for silica sand, Badarpur sand and stones from the Aravalis especially between Gurgaon and Faridabad area and the associated increase in the human and machine population in the area have for all practical purposes destroyed the ecosystem and impaired the floral and faunal diversity beyond repair.

### **Current status of Biodiversity**

For the conservation of wildlife in the state, there is one National Park and nine wildlife sanctuaries, which are listed, in the 'ongoing initiatives of the state'. The status of the plant and animal species in the various ecosystems described in the earlier chapter is given below:

## **FOREST ECO-SYSTEM**

### **The Shiwalik Sal forests of Kalesar Wildlife Sanctuary**

The Sal forests of Kalesar are well protected and are a good habitat for wild animals. Apparently there are no signs of any degradation. However, there are reports of little damage to Sal trees by Sal borer (*Hoplocerambyx spinicornis*). The Forest Research Institute of India, Dehradun was requested to study the extent of damage or attack of this borer to the Sal crop. The preliminary

report submitted by FRI, Dehradun says that the damage is low of intensity . They have suggested taking up of manual trapping of the insect for the conservation of the Sal forests. The list of plant species of the area and also of the animal species found has been given in the Working Plan of the area. A detailed report on the evaluation of the availability of food during the pinch



period was studied by Sh. R.C. Trigotra, a forest officer of the state. The report is available in this office. The detailed survey of the animals found in the sanctuary has not been carried out.

#### **Chir Forests of Morni areas**

The resin tapping of Chir crop was stopped by the Forest Department in 1983. The health of these forests has improved because of this. However, with the gradual increase of human population the wild animal population is showing the sign of depletion. The Chakore, which used to be found in Bhoodi areas of Morni is very rare to be sighted.

#### **Northern tropical mixed deciduous forests of Panchkula and Yamunanagar districts**



Although there has not been any significant depletion of these forests, the areas in the vicinity of human habitation have degraded under human pressure.

### **Anogeissus pendula forests of Aravali hills**

The Dhok forest of Aravalis have suffered the maximum in the last three decades. The EEC Aided Aravali Afforestation Project carried out extensive plantation in these hills. The main species planted are *Prosopis juliflora*, *Acacia Senegal*, *Acacia leucophloea* etc. Although the vegetation has improved the original crop composition stands destroyed. The animal population is reported to have increased and the small animals like Hare, Jackal and Hyena are reported from the area.

### ***Sterculia* and *Acacia senegal* forests of Khol of Rewari district**

Mining of slates is done this area. This has increased the human and machine presence and have a degrading effect on the animal habitat.

### ***Prosopis cineraria* and *Tamarix articulata***

The increased human population and the availability of irrigation through sprinkler sets, the wastelands have been converted into agriculture lands.

### ***Acacia Jacquemontii-Gymnosporia-Bauhinia***

The colonization of Aravalis and the foothills have resulted into the destruction of habitat of the animals.

### **Grass Land Eco-systems**



The Kans and Munj grass lands have not degraded significantly but the animal population of Hare, Partridges and Reptiles etc. in these areas has reduced.

### **Wetlands Ecosystems**

The destruction of wetland ecosystem in the state has been elaborated earlier. Although a check list of birds found in Sultanpur and Bhindawas is available, there is no seasonal classification. The monitoring of the birds population is not done.

### **Desert Ecosystem**

There is little information on the status of vegetation or animals in the desert ecosystem and the Riverian ecosystems of the state.

### **Census of animal population**

The census of Tiger, Leopard and ungulates carried out in 1997, gave the following figures:

Name of area	Chital	Sambhar	Barking deer	Wild boar	Ghoral
Kalesar	65	222	175	263	802
Kalsia	26	108	79	121	103
Morni	-	247	302	1606	1022
Raipur Rani	50	-	-	-	-
Bir Shikargah	35	46	38	214	49
Khol Hai Raitan	-	125	75	434	200
Aravali Hills Neelgai	-	5232			
Chinkara	-	422			

### **Problems relating to Biodiversity**

Some of problems related to the loss of biodiversity in the state have been discussed in earlier para under brief history of changes and land use. These reasons alongwith others have been enumerated below :

**Habitat destruction**

- (i) Conversion of waste lands for agriculture use.
- (ii) Colonization of large extent of areas in Aravallis under pressure of Delhi population.
- (iii) Ingress of human habitation into the forested hills in Shivalik areas.
- (iv) Conversion of village common lands for other developmental purposes, agriculture and afforestation .
- (v) Quarrying and mining of the hills for minerals like silica -sand and for stones.
- (vi) Construction of roads, canals, drains, bandhs etc fragmenting original habitat.

