

## **Balancing the Eco-System: Flora and Fauna in Pre-Colonial and Post-Colonial Haryana Region**

**Dr. Mahender Singh,**  
*Associate Professor in History,*  
*Rayat College of Law, Railmajra (Punjab)*  
*Affiliated to Panjab University, Chandigarh*

---

### **Abstract:**

Flora and fauna played a vital role in balancing eco system of any geographical region. Present paper brings out the changes in pre-colonial and post-colonial Haryana. This paper is based on the assumption that the Colonial State had the dawdling approach in the preservation and maintaining of eco-system because they focused on to retain its basic geographical features and confined only on clearing the forest land converted into cultivated land in terms of collecting the land revenue from this area, on the contrary, the state government made a several steps in terms of preservation and in balancing the eco-system in the contemporary times. Both assumptions would be tested in the present paper. One of the interesting things in choosing this title is that hardly any secondary literature historically found on the topic under reference.

**Keywords:** Eco-System, Colonial State, Nardak, Biodiversity, Habitat, Gazetteer, Aravalli.

---

Date of Submission: 17-10-2020

Date of Acceptance: 02-11-2020

---

### **I. ETYMOLOGY:**

Flora and fauna are words originating from Latin. Flora in Latin means the goddess of the flower. Flora is also derived from the word floral, which means relating to flowers. Therefore flora is a group of indigenous plants in an ecosystem of a geographical region. All species of plants that are found in a particular region, period, or special environment called flora. (Encyclopedia, Britannica). So, the term flora and fauna was coined by biologists to refer to a collection of plant and animal species in a given geographic location. This is why you hear phrases like flora and fauna of India, flora, and fauna of Indonesia and so on. The origin of the word fauna is a bit shrouded in mystery. According to Roman mythology, Fauna refers to the goddess of fertility. Fauna is sometimes referred to as Fauns, meaning forest spirits. By definition, fauna is a group of indigenous animals of any geographical region.

### **Relevance:**

Human life needs flora and fauna to survive on this planet. Flora helps in the generation of oxygen into the environment. Whereas fauna that is animal species, they produce carbon dioxide in large amounts. Plants absorb carbon dioxide. In the same way, humans also take oxygen from plants and exhale carbon dioxide, thus, ecological balance is maintained by flora and fauna, therefore, the nature is the greatest teacher of all times, it teaches us the meaning of this life, love, survival and lot more things, as rightly said by William Wordsworth 'Come forth into the light of things let nature be your teacher'. It sounds philosophical and but true about nature. Let's come back to Science and History again and discover more interesting facts about the two terms mentioned above.

### **II. COLONIAL POLICY:**

The British colonial empire throughout the world had varying forms of administrative and exploitative tools based upon the prevailing local conditions. Among the various forms and methods of colonization, one of the forms was to put the biodiversity and green resources for their commercial and greedy ends. Thus the green imperialism by the British exploiters, having a universal character, witnessed the similar course and impact in the case of Indian situation. The various justifications given by the British for exploitation of such resources have found in our primary and secondary literature. However, the exploitation of flora and manipulation of certain plant species disturbed the biodiversity of the forest and it brought tremendous climate change due to deforestation, extinction of variety of flora and fauna, etc., however we may find the obstinate picture in the post-colonial era. The colonial state main aim was to convert the cultivable land into cultivated land for the collection of land revenue, therefore, the cultivated area of the region under reference had increased by 11.8

percent in 1886-87, by 21.8 percent between 1887 and 1907, by 1.6 percent from 1907-22 but then decreased by 11.5 percent by 1940.

