

Impact of human expansion on wetland areas



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Human exploitation damaged a lot of wetland areas. Expansion of settlements and agricultural lands affects wetland directly and spoils the natural form of particular wetlands. Bhindawas and Tal Chhapar also faces some challenges and altered by man with some natural degradation factors. The impacts of various factors are described here.

Loss of Habitat:

Dense forest is scarce in Tal Chhapar and Bhindawas wetland areas. Most of avifauna and wildlife needs dense forest as their habitat to secure food and shelter in these wetland areas. Dense forest provides safe habitation for Blackbucks and Nilgai's to hide themselves from predators. Blackbucks migrates in the Tal Chhapar wetland, in the day time for their feeding and during night to save themselves from foxes and other predators, mainly stray dogs who enters the sanctuary after chasing calves, older and other ill Blackbucks in the sanctuary. These animals migrate to eastern parts of the Tal Chhapar which is covered with dense woody vegetation than the western part of the wetland but these animals' moves towards western parts of the sanctuary or outside the sanctuary for their food as the core of the wetland is covered with sewan and other nutritious grasses. Fencing around the sanctuary protect these animals but these animals face difficult to find an entry after sunset and they falls prey to stray dogs outside the wetland area of some times killed by vehicular movement on the road which passes through the Tal Chhapar as well as its boundary also encroached by road made by Public Works Department of Rajasthan. In the western side the wildlife faces heavy dumpers and loaded trucks while central encompassing road dominated by buses, trucks and other fast moving vehicles while the

eastern side road is followed by jeeps, motorcycles with blowing pressure horns. Eradication of Juliflora plant in the western side also pose a threat to Blackbucks as they move outside the sanctuary area and forget the path after sunset. These animals chase by stray dogs from Surwas and Chadwas villages outside the wetland area. They cannot enter the sanctuary area due to fencing and dig walls around the Tal and constructed wall in the northern side of the wetland. Wild Boer also face the similar situation, these animals feels safe in grassy area but they cannot stay at a safe point as Blackbuck moves freely in this area. Wild Boer avoids thick woody area as they make their habitat in the tall grassland in the core area. Spiny tailed lizards live in the open patches of the eastern side area of wetland close to Devani village. Spiny tailed lizards also eaten by Monitor lizards and Cobra snakes. Reptiles are killed by vehicular movement as they move mainly during night towards eastern side for their food. Spiny tailed lizard's falls prey to foxes also due to open patches in the eastern side of the wetland. Many migratory birds come here during winter for their breeding season. This avifauna resides in colonies mainly in the extremes of western side or open forest area outside the sanctuary area.

The wild animals exhibit phenomenon of local migration within the sanctuary and to neighboring areas. The migration is mostly for water, but some times animals migrate for food also. During summer the wildlife migrates and confine near the water holes. The carnivores migrate out., side / the sanctuary area, during night. Few migratory birds also visit the area and leave it again in late February. Migration of exotic fauna is regular phenomena in the sanctuary. Most of bird and animal species always like

dense forest for their habitat for much availability of food and safety point of view. Due to lack of dense forest there is very less plant and animal species founding the sanctuary.

1. Various type of habitat

There are basically four types of the habitat in the sanctuary. On the basis of topographical considerations and it has been classified as under

(a) Soil habitat

(b) Grassland habitat

(c) Aquatic habitat

(d) Rocky habitat

(e) Other habitat

(a) Soil Habitat

Bhindawas wetland is part of Indo- gangetic plain under South- West Haryana Sandy areas in Jhajjar district of Haryana. Soil habitat lies on outer side of main lake boundary where water could not reach even in the monsson season. Soil habitat area is an open space, used by Nilgai, Chinkaras, reptiles, small insects, rats and other creatures who lives beneath the soil cover.

Tal Chhapar sanctuary falls in Indian thar desert where wind erosion is common feature, like other deserts, high velocity of wind shift the sand dunes. The sand dunes are also found in and around the sanctuary. A long <https://assignbuster.com/impact-of-human-expansion-on-wetland-areas/>

range of dunes having near southern periphery of the sanctuary. The sandy habitat is liked by chinkara, Reptiles, lizards, Rodents and many beetles of desert.