**Use of Pesticides**

Green revolution was achieved through the cultivation of hybrid varieties of wheat which require irrigation and fertilizers. To control the insect pests on these hybrid varieties, increasing amount of pesticides are used by the farmers. The increased utilization of pesticides also kills large number of insects which are consumed by small animals and birds.

The bio accumulation of these pesticides and the related toxic effects have resulted into the decreased population of small animals and birds. Recently, large scale mortality of peafowls was seen in the rural areas of the state. Investigations by Haryana Agricultural University, Hisar revealed that the mortality of peafowls was because of the consumption of seed treated with Chloropyriphos. Whereas the recommended quantity for the treatment of seed is 1.5 ml. of the pesticide per kg. seed in actual practice the quantity of pesticide used by the farmers was more than four to five times the required doze. The

sudden disappearance of vultures, however, is attributed to the extensive veterinary use of non-steroidal anti inflammatory drug diclofenac.

### **Hunting of the animals by man**

Around 1888 lions were hunted by the then rulers in Hisar. Record to this effect is available.

The last remaining tiger in Haryana was shot in the forests between Berwala and Mandhana in Panchkula district. There is no resident tiger population in the state now. The Kalesar forests had resident wild dog population. During the period 1968 to 1970, a campaign under the title “shooting of wild dogs in Kalesar reserved forests”, and “annihilation of wild dogs” was taken up and as per the record available in the Govt. office, the last wild dog was shot in February, 1970.

In 1963, the Secretary Forests, Himachal Pradesh declared award of cash incentives to encourage public in killing of wild animals. Each panther fetched Rs. 50/-, Hyena Rs. 15/-, Black bear Rs. 15/-, Jackal & Wild cats Rs. 5/- each, Monkey Rs. 3/-, Langur Rs. 5/-, Fox, Falcons, Baj & Shikaras Rs. 3/- each.

There has been a total ban on the hunting of all wild animals throughout the country, which has come into effect after 1991 amendment to Wildlife (Protection) Act. Despite this ban and fairly good implementation on the ground, instances of poaching do take place.

There are some communities, especially, Deh, Bangale, Shikaligar and Bawaria etc. who indulge in small game offence on a regular basis. These people catch Hare, Monitor lizards, Partridges, Quails and such other small animals. Earlier these people used to go for hunting and bring their catch openly. After the stricter implementation these people now bring their catch not on cycles but change the mode of transportation at the nearest transport head.

The local communities also indulge in the hunting of wild animals for various reasons. The survey of some villages in Gurgaon, Rewari and Mahendergarh districts reveal that the wild animals are used for their various medicinal value. As revealed by the survey the following animals are used for the purpose mentioned.

**Porcupine :** The flesh of the animal is used to control Foot and Mouth disease of the cattle.

**Blue Rock Pigeon :** The blood is used in the treatment of Paralysis and also in the treatment of Asthma.

**Green Pigeon :** The flesh of this bird is used to control Polio.

**Peacock/Peafowl :** The legs and the toes are used to treat the burn injuries . The eggs of this bird are used in the treatment of the diseases of cattle.

**Black Partridges :** The flesh is used to treat Tuberculosis .

**Fox :** The fat removed from the brain of the animal is used as medicine.

**Frog :** The whole animal used in the treatment of certain infection in human beings.

**Owl :** The flesh and feathers are used in the treatment of diseases of children. The flesh is also used to treat the Foot and Mouth disease of cattle.

**Jackal :** The flesh is used in the treatment of Foot and Mouth disease of cattle and also in the treatment of mouth ulcers.