Therefore, the overall growth of the cultivated area was a moderate one of almost 23 percent between 1867 and 1940. In terms of the above purpose taking into consideration, they did everything for the destruction of eco system, for example, during the last five years 1865-70, the amount of Rs. 620 have been given for the destruction of 2 tigers, 16 leopards or panther, 1 bear, 136 wolves and 271 snakes in district only and this practice. This practice or colonial mindset continued up to 1963 when the Secretary of forests 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/-, Jackals and wild cats Rs. 5/- each, monkey Rs. 3/-, langur Rs. 5/- and fox, falkans, baj, and shikaras Rs. 3/- each. Around 1888 lions were hunted by the then rulers in Hisar, Records in this effect are available. The last remaining tiger in Haryana was shot in Barwala 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 1968-70, a campaign under the title 'shooting of wild dogs in Kalesar reserved forests' and 'Annihilation of wild dogs' was taken up as per record available in the Government office, the last wild dog was shot in February 1970. The situation remained worse up to 1972, whenever the central government enacted the Wild Life Protection Act 1972. In 1972, Elizabeth Whitcombe in her work, *Agrarian Condition in Northern India* rightly remarked that the East India Company's attempt to establish a number of irrigation projects in Northern India brought a number of ecological disasters.

#### **Flora in Colonial South-Eastern Punjab (Haryana):**

The south-eastern region (Haryana in post-colonial era) had a rich fauna and flora. There were several trees, which were common in all parts of south-eastern area: The *kikar* (Acacia Arabia), *pipal* (Ficus religiosa), *tut* (Mulberry), *faras* (Tamarix), *am* (Mango), *nim* (Melia azadirachta), *jaman* (Sizygium), *dhak* (Butea frondosa), *dab* (Sacred grass), *khajur* (Wild date palm) and *nagphani* (Cactus indicus). The flora included, the shrubs included the '*jal*' and '*kair*' grew gregariously all over the higher poor parts of the tract. The fruit of the former was called '*pilu*'. The *jand*, *hing* and *hingo*, *arni*, *thohar*, also found there. The best fodder grasses, in order of merit, included, *dubh*, *polwan*, *gandh*, *sarala* and *rus*. In the fields, the commonest trees were almost self-sow and *shisham* usually required to be planted. *Jand* (Prosopis picigera), *nim-bhur* or *nimbher* (Zizyphus), *jal* (Salvadora oleoides) *khair* (Acacia catechu), *hingo* (Balanitisaeguptiaca). The grasses were locally called *chaprur*, *sanwak*, *makra*, *palua* and *gandhi*. *Siras* and *shisham* were also to be met with here and there. The shrubs in the brushwood, which covered so great a portion of the district, were the *jal* and the *kair* or *karil*. The fruit of these shrubs, called respectively *pilu* and tend berries, played an important part in the diet of the common people. *Jharberi* was a useful shrub in this tract.

The Gurgaon district, however, it was not well wooded, and some portions of it, such as the low-lying tract in Nuh, were peculiarly bare of trees. The *kablikikar* (Acacia Farnesiana) were also common. The *imli* (Tamarindus Indica), *am*, the *bakain* (Meliasepervirens) and the *amaltas* (Cathartocarpus fistula), the *ber* (Zizyphus jujuba) were in the list of fruits. *Jharberi* was the most characteristic plants of the district. The *Jhau* (tamarix dioica), *bathua* (Chenopodium album) and *chaulai* (Amaranthus) were common. *Nagphani* (Cactus Indicus), which formed a thick hedge round many villages in Rewari was known to this area. The flora, in the Ambala district, included the Mango, common in the southern portion of the districts. The other indigenous trees were *siris* (Acacia Sirisa), *sal*, *bargat* (Ficus indica), *simbhal* (Bombax pectaphyal). The *sal* was found in the Siwaliks. The Chhachhara jungle was formed exclusively of *dhak* trees, the Morni jungles of rough scrub with a few bamboos and *chil* (Pinus longifolia).