(b) Grassland habitat

Unlike other desert of the world, Indian Thar Desert bears comparatively high density of flora and fauna. Grasses like Sevan, Dhaman, dhob, mothia etc. are found on plane area of the sanctuary. The Grassy habitat is suitable for black buck the black buck takes grasses like Lana, luni and lender shoots of ber, ker etc.

The habitat also helps wildlife by providing them food, shelter and place for reproduction.

Saline soils of Tal Chhappar area reduce chances of the development of trees and sevan grasses but places having fresh sand deposition are occupied by grass species. The patches with high salinity remain barren. Plant of prosopis julie flora are gradually coming of the saline and gravel soil, if Julie flora plant are not controlled properly then the whole area may be occupied gradually by these plants, which will make the habitat unsuitable for other species to grow there.

Grassland habitat in Bhindawas wetland dominated by small creatures only. These are actually water fens and weeds which prohibits other wildlives to make their shelter. Rodents, ants and other beetles survive in these areas.

(c) Aquatic habitat

Bhindawas wetland is typical aquatic habitat for many water birds and water snakes, fishes, tortoise etc. Main lake provides a strong and safe habitat for all aquatic life. Large water bodies are preferred by fishes and water snakes. It protects these creatures from heat and dust at the time of "Loo" and from illegal hunters too. Water maintains an optimum water temperature which is crucial for aquatic life.

In and around the sanctuary there are many small nadies and salt mines. The saline water remains in these nadies for a longer time. These scattered salt lakes form aquatic habitat, which attracts many species of animals and birds. Presently there are four Talabs and two Talabs are located in the sanctuary and another two are located in the periphery of the sanctuary. The degree of water salinity varies from water hole to water hole. Out of these four water holes, the Nadi situated on the junction of Bikaner-Chhapar and Chhapar-Sujangarh roads, is having comparatively less domestic animal of surrounding villages.

As mentioned earlier the Tal Chhapar sanctuary is located in a depressed zone with a poor drainage system. Due to bad drainage pattern water gets accumulated, in the depression and that water lasts for a considerable long period. Among common aquatic fauna found in and around these lake are cattle Ergot, small ergot, Pond heron, black winged stilt, King fisher, common crane etc.

(d) Rocky habitat

There is no rocky habitat in Bhindawas wetland. It is a plain saucer shaped depression filled with water and dominated by weeds and tress.

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Gravels exposed rocks; small hillocks and magra land are found in the western desert. The hillocks with low height are three i. e. towards gopalpur Chadwas villages. This habitat with inter spread grassy patches is suitable for hares, partridges and carnivorous species like fox, jackal etc.

(e)Other habitat

Tal Chhapar sanctuary is a species specific habitat for some mammals. The sanctuary is a home for the black buck. Well stocked population of black buck, in a compacted area of 719 hectare, shows that the habitat is suitable for this species. Though other wild animals are also found in the area but their population is still very less and the population trend is not towards increase.

Open patches in water bodies are perfect place for basking in the winter season and are used by avifauna for breeding, mainly migratory birds in Bhindawas wetland.

Habitat Change:

There is consensus among intellegentia and even local pepole in considering habitat change and fragmentation of habitat as one of the major threatening factor for wildlife, bird and reptiles at the global scale. Habitat change causes by expansion of exotic species in water and over the land in Bhindawas.

Polluted water of drain no. 8 mixes with wetland water affects fish species too. Toxicity of water from drain no. 8 kills fishes near outlet of wetland, ultimately forest department does not forward fishing activity near the drain.

Expansion of water hyacinth and othe exotic weeds forbid birds to sit on open patches of land. Sedimentation by canal water reduces open areas

which are used by birds as breeding sites. Conversion of forest land into waterbodies destroys shelter of Nilgai and other animals in the wetland. Now these animals take refuge in *Prosopis juliflora* plants.

