

Change and loss of habitat in Tal Chhapar wetland area of Rajasthan

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Abstract

There is hardly much dense forest in the Tal Chhapar wetland area. For the majority of avifauna and wildlife to find food and shelter in wetland environments, they require extensive forests as their habitat. Blackbucks, reptiles, birds, and other tiny creatures can hide from predators comfortably in dense forests. In order to feed, nest, hatch, and stay safe, animals and birds go from one shelter to another. Seasonal, diurnal, or forcible migration might occur as a result to predator threats. Anthropogenic activities are the cause of habitat modification and loss. The carrying capacity of the wetlands is strained by some man-made exploitative activities or natural disaster-like circumstances.

Keywords: Habitat, migration, predators, prosopis juliflora, fencing, carrying capacity

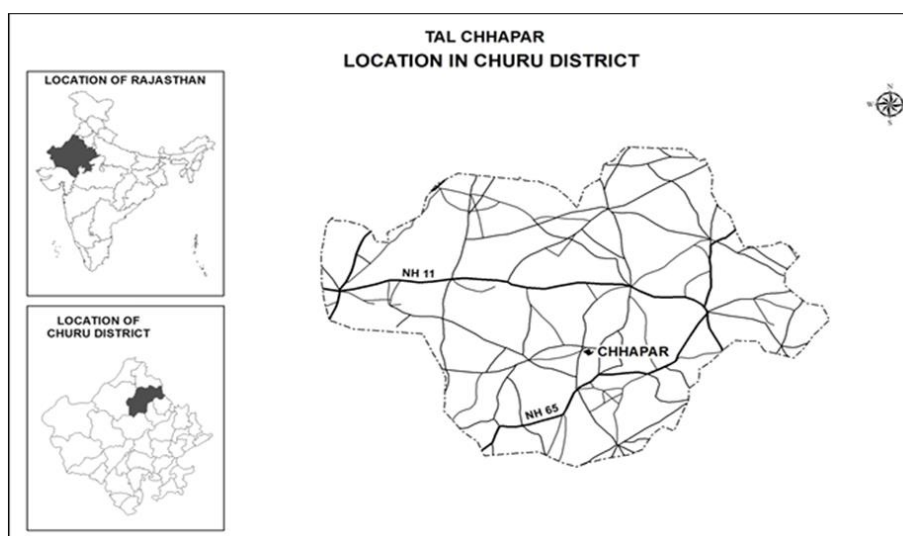
Introduction

Many wetland areas were harmed by human usage. The natural form of certain wetlands is ruined by the direct effects of agricultural land and settlement expansion. Along with some natural degradation elements, Tal Chhapar also has several obstacles and has been altered by humans. Anthropogenic elements that put additional strain on Tal Chhapar include mining, construction in catchment areas, tourism, grazing, and agriculture. Wildlife and avifauna in these wetlands find food and habitat in the densely forested area with open land sections in the water area. Wildlife, especially mammals and reptiles, die as a result of habitat loss brought on by invasive species, encroachment, and vehicle traffic near study sites ^[1].

Study Area

On the western edge of the sanctuary are a few small hillocks with exposed quartzite and slate rocks. The watershed area of the sanctuary is the area between the

hillocks and the sanctuary. Due to salt mining in the watershed, very little rainwater that falls on the hillocks makes it to the sanctuary, which is made up of hard pans and was once inundated by water during heavy rains. The sand dunes of the villages of Rampura, Devani, Surwas, and Chadwas hide the salty flat area known as Tal Chhapar. The settlement of Chhapar is located on the sanctuary's northern edge. The western portions of the Tal region are home to the Gopalpura Hills. The general slope of the Tal region is from west to east in the western portion and from south to north in the eastern portion. Sand dunes determine the slope. The study region is located in the Indian Thar Desert's dry zone. This arid zone is covered by Sujangarh tehsil, and the Tal Chhapar wetland is located within the main arid zone of the Thar Desert. The region experiences extremely unpredictable rainfall. Located in India's desert region, Tal Chhapar experiences year-round severe temperatures. The Indian plains' greatest and lowest temperatures were recorded here.



Objectives: Main objective of the research was to identify habitat types and loss of habitat for fauna in Tal Chhapar wetland that put pressure on carrying capacity of wetland.