Some paragraphs detailing important shrubs and bushes from the Hissar District Gazetteer, 1892 are reproduced here: "The commonest trees of the district are the *jand* (Prosopis picigera) and the *kikar* (Acacia arabica) which are indigenous to the soil. The *Jand* is generally of short and stunted growth and in favourable localities attains a height of 25 feet. Its wood is soft and liable to attacks of insects; it is however preferred in some parts to *kikar* for agricultural implements, as it is not so liable to split with the heat. The *kikar* grows to a height of 35 or 40 feet, its wood is hard and is used for agricultural implements in many parts. These trees are found generally not in groups but scattered over the fields, except in the tract on either side of the Ghaggar. The leaves are used as fodder and its bark is employed as a tanning agent. The *babul* (Acacia jacquemontii), a smaller species of *kikar*, is very common in the Bagar. A tree peculiar in a considerable degree to this district is the *Rohira* (Tecoma undulata). It is found principally in the Bagar and is remarkable for its beautiful yellow flowers. Its wood is used for the legs of charpais. In the Nali tract on either side of the Ghaggar are found the *farash* (Tamarix articulata) and the *hins* also called *thor* (Capparis sepium) and the *dhak* (Butea frondosa) is very common in addition to the above. These are also found in the canal tract, especially the *hins*. The latter is a tree or large bush with big thorns. The *dhak* is the Punjabi *chachra*. Its leaves make a very good fodder for buffaloes. The tree itself seems to be regarded as more or less sacred; its wood is used as fuel for the home or sacred fire, and at least a few pieces of it are put in the funeral pyre. Its soft but tough wood stands the action of water well,

and it generally affects stiff low-lying soil (dabar). The hingo or kangera (*Balanitisroxburghii*) is not uncommon in the district. Close to and on the canal banks the shisham (*Sisoodulberghia*), Sartut (*Morusnigra*), penda and bakain (*Melviazedarach*) are found in considerable numbers in addition to the more common trees. Near the village sites and tanks the pipal (*Ficus religiosa*), siris (*Albizzialesbek*) and Nim (*Meliaindica*) are frequently found. The bar or baniyan (*Ficus bengalensis*) and the Tunt (*Morusalba*) are common as roadside trees in and near the canal tract. The Ber (*Zizyphus Jujuba*) is not frequently seen in the firmer soils of the district. Its wood is durable and is employed for doors, etc., but it is too expensive for common use". Shrubs & Bushes "The commonest bushes of the district are the kair or karil (*Capparisaphylla*) and the jal or van (*Salvadoraoleoides*). They are met with all over the district except in the sandy soil of the Bagar. The fruit of these bushes, called respectively tend and pilu, play a not unimportant part in the diet of the people. The pilu berry makes its appearance in Baisakh (April) and ripens at the end of May, attaining the size of a pea, it is generally swallowed in handfuls-skins, stones and fruit. It is eaten by the poorer classes, who consider it a good alternative, but it is said to be somewhat heating. The kair bush, which produces the tend berry is a straggling shrub devoid of leaves".

### **Fauna in the Colonial Era:**

Ambala district was considered to be among the best in the Punjab for the sport of several kinds. Game may be readily found in every part of it, but was especially plentiful in the neighbourhood of Kalesar, in the jungles of the Piplitahsil north of Thanesar, and the Morni forest of Kutaha. Tigers were even found in the lower ranges of the Siwalik Hills. Leopards and wolves were common in the same locality. Hyenas and wolves were only too common everywhere. Sambhar were as great a plague to the Kutaha hill villages as were black-buck in the plains. Chitals, 'kakar' or barking deer were found in the districts. As to fishing, 'mahasir' abounded both in the Sutlej and the western Jumna Canal.<sup>1</sup> Rewards were also given for killing wild animals.<sup>2</sup> In the Karnal district, the dense jungles in the northern parts, and the presence of the canal, made Karnal an unusually good sporting district. Black buck, 'nilgae' and 'chikara' were found in all parts of the district. Grey partridge swarms were found throughout the jungles. Duck and snipe were also found. Tigers were uncommon whereas wolves were common all over district. The common red monkeys were also there. 'Saras' and 'Kulan' cranes were found in the cultivated tracts. In spite of this, crocodile and snakes were also found. Fish were also found in the Jamna and in the village ponds.