**Hare :** The blood is used in the treatment of diseases of children, as an antipyretic, in the treatment of eczema . The blood is also to cure pneumonia in children.

**Tortoise:** The flesh is used to treat Tuberculosis.

**Snakes:** The bones are oven in the form of a necklace and is supposed to cure jaundice. The skin is used in the preparation of eye liner . The black snake poison is used by the ‘Sapera’ community in the preparation of eye liner.

**Monitor lizard :** The fat is used in the treatment of arthritis.

## **MAJOR ACTORS AND THEIR CURRENT ROLES RELEVANT TO BIODIVERSITY**

### **(a) Governmental**

The Forest Department has been entrusted with the responsibility of conservation of wildlife in the state. The Forest Department is the custodian of the forests, areas notified or declared as forests under various sections of the relevant Act. The conservation of forests and its management is oriented towards the protection of wild animals through habitat management in the protected areas - areas which are declared as wildlife sanctuaries and National Parks. The wildlife wing implements the provisions of the Wildlife (Protection) Act, 1972 both in the Protected Areas and outside the forest areas.

To advise the Govt. on the conservation of wildlife in the state an Advisory Board has been constituted in the state.



Inter departmental Co-ordination Committee has been constituted in the state to enforce the provisions of Wildlife (Protection) Act and specifically to prevent the trade in wildlife and wildlife products. Similarly Inter-Departmental District Co-ordination Committees have been constituted to strengthen the protection mechanism at the district level.

**(b) Institutions**

Wildlife Institute of India has been helping the state in technical matters. In the early nineties, this institute conducted an exhaustive study on Neelgai and its control mechanism to prevent crop damage. They have also been helping the department by training of the field staff in various fields.

**(c) Citizens Groups and NGOs**

Non governmental organizations or citizen groups, which are doing some related job, are mentioned below:

**(i) WWF Chandigarh chapter**

The World Wide Fund for Nature- India has a chapter located at Chandigarh. This organization is working in the state for the cause of biodiversity conservation. Creating public awareness, especially in the school children, is one of their main activities.

**(ii) All India Jeev Raksha Bishnoi Sabha**

This organization has been active in the state especially in the south and south-western part of the state where there is a significant population of Bishnoi community. Although they are not doing anything significantly towards the development of wildlife habitat but have extended protection to all animals against killing. They have also been sensitizing the local population and have taken steps to prevent hunting of wild animals. Through their efforts they also influence Govt. policy to some extent.

**(iii) Bombay (Mumbai) Natural History Society**

This internationally known voluntary agency has come forward recently for the conservation efforts of the dwindling vulture population. They have also been voicing their concern on the decision of the State Government of allowing hunting of Neelgai to prevent agricultural crop damage.

(iv) The Environment Society of India has been active in increasing the awareness of conservation of nature. However, their activities are confined basically to Chandigarh and adjoining parts in Haryana.

(v) There are few individuals who are active in wildlife conservation efforts. The check-list of birds of Haryana has been compiled by Mr. S C Sharma (resident of Sonipat) and Mr. Bill Harvey.

#### **Local communities: rural and urban**

(a) Although the issues of forests, wildlife and environment are acknowledged by the educated urban communities, there is very little contribution from them in conservation of forests and wildlife in the state. The wildlife wing has been making continuous efforts to create awareness among rural communities particularly school and college students about the importance of wildlife conservation. Community involvement is also sought for the protection of wildlife whenever required. However, it will be a time taking process to sensitize the rural communities so as to secure their spontaneous actions and co-operations in conservation efforts. The contribution of the Bishnoi community in the protection of plants and animals needs special mention. The protection of plants and animals is one of the twenty nine principles of living. But for their strong belief in the protection of the wild animals, their population in the country side especially in the south and south-west of the state would have been vastly depleted.

There are few other individuals in the state who are making efforts in the conservation of wild animals, especially birds.

#### **(b) Rural Communities**

(c) There are some communities who have been indulging in wildlife offences. They are Deh, Banjara, Bangale, Shikligar, Bawaria and are found throughout the state.

(d) The bird trappers of Ambala: They indulge in the trade of birds in Ambala district.