There is migration of blackbucks from western part of Tal Chhapar to eastern parts in the night as lack of thick forested patches in the western parts pose them to stray dogs in the night, for safety purposes these animals move to small thick areas dominated by large trees.

The large-scale effects of habitat alteration produced by oil-industry related pollution on the habitat use of four species of freshwater turtles (*Pelusios castaneus*, *Pelusios niger*, *Pelomedusa subrufa*, *Trionyx triunguis*) were studied in the River Niger Delta, southern Nigeria (West Africa) between 1996 and 2004. This study was conducted by Luca Luiselli, Godfrey C. Akani and E. Politano (2006).

Decrease in Carrying Capacity:

Carrying capacity of a wetland is a measure of the ecological, hydrological, biochemical processes and its ability to support entire ecosystem and biodiversity. Carrying capacity defines as support to ecosystem of a wetland without damaging productivity of the wetland and habitats within it.

Availability, requirement and production of resources to sustain its ecosystem on any wetland is a real determinant to describe carrying capacity of the wetland.

To assess carrying capacity, a long term study requires over any wetland but there are changes in land use pattern, species of avian fauna, numbers of

wildlife and sources of point based with non point sources of pollution also helps to determine carrying capacity of both wetlands.

Guangwei Huang and Masahiko Isobe (2012) developed a method to quantify the carrying capacity of a water body with regard to massive waterfowl was developed through the study of five wetlands that are used as the wintering ground by a large number of waterfowl in Japan. It takes into consideration water depth, retention time, and in-lake phosphorus concentration. For one of the sites, Sakata Lagoon, which is a registered Ramsar wetland in Japan, the assessment of its carrying capacity suggests that the number of waterfowl should be reduced by half to sustain the water quality of this wetland.

Available nutrients in water and soil of Bhindawas wetland indicate carrying capacity of the wetland. This wetland supports vegetation of different types but infestation by water hyacinth destroys other water plants which can not compete with exotic species to survive in the wetland. The situation presents that carrying capacity of wetland has been decreased. Numbers of migratory birds also less than Khaparwas sanctuary which is smaller than Bhindawas wetland also indicate carrying capacity of the research site.

Tal Chhappar is a small area, preserving its carrying capacity with limited available natural resources. Open lands has been converted into grassland and some tree patches to support blackbucks in the sanctuary area. Total counts of wildlife and other reptiles are constantly same during study period. Supportive system provided by forest staff like water availability during

drought period, purchase of fodder for minor or injured wildlife manages it carrying capacity more or less.

Impact on Wildlife:

The wildlife face a spread of disease particularly herbivores from outside livestock as these animals moves outside the sanctuary area for fresh and nutritious food like green leaves in kankars (lush green vegetation line to demarcate boundary between villages and major revenue fields). These Blackbuck mixes with domesticated livestock and get infected with disease which are not prone to their co- habited wildlife in the wetland area. Fencing with in wetland obstructed free movement og wildlife of Tal Chhapr. Mid way fencing pose threat to animals as they falls into dig walls or may struck into fenced wires of Forest department. The passing through road, connecting Bikaner with Sujangarh cuases severe loss to wildlife mainly reptiles as well as Blackbucks, Nilgai and Wild Boers.

Degradation of the Catchment Area:

Capacity of the wetland catchment areas to intercept, process and to store water is influenced by many factors including time and amount of precipitation, land use, vegetation, topographic relief, soil type, temperature and ground water connection. Catchment areas of Tal Chhapar wetland that includes Chhapar, Chadwas, Gopalpura, Rampura, Devani and Surwas villages, in the last ten years the open land has been converted into built up areas. Built up areas means constructions of petrol pumps, roads in the periphery of sanctuary, establishment of a stone quarrying and stone cutting small scale industry and mushrooming of road side dhabas on NH 65. All

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these activities degrades catchment areas of the wetland which depends on rainfall water and on rivulet channel from Gopalpura hills. But this water pollutes by salt plant which are situated in western parts of Tal Chhapar. Rajasthan government has issued NOC to a big stone quarrying industry in Chadwas village which may disturb ecosystem of the Tal areas.