The fauna in the Rohtak district was famous one. Animals were also the same as there in the adjacent districts. Camels were fewer, horse was not common, and horse breeding was rare. Among the wild beasts, wolves were sometimes seen; foxes, jackals and wild cats abound in jungles. Snakes were cobra and karait the former of great size. Of game, black buck, 'chikara' (ravine deer), and 'nilgae' (called by the people *rojha*), black partridge, peacocks, pigeons, were also found in this tract.<sup>3</sup>

In Hissar district, leopards were occasionally met with, hyenas, wolves, jackals, foxes, and porcupines were common. *Nilgae*, blackbuck, ravine deer, and pig were prevalent throughout the district, especially in the government *bir* (farm). Hares were also found everywhere. Peafowl, half-domesticated, were common around the villages. Altogether Hissar was one of the best shooting districts in the province.<sup>4</sup>

Tiger, the panther (*taindua*), wild cat (*banbilla*), Hyenas (*jarag*), wolves (*bheria*), foxes (*lomri*), and jackals (*gidar*) were common in all parts of the district. A nilgae was also common in Rewari. The birds included, water fowl, the *saras* (cranes), the comb nuck (nakta), pea-fowl, wild or blue pigeon, wood pigeon, the *lik* or painted florican. Tortoises were also found in the Jamna. Snakes appeared only in the hot and rainy season. Lizards were also there. Firozpur had a few species of small fish of the ophiscipali (*saol*) and macrons (*tengra*) species peculiar to muddy and stagnant waters.<sup>5</sup>

### **III. FLORA IN POST-COLONIAL ERA:**

Haryana is rich in flora but there are various kinds of flora. Almost there is a general type of flora but some pockets of the region gave special types of herbs and bushes. Some types of vegetation are seasonal and other type is permanent one. Before going into the depth of floral properties of Haryana, it would be better to have an assessment about the topography and soils of Haryana State briefly. There are hardly any hilly tracts in Haryana except a few in Panchkula district-its sub-montane area and the range of Aravalli chain in Gurgaon, Rewari, Faridabad and Mahendragarh districts. In Panchkula, the hilly areas are generally devoid of vegetation other than rough scrub, and the low bleak hills are of little use except as grazing grounds. The tract around Kalesar and Morni, however, is more valuable. There are some high ridges running through out in tract from the north-west, with numerous spurs branching out in all directions. These hills are known as Morni. In the Gurgaon and Mahendragarh districts the hill ranges are connected with Aravalli chain. Formed almost entirely of alluvium, the state is situated towards the depressions of the rivers, Ganges and Indus. It is a broad plain standing nearly on the watershed between the basins of the two rivers. It is vast ground of moist land. So, under the situations, flora also differs. First of all, the flora in the Gurgaon division within Aravalli chain is grouped here.

Kikar is found all over the State; not to talk of any part of the area. This is a very famous tree which is found in abundance in Rewari, Gurgaon, Faridabad and Mahendragarh districts. It has come up very well in the Nuhtahsil of Gurgaon district, particularly along the roads. In Palwal and Ballabgarhtahsils of Faridabad district, besides private and village Shamlat lands, it has been grown successfully in the notified areas by the Forest Department. Its wood is used locally for many purposes. Khair has been mostly grown on Aravalli hills. Generally, it is available in the hilly area of Mahendragarh district; particularly near Khudana ridge. Neem is generally found growing along Gurgaon-Alwar, Nuh-Palwal, PalwalRewari and Tarao-Pataudi roads and also in and around village-ponds and near the habitation where Pipal and Bar trees occur frequently everywhere in the region. The Jand tree is found everywhere in the fields or along the roads. Its uses are many; it is used as a fodder for camels and other cattle; as wood manure by its leaf fall and it gives shade in the fields. Besides, it does not harm the field crops as it is a deep-rooted tree and derives its sustenance from the region far below the root-zone of the field crops. The Jand trees are abundant even in Rewari and Mahendragarh areas. Even they are available in the hilly areas. In some parts of Gurgaon district, particularly low-lying flooded areas such as Sultanpur and Sarai in which soil is sandy, Khajur grows abundantly, but fruit is of very inferior quality. In the areas of Rewari and FerozpurJhirka of the Gurgaon district, there are a few scattered species of *tari*. Ballabgarhtahsil (Faridabad district) is the best wooded in spite of large scale cutting and removal of trees. The greater part of vegetation ordinarily found is *bans* and reserve forests consist of *Karir*, *Hins*, *Jal* and *Raunj*. *Dhak*, *Gular*, *Papri* and *Lasura* are also found. Kadam is fairly common towards Palwal and Hodal. Barna, Odora and Imli are also met with, though not very commonly. Amaltas is found at various places. Ber tree is very common in these areas. The Ber fruit of Guryani, Mahendragarh and Narnaul is very sweet and delicious. This fruit is a common speciality of Mahendragarh and Rewari districts. Bers are exported to other areas. Shisham and Siris are mostly confined to road sides where these have been planted by the Government. Bakain and Arjan are also seen along the roads.