Besides these, there are no major actors in the conservation efforts in the state.

### **ONGOING INITIATIVES**

#### **(a) Governmental efforts**

##### **(i) In-situ conservation efforts**

Besides protecting wild animals found anywhere in the state under Wildlife (Protection) Act, the State Government has declared two National Parks and ten wildlife sanctuaries in the state for the development and conservation of

wildlife. Brief description about the National Parks and wildlife sanctuaries is given below :-

**LIST OF NATIONAL PARK AND WILDLIFE SANCTUARIES**

Sr. No.	National Park/ Wildlife Sanctuary.	Tahsil/ District	Wild animals which are found.	Area (in acres)
<b>National Park</b>				
1.	Sultanpur National Park, Gurgaon		Water birds.	359.51
2.	Kalesar National Park	Yamuna Nagar	As at No 9 below	11570
<b>(A) Wildlife Sanctuary</b>				
1.	Bhindawas Wildlife Sanctuary.	Jhajjar	Water birds, Black buck, Blue bull, Black & brown Partridges.	1016.94
2.	Nahar Wildlife Sanctuary.	Kosli	Black buck, Blue (Rewari) bull, Black & Brown Partridges.	522.25
3.	Chhilchhila Wildlife Sanctuary.	Kaithal	Water birds.	71.45
4.	Bir Shikargah Wildlife Sanctuary.	Kalka	Chital, Wild boar, (Panchkula) and Red Jungle Fowls	1896.00
5.	Abubshihar Wildlife Sanctuary.	Dabwali (Sirsa)	Blue bull, Partridges and Black buck.	28492.00
6.	Saraswati Plantation Wildlife Sanctuary.	Guhla-Cheeka	Black buck, Hog Kaithal/ Kurukshetra deer and Wild boar.	11003.00
7.	Khaparwas Wildlife Sanctuary.	Jhajjar	Water birds.	204.36
8.	Bir Bara Ban Jind Wildlife Sanctuary.	Jind	Blue bull, Monkeys, Hare, Black & brown Partridges.	1036.00
9.	Kalesar Wildlife Sanctuary.	Chhachhrauli (Yamunanagar) deer, Wild bore & Red Jungle fowl.	Leopard, Bear, Chital, Sambhar, Wild Goat, Baking	24431.65
10	Berwala-Mandhana	Panchkula	As above	5501.88 (Declared) 6563.91 (Notified under section -18)

Although there is no resident tiger population in the State but a couple of tigers do visit Kalesar sanctuary especially in winter. A Terai Arc Tiger Reserve has been proposed by Wildlife Institute of India and Kalesar is proposed to be part of the proposal. The frequency of visit of the elephants to Kalesar National Park has also increased since the year 2003.

For the development of these protected areas for promoting the wildlife therein various developmental works are taken up from time to time.

### **Ex-situ conservation units**

- (a) At the Pheasant Breeding Centre, Morni, **Red jungle fowl** has been successfully bred and released in the forest. The genetic studies on the purity of red jungle fowl were got carried out at the Centre for DNA Finger Printing and Diagnostic at Hyderabad which proved that there is no swapping of domestic gene into the wild one.

Even Kaleej pheasant was bred and released. The efforts to breed Cheer pheasant and Chakore have not succeeded for various reasons.

- (b) At Bhaur Saidan, **breeding of crocodiles** was started earlier. Now there are a large number of crocodiles in the lake which are facing the problem of over population.
- (c) **Chinkara Breeding** Centre at Kairu is a 58 acres fenced area in village Kairu in Bhiwani District. The animals here are in their near natural environment, and for all practical purposes this can be called as in-situ conservation effort.
- (d) There are two zoos in the state, one at Rohtak and the another at Pipli. Both these zoos are small and as per Central Zoo Authority guidelines fall in the category of mini zoos. Although they serve the local population, their role as conservation centres is only limited.
- (e) There are two deer parks one at Hisar and one at Meham.

- (f) A **vulture conservation breeding** programme has been undertaken in collaboration with Bombay Natural History Society( BNHS) at Pinjore.