Bhindawas is surrounded by 12 villages, mostly dominated by agricultural castes, those practices intensive cultivation that requires heavy fertilizers, pesticides, fungicides and water consuming put pressure of these pollutants in nearby areas of the lake. Due to leaching of water and salinisation of waterlogged areas outside the embankments mixing of residues of pesticides and urea is going on. All these practices degrades catchment areas as well as wetland areas and pressure on wetland ecosystem. Sometimes blackbucks and peopcocks go out of wetland for their food and consume pesticide infested crops and that cause their death.

Land Conversion:

Open land has been converted into built up areas in the catchment areas of Tal Chhapar. Main cause of this conversion is developmental activities in the area. Construction of road from Rampura to Surwas via Devani has done, land of Forest department was taken for this purpose, this land was under buffer zone area in the southern part of the Tal. This small land conversion for the road allows heavy trucks to carry mud quaries, stone from Gopalpura area and salt from the vicinity of sanctuary. These heavy trucks kill blackbucks while they comes from fields or goes at the time of road crossing. Snakes, lizard particularly spiny tailed which has medicinal as well as

ecological value smashed under loaded heavy vehicles on Bikaner-Sujangarh road and Rampura - Surwas road. Some grassland was taken by *Prosopis juliflora* plants but now these plants have been removed from those areas.

Bhindawas wetland does not face land conversion from its land area but with in wetland there is change in land use pattern which is also harmful. Forestland occupied by waterbodies and grassland while waterbodies converted into grassland. This type of land conversion directly affects migratory bird as it swallow small patches of land, a breeding and basking site.

Wetland Exploitation:

Wetlands in semi - arid or arid area are those ecozones which offer good ecological conditions with high productive potentials and divergent conditions to exploit. Since civilizations wetlands uses by man for their needs either in the form of food or clothes. Exploitation of wetlands passes through different stages from Early Neolithic period. Man uses wetlands from subsistence food gathering to exploitative axing of trees to make big ships. These wetlands are considered as excellent bases for exploitation from fishing to high end products in the international market. Nature and intensity of wetland exploitation depends on its location and richness in biodiversity. Apart from agricultural exploitation, early medieval wetlands may have provided important additional resources of fish, shellfish, and waterfowl, their abundance mainly dependent on the primary productivity (e. g.

Prummel 1983). In addition, the importance of salt production in coastal and estuarine areas is well attested. (e. g. Besteman 1974; Adshead 1992).

Tal Chhappar wetland was used by local people for grazing their small animals before its taken over by the Rajasthan government. After completion of fencing work, local people take other alternates for their fuelwood and grazing of small animals. Some people took Spiny tailed lizard from the sanctuary area for their valuable oil but forest department put an end on all this type activities. Bhindawas wetland was constructed after repetition of floods and construction of Jawahar Lal Nehru canal in Haryana. This wetland was notified as a protected forest area by Haryana government to store flood water oor excess water during Monsoon time. People exploitate Bhindawas wetland for grazing animals including cow, buffalos, sheep and goats. These people take fuelwood for their homes. Sometime farmers extract water for their crops. Bhindawas and Tal Chhappar wetland are International Bird Area (IBA) sited for bird watching, mainly migratory birds.

Hunting/ Poaching:

The primary association between hunters and wetland environments was clearly linked with hunting till Nineteenth century but it is still prevalent in developing countries. Some tribes in Indian states earn their livelihood from hunting in wetland areas. But Indian government banned hunting and other activities associated with it. But there are some tribes in Rajasthan state and few notorious communities are living near the wetland areas in Haryana. Tal Chhappar area is dominting by animal worshiping communities, so there is rare chance of hunting or poaching happens in Tal or any adjoining areas.

Bilochpura is a near by village to Bhindawas wetland. Some persons engaged in hunting but these people perform their hunting activity during night time only.