One of the most characteristic plants of Rewari, Faridabad, Gurgaon and Mahendragarh districts is Pala or Jhar-beri. This is a common in these areas except in low-lying inundated tracts. In September and October the fields are often thickly covered with this prickly shrub. It is very valuable plant. Its leaves are thrashed and given as fodder to the cattle, particularly to the camel. Its fruit is eaten; thorny branches are used for hedges or as a fuel and roots for dyeing leather. The Munj grass is very useful. It flourishes both in high sandy lands and low flooded tracts. It is found in abundance in waste lands along the Yamuna and is grown quite frequently by the people along their boundaries to serve as wind break.

The characteristic plants of sandy areas of Rohtak district are *Dholi mudi*, *Jawasa*, *Rattenjot*, *Meini*, *Khip* and *Harmala*. Many of these are used medicinally. Farash is also found in the Jhajjar area. This tree grows readily from cuttings, does not need much water and is therefore, planted along roadside, canal banks and around cultivated fields. Babul, Siris, Pipal, Bar and Shahtoot are commonly found in Haryana. In Sonipat and Rohtak areas, some trees occasionally met with are Kachnar, Barna, Sohan, Jna, Kain and Jhor. Aam and Jamun the fruit trees are also found in the area. Among the cultivated fields, many types of seasonal weeds are found available. Such weeds are Dadain, Dona-Jhan, Piazi, Sarwali, Hulhul, Hirranpaddi, Gulabi, Kundla, Kangi, Daudhi, Maldoda and Sufed-Phul-Kee. The aquatic flora includes flowering plants such as Chhota Kamal, Singhara and Utricoloria. The Panipat district is not rich in its forest wealth. Tropical dry deciduous forests are found here. Mostly the vegetation consists of Khair, Kikar, Shisham and Safeda. Ber, Aam and Jamun are the main fruit trees. In the districts of Karnal, Kurukshetra and Kaithal, the main trees are: Dhak, Hingot, Jal, Kaindu, Jand, Jhar, Arni, Jawasa, Neel and Nagphani. During the monsoon, a number of herbaceous plants appear as undergrowth in the jungles. These include Kanana, Gokhru, Bishkapra and Chichra. Kikar and Khajur are very common in swampy or marshy localities or in low lying areas. Motilana are common herbs in saline areas. Shisham is extensively planted along banks and road sides. Some of the other planted species along canal banks and road sides include Akas Nim, Maharukha, Jand, Kanda, VilayatiImli, Nimbar, Sirish, Tut and Safeda. The irrigated forest plantations have been taken up to meet the demand for fuel wood and timber for furniture, sports goods industry, paper pulp, electric poles, etc. The main plantation block is the Saraswati plantation near Pehowa in Guhlatahsil, raised with species of Safeda, Shisham and Kikar.

The Panchkula, Ambala and Yamuna Nagar districts have abundant vegetation due to availability of rainfall and elevations extending upto 1,500 metres above mean sea level. The plains and foothills contain mainly tropical type of vegetation. Shisham, Kikar and mango are important tree species grown in the alluvium plains. Safeda was introduced on a big scale since 1963 in the forest areas as well as on private lands. The wood of this tree is used for the manufacture of paper pulp and fuel. It has been extensively planted on forest strips and also in the cultivated land near Jagadhri, Sirsagarh, Serpur and lehroundi. Besides, Jamun, Semul and mulberry are occasionally met within the plains. Chil is the main sub-tropical species.

A large number of grasses are also met with in Ambala and Yamuna Nagar districts. Babbar is an important grass growing naturally in many areas. This is used for manufacturing of paper. An area of 359 hectares in the Morni hills was planted with Babbar grass to increase the supply of raw material for paper mills.