Hypothesis: Anthropogenic activities are responsible for habitat loss and change in nature of habitat for fauna in the

wetland but forest official's dedication maintains positive status of Tal Chhapar wetland.

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

- 1 Soil habitat
- 2 Grassland habitat
- 3 Aquatic habitat
- 4 Rocky habitat
- 5 Other habitat

Soil Habitat

The Tal Chhappar Sanctuary is located in the Indian Thar Desert, which is prone to wind erosion. As in other deserts, the sand dunes are moved by strong winds. The sanctuary and its surroundings are also home to sand dunes, a vast array of dunes that border the sanctuary's southern edge. Chinkara, reptiles, lizards, rodents, and numerous desert beetles all like the sandy terrain. *Capparis decidua*, *Calotropis procera*, *Calligonum polygonoides*, *Acacia senegal*, *Prosopis cineraria*, *Aerva javanica*, *Aristida adscensionis*, and other psammophytic plants are the primary species that cover the stabilized dunes of the catchment areas [2].

Grassland Habitat

The Tal Chhappar area's saline soils hinder the growth of trees and sevan grasses, however grass species are found where fresh sand has been deposited. The high-salinity areas are still bare. *Prosopis juliflora* plants are slowly emerging from the gravel and salty soil. If these plants are not adequately managed, they may eventually take over the entire area, rendering the ecosystem unsuitable for the growth of other species [3]. The Indian Thar Desert has a relatively high density of plant and animals in contrast to other deserts across the world. The sanctuary's plain region is home to grasses including *Sevan*, *Dhaman*, *Dhob*, and *Mothia*, among others. Black bucks thrive in grassy environments. They eat grasses like *lana*, *luni*, and *lender* shoots of *ber*, *ker*, etc.

Aquatic Habitat

There are numerous salt mines and tiny rivulets in and around the sanctuary. These rivulets hold the salty water for a longer period of time. Numerous animal and bird species are drawn to the aquatic habitat created by these sporadic salt lakes [4]. There are currently four ponds total, two of which are inside the sanctuary and two more of which are outside. Different water holes have different salinity levels. Of these four water holes, the *Nadi*, which is located at the intersection of the Chhappar-Sujangarh and Bikaner-Chhappar highways, has a somewhat lower number of domestic animals than the other settlements. The Tal Chhappar sanctuary has a weak drainage system and is situated in a depressed area, as was previously described. Water accumulates in the depression as a result of poor drainage patterns, and this water persists for a very long time. Cattle, *ergots*, small *ergots*, pond herons, black-winged stilts, kingfishers, common cranes, and others are among the common aquatic wildlife found in and around these lakes. The regional and temporal variance of precipitation determines the water availability over time [5].

Rocky Habitat

The western desert is characterized by magra land, little hillocks, and gravelly exposed rocks. There are three low-lying hillocks, which are located near the villages of *Gopalpura* and *Chandwas*. *Hares*, *partridges*, and

carnivorous animals like *foxes* and *jackals* can all thrive in this ecosystem, which features interspread grassy patches [6].

Other Habitat

For certain mammals, Tal Chhappar Sanctuary provides a habitat unique to their species. The black buck lives in the refuge. A healthy black buck population inside a 719-hectare condensed area indicates that the habitat is appropriate for this species. Even if there are other wild animals in the region, their numbers are still quite small, and they are not on the rise.

Habitat Change and Loss of Habitat

It is widely accepted among intelligentsia and even local people that habitat fragmentation and change pose a serious threat to mammals, birds, and reptiles throughout the world [7]. Blackbucks migrate from the western to the eastern parts of Tal Chhappar at night because the western parts of the area lack dense forested patches, which makes them vulnerable to stray dogs. For safety, these animals go to small, dense areas with lots of trees. Because Tal Chhappar is a small area, its carrying capacity is maintained despite the scarcity of natural resources. In order to support blackbucks in the sanctuary region, open fields have been transformed into grassland and a few tree patches [8]. Throughout the study period, the overall numbers of animals and other reptiles remain consistent. Its carrying capacity is roughly managed by the support systems offered by forest employees, such as the provision of water during dry spells and the buying of feed for young or injured wildlife [9].