**(iii) Other activities**

For the protection of wildlife the State Government has taken various steps like improving the wireless communication, provision of arms in sensitive areas vehicles for the mobility of staff. Education, training camps are organized for the farmers, school children and teachers. However, this activity is constrained for the want of adequate resources and trained man power. To educate the rural community about the provisions of Wildlife (Protection) Act and to generate appropriate awareness meetings at the village/panchayat levels are held regularly.

The Department of Environment, Government of Haryana has initiated a programme of constituting Eco clubs in the state. At present about hundred Eco-clubs are functioning with differing enthusiasm in every district. The school children are given necessary environmental education through these Eco clubs.

**(iv) NGOs and other people movements**

There are few NGOs or voluntary agencies working in the state. The WWF (Chandigarh chapter) and Environment Society of India are working for creating general awareness about nature conservation. Bombay (Mumbai) Natural History Society has recently started some activities in the state.

**Strategies for the conservation of the wildlife in Haryana**

For the conservation of wildlife and biodiversity of the state, eight-pronged strategy, as suggested, both short term and long term need to be adopted. Although at the moment some work on these strategies is being implemented a concentrated efforts on further strengthening various activities and undertaking newer activities are required.

**Forested Ecosystem**

Protected areas representing the Aravali hill system and the sandy desert system need to be strengthened.

The forested ecosystems need to be further developed so that they can support a greater population of wild animals by improving the habitat. Plantation

of fruit species and provision of water especially during the pinch period need to be undertaken.

To reduce the pressure on the protected areas, Eco-development works for raising the fuelwood and fodder and other income generating activities in areas outside the protected areas have to be taken up. At the state level promotion of agro-forestry, and production of fuel fodder on community lands i.e. social forestry needs to be revived on a larger scale.

**Ex situ conservation** efforts are required to be undertaken to conserve some animals whose population is declining this also with a view to develop the capacity of breeding the species and the genetic variations thereof.

**(b) Wet land**

With the development in all other sectors the wetlands in the state are fast disappearing. Provision of water to the wetlands and their protection should be done and sustained efforts needed for maintaining them in future. The catchment area of Sultanpur national park needs to be notified under the provisions of appropriate Act to prevent any further construction creating obstruction to the free flow of run-off to the lake.

**(c) Community land**

For the conservation of wildlife outside protected areas amendments to the Panchayat Act is required to be done so that 25 to 30 % of the community land is kept under tree cover in consultation with the concerned panchayat. The extent of such land may vary depending upon the total area of community land. Where existing, the communities and the panchayats should be prevented from further appropriating the area for other developmental activities.

**(d) Wildlife Trade**

Prevention of trade in wildlife and wildlife products from within the state and passing through state should be prevented for which the protection mechanism needs to be strengthened.

**(e) Generating awareness**

For all these efforts to be sustained in future and for creating the awareness for the conservation in the people, nature education and conservation awareness programmes should be continued with full support and adequate government funding.

The local community will be associated, as far as possible in the management of the Protected Areas Help of articulate men and women will be taken in this awareness generation.

**(f) Capacity building**

To enhance the capability of the department and to sensitize the associated personnel, staff should be trained and sensitized for various skills in the wildlife management.

**(g) Baseline Surveys**

Base line survey of wild animals and other organisms should be undertaken and the status of each and every of these should be monitored continuously periodically.

**(h) Small animal offences**

A long term plan to wean away the community involved in wildlife offences be drawn up.

**Wildlife Tourism**

Although wildlife tourism has developed in other states there is not much scope for its development in Haryana. There are no extensive forest areas nor big sanctuaries. Encouragement of tourism in smaller protected areas disturbs the wildlife.

However, Sultanpur Park being nearer to the national capital Delhi there are usually large number of visitors to the park. And Bhindawas, although as a water body is much larger than Sultanpur National Park, there are very few visitors to this wetland.

Shiwaliks in the foot-hill of Himalayas are rich in bird life almost all the year round hence is a potential area for bird lovers.

Haryana is a fascinating land of Aryan culture. The Haryanvis continue to worship fauna and flora to maintain the ecological balance. Black Buck is the state animal, Black Partridge is the state bird and peepal is the state tree.

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