Congress grass is a very obnoxious weed in the Panchkula and Chandigarh areas. The government warns the people to destroy it as it causes skin diseases. The Karnal-Panipat area has some specific kinds of grass. Sarkara, Munj and Dab are three important grasses of this area. The leaves of these grasses are used for thatching huts and baskets; chairs, screens etc. are made of the stem of Sarkara. Munj fibre is strong and is used in making rope strings and matting. The fibre of Dab is inferior to that of Munj. Khus-Khus is often found in water-logged areas and along canal banks. Singhara is cultivated in water ponds. Besides Anjan, Paliva and Sarla are fodder grasses. In Rohtak and Sonapat area, the grasses are numerous. Most conspicuous of all is the Sar whose uses are too well known to need mention. This is abundant on the sand hills and also grows on the stream sand thrown out by excavation of the canal channels. It is proverbial "Aur Ghas Jal Jayegi, Dub Rahegi Khub". (Though all other grass be burnt up, the Dub will remain fresh). The Motia is a troublesome weed especially in irrigated land but bulbous root is edible. Dab is often troublesome weed but when young it is readily grazed and when times are bad it is stored and chopped up as fodder. Sambhlu and Kans are other grasses which are considered very useful for animals.

### **Fauna in Post-Colonial Haryana:**

Fauna In olden times, lions and tigers were not uncommon. The Nardak area of the then Karnal district was once a favourite spot of the Mughal emperors for hunting lions and tigers. Francois Bernier states that "lions which were scarce in India except in Kathiawar were still found in this area and that lion hunting as a sport was the privilege of the emperors". As late as 1827, Archer says that lions were some times seen within a 20-mile (32-kilometre) radius of Karnal while tigers were exceedingly numerous in its immediate vicinity. These species completely disappeared."

As already stated, there was a time when dense jungles harboured various kinds of wild birds and animals. But with the growth of communications, clearance of jungle, increase in irrigational facilities and extension of cultivation, the rich stocks have considerably dwindled; nonetheless the areas of Karnal, Panipat, Kaithal and Kurukshetra still hold a good position as regards the stock of wild life. In the Kaithal district and the area bordering Jind territory, black buck and chinkara are still available, though not in plenty. Hog deer which was once quite abundant in swampy parts and along the banks of the Yamuna, is now available in traces only. Grey partridges are sufficiently available throughout Haryana except in Khadar areas. Black partridges are found along the bank of the canal irrigated and riverain areas. The pelicans, cranes, perons, bitterns and many sorts of waders cover jheels; saras and kunj are particularly conspicuous. The old history of fauna pertaining to old district of Rohtak is worth-mentioning. Early in the 20th century, the Rohtak area was well-known for its large herds of antelope (black-bucks) and gazelle. As no Hindu would kill them and gun-licences were rare, the herds in some parts were very numerous. Now position changed. The position of game birds, given by the Deputy Commissioner and Settlement Officer, Rohtak in 1910 is asunder: "Of game birds, the black partridge, snipe, duck, geese, teals and cranes are common in suitable localities. The grey partridge, common sand grouse and quail may be found all over the district, though quails are nowhere plentiful. The imperial sand grouse is not uncommon and bustard are said to be occasionally found. Peafowls run wild everywhere, but the people, even Muhammadan Rajputs, object to their being shot. Birds of all kinds are extraordinary common in the district and many of them are of singularly brilliant plumage". Generally, three kinds of ducks are met with in the State, viz, divers, dabblers and mergansers with saw-like bills. Besides, there are other types which visit the jhils and ponds in winter from distant lands beyond Himalayas.