Since these animals travel outside the sanctuary area in search of fresh and nourishing food, such as green leaves in *kankars* (a line of lush vegetation that marks the boundary between settlements and important revenue fields), the wildlife is at risk of contracting diseases from outside livestock, especially herbivores. In the wetland area, these Blackbucks come into contact with domesticated animals and contract diseases that are not common among their coexisting fauna. Wildlife in Tal Chhappar was unable to travel freely due to fencing inside the marsh. Animals are at risk from midway fencing because they can fall into the excavated walls or run into the Forest Department's barbed wires. Wildlife, particularly reptiles, Blackbucks, Nilgai, and wild boers, are severely impacted by the passing through road that connects Bikaner and Sujangarh. Numerous factors, such as precipitation duration and volume, land use, vegetation, topographic relief, soil type, temperature, and ground water connection, affect the wetland catchment areas' ability to intercept, process, and store water [10]. The open land in the Tal Chhappar wetland's catchment areas—which include the villages of Chhappar, Chadwas, Gopalpura, Rampura, Devani, and Surwas—has been developed over the past ten years. Built-up areas include the installation of gas pumps, roads around the sanctuary's perimeter, a small-scale stone quarrying and cutting business, and an abundance of roadside *dhabas* along NH 65. All of these operations harm the wetland's catchment areas, which rely on rivulet channels from the Gopalpura hills and rainfall water. However, salt plants, which are found in Tal Chhappar's western regions, pollute this water. A large stone quarrying operation in Chadwas village has received a NOC from the Rajasthani

government, which could disrupt the Tal regions' ecosystem.

In Tal Chhappar's catchment areas, open ground has been transformed into populated areas. Developmental activities in the area are the primary source of this conversion. The Forest Department's land, which was located in the southern portion of the Tal's buffer zone, was taken for the road's construction from Rampura to Surwas via Devani. Heavy trucks are able to transport salt from the area around the sanctuary, stone from the Gopalpura region, and mud quarries thanks to this minor land conversion for the route. When blackbucks cross the road or come from fields, these large trucks kill them. On the Bikaner-Sujangarh and Rampura-Surwas roads, snakes and lizards, especially spiny-tailed ones with ecological and medicinal importance, were crushed beneath heavy, laden automobiles ^[11]. *Prosopis juliflora* plants occupied several grasslands, but they have since been eradicated from those regions. Animals in the desert have evolved strategies to stay cool and conserve water. Many predatory species, such as Indian Foxes, Desert Foxes, Desert Cats, and Jungle Cats, go into the surrounding fields of Devani, Charwas, Surwas, and Gopalpura hills for hunting during the night after leaving wetland and catchment areas. These predators occasionally kill Blackbuck calves when they come across them at night. In order to protect themselves from predators, groups of Blackbuck (*Antelope cervicapra*), Indian Gazelle (*Gazella bennettii*), and Nilgai (*Boselaphus tragocamelus*) migrate from all over to the forested eastern portions of the marsh. The eastern and southern regions of the marsh are home to a colony of spiny-tailed lizards. The Indian Spiny-tailed Foxes, raptors, crows, and snakes all preyed on lizards ^[12]. In the wetland area, wild boers only move throughout the day and hardly ever cross the Tal's border. There are hardly any trees in the Tal Chhappar sanctuary area. There are sporadic areas of grasses with extremely low height and density. As browsers, black bucks and chinkaras graze on tiny grasses as well as shrubs like ker, ber, and lana. Black bucks feed during the day, but during the sweltering summer months, they feed in the morning and evening. They experience severe water scarcity in the summer. Both within the sanctuary and to nearby places, the wild animals display the phenomenon of local migration. Animals migrate primarily for water, but occasionally they also move for food. The animals congregate close to the water holes and migrate during the summer. At night, the carnivores move outside the sanctuary area. Additionally, not many migratory birds stop by the region before departing again in late February. In the refuge, exotic species migration is a common occurrence ^[13].

Conclusion

The residents used the Tal Chhappar marsh to graze their small animals prior to the Rajasthani government assuming control of it. The residents discover alternate sources of firewood and small animal grazing when the fencing project is finished. Following the theft of spiny-tailed lizards from the sanctuary area for their valuable oil, the forest authorities halted all such activity.

Hunting and poaching are rare in Tal Chhappar and the neighboring areas because the majority of the population is animal worshippers. Illegal grazing of domesticated livestock with native animals and wetlands birds can result in diseases and other problems.

The forest department authorities' efforts have allowed Tal Chhappar to continue operating and carrying its capacity.

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