They are found on banyan, peepal, beri or fig trees. Blue rock pigeon is commonly found throughout the State. There is no shortage of peafowl. Common sand-grouses are found in open, barren plains, stubble fields and land away from water. They come to drink water regularly in the morning and at sun-set. Apart from the game birds described above, there are numerous other common birds such as sparrow, crow, kite, vulture, babbler, kingfisher, hornbill, egret, heron, stork, tit, bulbul, cuckoo and the dove. Baya, tailor-bird, is also common in Haryana State. It mostly makes its nests in the trees of kikar which are in abundance. The other common birds which can be seen everywhere are large Indian parakeet, rose-ringed parakeet, blue cheeked bee-eater, coppersmith, Indian golden oriole, pied crested cuckoo, koel, crow pheasant, red-vented bulbul, white-eared bulbul, verditer flycatchers, Indian magpie robin, Indian purple sunbird, Indian spotted munia and crested bunting. Besides such attractive birds as hoopoe, Indian white eye is also seen in and around villages. There are some categories of birds, which fall under the class of birds of economic importance. Such birds are: The Indian scavenger vulture, besides feeding on dead animals, consumes a large quantity of human excreta. Predators like black winged kite, Indian shikara, laggar falcon & keatrel are resident birds. Others like pale harrier & eastern steppe eagle visit the state in winter season. These along with spotted owl and eagle owl keep a check on the population of not only rodent pests but also various insect-pests by consuming them.

The pariah kite, brahminy kite, white backed vulture, tawny eagle, Indian jungle crow and Indian house crow keep the area cleared of dead animals by feeding on them. The insects and caterpillars harmful to agriculture are consumed by the large number of birds. Swifts such as Indian house swift, Indian palm swift and

swallows like western swallow use the insects as their staple diet. Shrikes or butcher birds as they are popularly called, feed upon a considerable quantity of insects. Some other insect-eating birds are king crow, brahminy myna, Indian pied myna, bank myna, babblers, warblers and fly catchers of various species.

#### **IV. PROBLEMS RELATING TO BIODIVERSITY:**

Some of the problems related to the loss of bio-diversity in the state have been discussed. There were many factors enumerated below.

##### **Habitat destruction**

- 1) Conversion of waste lands for agriculture use.
- 11) Colonization of large extent of areas in Aravallis under pressure of Delhi population.
- (111) 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, and handsets fragmenting original habitat.

#### **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. Interdepartmental 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**

Nongovernmental 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 southwestern 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 a 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.

As per the above account, it has been proved that Government is making vigorous efforts to preserve the wild animals in the state. Some of the noted wild animals and birds still available in Haryana, of course in lesser numbers than before, are mentioned below: Sambhar, barking deer, spotted deer, wild boar, black buck, ravine deer, blue bull, panther, hyena, hare, Kalij pheasant, red jungle fowl, peafowl, black partridge, grey partridge, quails, sandgrouse, green pigeon, ducks, geese, spoonbill storks and cranes, flamingo and pelican are found in the state. Certain other elegant birds and birds of common occurrence still exist here. Black partridge is a state bird. Tiger is a casual visitor to the Kalesar forests and Aravalli hills. There are wet lands in Gurgaon, Rohtak, Sonapat, Karnal and Kurukshetra districts and offer good opportunities for water fowl study and shoot. The fauna regions of Kalka, Pinjore, Morni hills, Kalesar and Kalsia forests yet provide adequate wild life and possess good potential for future development. The account of some important wild life sanctuaries and zoological parks and many centres set up under the aegis of Haryana. The Haryana Government is making best efforts to retrieve the wild life glory of the State as far as practicable through measures for its protection, propagation and conservation. This is, however, undeniable that there exists a vivid and acute competition between men and other animals.

Although wild life tourism has developed in other states there is not much scope for its development in Haryana. There are neither extensive forests areas nor big sanctuaries. Encouragement of tourism in smaller protected areas disturbs the wildlife.

However, Sultanpur Park being near to the national capital Delhi there is usually large number of visitors to the park. And Bhindawas, although as water body is much larger than Sultanpur National Park, there are very few visitors to this wetland. Shiwalik 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 Aryanculture. The Haryanis continue to worship fauna and flora to maintain the ecological balance. It is also evident that the Black Buck is the state animal, Black Partridge is the state bird and peepal is the state tree, and therefore, the Colonial State constrained the ecological balancing system.

#### REFERENCES:

- [1]. District Gazetteer of Ambala, Government of Punjab, Lahore, 1883-84, 1884, DG hereinafter.
- [2]. Archer's Tours in Upper India and in parts of the Himalayan Mountains, 1833 Quoted in Haryana State Gazetteer, Vol.-II, Agriculture and Irrigation, Gazetteer Organization, Revenue Department, Government of Haryana, Chandigarh, 2005.
- [3]. For details see, Mahender Singh, 'Shifting Trends in Agriculture: Cultivated Area and Cropping Pattern in the South-East Punjab, 1858-1947,' Punjab History Conference Proceedings, Patiala, 2004, 357-70; and also see, Mahender Singh, Colonialism and Agriculture: Agricultural Development in the South-East Punjab of British India, Lambert Academic Publishing House, Deutschland, Germany, 2013.
- [4]. DG Rohtak, 1883-84, 1884.
- [5]. General Report on the Administration of the Punjab Territories, for the years 1864-65, 67, 68, Punjab Printing, Lahore, 1869, XX-XXI; and K.C. Yadav, Haryana: Itihas Evam Sanskriti, 1313-14; and Report on the Land Revenue Administration of the Punjab, for the Agricultural Year, 1<sup>st</sup> October 1908 to 30<sup>th</sup> September 1909, Civil and Military Gazette, Lahore, 1910, Statistics, I, II, III, and Report of the Land Revenue Administration of the Punjab for the year Ending the 30<sup>th</sup> September 1922, Superintendent Government Printing, Punjab, 1923, Statement No. II, III, and Punjab Agriculture Facts and Figures, Publication No. II, Controller Printing Press, Chandigarh, 1957, 90-120.
- [6]. DG Hissar, 1883-84, 1884.
- [7]. Gazetteer of Karnal District, 1883-84, Arya Press, Lahore 1884.
- [8]. Gazetteer of India, History and Culture, Vol. II, Ministry of Education Press, New Delhi, 1990.
- [9]. Haryana State Gazetteers, Vol. II, Agriculture and Irrigation, Gazetteers Organization, Revenue Department, Chandigarh, 2005.
- [10]. Haryana District Gazetteer, Gurgaon, Controller Printing and Stationary, Chandigarh, 1976 (Revised).
- [11]. Haryana District Gazetteer, Hissar, Controller Printing and Stationary, Chandigarh, 1976 (Revised).
- [12]. Haryana District Gazetteer, Karnal, Controller Printing and Stationary, Chandigarh, 1976 (Revised).
- [13]. Haryana District Gazetteer, Ambala, Controller Printing and Stationary, Chandigarh, 1984 (Revised).
- [14]. Punjab District Gazetteers, Karnal District, 1918, Vol., VI-A, Government Printing, Lahore, 1919.
- [15]. Gazetteer of the History District 1892, Civil and Military Gazette, Lahore, 1894.
- [16]. Bhoop Singh, 'Impact of Mining on Flora and Fauna of Faridabad District in Haryana', International Journal of Research in Science and Technology, (IJRST), Vol. No. 2, Issue No. VI, July-September, 2013.
- [17]. Mahender Singh, Agrarian Society in Transition: A Case Study of Colonial South-Eastern Punjab, Writers Choice, New Delhi, 2015, Chapter 1.

- [18]. DG Gurgaon, 1883-84, 1884.
- [19]. Haryana State Gazetteer, Volume-1, Gazetteer Organization, Revenue Department, Government of Haryana, Chandigarh, 2006.
- [20]. Wheeler, D., et al. Greening Industry: New Roles for Communities, Markets and Governments, World Bank Policy Research Report, Oxford University Press, New York, 2009.
- [21]. Elizabeth Whitcombe, Agrarian Condition in Northern India, Vol.1, United Province under the British Rule, 1860-1900, University of California Press, Berkely, 1972.
- [22]. Jasbir Singh, Agricultural Geography of Haryana, Vikas Publication, Kurukshetra, 1976.
- [23]. Interviewed with Desraj, Village Khalila, District Panipat, age 92 Years on 7.8.2001.
- [24]. Interviewed with Zile Singh, Village Khalila, District Panipat, age 87 years on 7.8.2001.
- [25]. Interviewed with BholaNamberdar, Village Mathana, District, Kurukshetra, age 82 years on 10.9.2001.
- [26]. Interviewed with Chandan Singh, Village Bastara, District, Karnal, Age 95 on 6.5.2005.
- [27]. Interviewed with Jahangir Singh, Village Jani, District Karnal, Age 71 on 25.1.2008.