

Comparative Study on Biodiversity of Desert National Park Sanctuary and Tal Chhappar Sanctuary

Sh. Praveen Kumar Chandel

Assistant Professor in Botany, Government College, Barmer, Rajasthan, India

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Annotation: Desert National Park is a national park situated in the Indian state of Rajasthan, near the towns of Jaisalmer and Barmer. This is one of the largest national parks, covering an area of 3162 km². The Desert National Park is an excellent example of the ecosystem of the Thar Desert. Sand dunes form around 44% of the Park. The major landform consists of craggy rocks and compact salt lake bottoms, intermedial areas and fixed dunes. The park was gazetted in 1980.

Despite a fragile ecosystem, there is an abundance of birdlife. The region is a haven for migratory and resident birds of the desert. Many eagles, harriers, falcons, buzzards, kestrel and vultures are spotted here. Short-toed eagles, tawny eagles, spotted eagles, laggar falcons and kestrels are the most common among these. Sand grouse are spotted near small ponds or lakes. The endangered great Indian bustard is a magnificent bird found in relatively fair numbers. It migrates locally in different seasons. The most suitable time to visit the area is between November and January. The Desert National Park has a collection of fossils of animals and plants which are 180 million years old. Some fossils of dinosaurs which are 60 million years old have been found in the area

Tal Chhappar Sanctuary is a sanctuary located in the Churu district of Northwestern Rajasthan, in the Shekhawati region of India. It is known for blackbucks and is also home to a variety of birds. The sanctuary is 210 km from Jaipur on the fringe of the Great Indian Desert and situated on road from Ratangarh to Sujangarh. The Tal Chhappar sanctuary lies in the Sujangarh Tehsil of Churu District. It lies on the Nokha-Sujangarh state highway and is situated at a distance of 85 km from Churu and about 132 km from Bikaner. The nearest railway station is Chappar which lies on Degana-Churu-Rewari line of North Western Railways. The nearest airport is Jaipur which is 215 km from Chappar.

Keywords: tal chhappar, desert, sanctuary, national park, Rajasthan, Churu, ecosystem, blackbucks.

Introduction

Tal Chhappar Sanctuary is named after Chhappar village which is located at 27°-50' North and 74°-25' East. It is a flat saline depression locally known as a "tal" that has a unique ecosystem in the heart of the Thar Desert. Perched at a height of 302 meters (990 feet) above sea level. Tal Chhappar Sanctuary, with almost flat tract and interspersed shallow low-lying areas, has open grassland with scattered Acacia and Prosopis trees which give it an appearance of a typical savanna. The word "tal" means pond or 'talab' in Hindi. The rain water flows through shallow low-lying areas and collect in the small seasonal water ponds.[1]

The geology of the zone is obscured by the wind blown over-burden. Some small hillocks and exposed rocks of slate and quartzite are found in the western side of the sanctuary. The area between hillocks and the sanctuary constitutes the watershed area of the sanctuary. The whole sanctuary used to be flooded by water during the heavy rains but with salt mining going on in the watershed, hardly any rain falling on the hillocks reaches the sanctuary. Near by villages are Jogalia, Jaitasar, Bidasar. The forest of this region falls under major group "Tropical Forest" as per classifications of Indian forests by Champion & Seth. The forest of sanctuary area again falls under the group "Topical Thorn Forest" and sub group 6B/C "Desert Thorn Forests".

The sanctuary area is mostly covered by grasses with a very few trees. It lies on the passageway of many migratory birds such as harriers. These birds pass through this area during September. Birds commonly seen in the sanctuary are harriers, eastern imperial eagle, tawny eagle, short-toed eagle, sparrow, and little green bee-eaters, black ibis and demoiselle cranes, which stay till March. Skylarks, crested larks, ring doves, and brown doves are seen throughout the year.^[3] Desert fox and Wildcat can also be spotted along with typical avifauna such as partridge and sand grouse.

Tal Chappar Sanctuary comes alive with the chirping of various migratory birds including Montagu's harrier, marsh harrier, pale harrier, imperial eagle, tawny eagle, short toed eagle, sparrow hawk, skylark, crested lark, ring dove, brown dove, blue jay, southern grey shrike, Indian spotted creeper, green bee eaters, black ibis and demoiselle cranes.

Desert National Park covers an area of 3162 km² of which 1900 km² is in Jaisalmer district and remaining 1262 km² is in Barmer district of Rajasthan State. The park was gazetted in 1980. The park mostly consists of sand dunes (44%) but also has pediments, pavements, and structural plains. Desert National Park also has fossils from the Jurassic Period. The Chinkara or Indian Gazelle (*Gazella bennettii*) is a common antelope of this region. The national park's other notable inhabitants are the desert fox, wolf and desert cat. Birdlife in this sandy habitat is vivid and spectacular. Birds such as sandgrouse, partridges, bee-eaters, larks, and shrikes are commonly seen. In the winter, the birdlife is augmented by species such as the demoiselle crane and MacQueen's bustard.^[2]

Perhaps the greatest attraction of the park is a bird called the great Indian bustard, a critically endangered species found only in India. Desert National Park is one of the last sites in which this species can be found in good numbers. As such, the species draws in thousands of birdwatchers from all over the world. In addition to the great Indian bustard, the park supports a variety of other birds of interest to birdwatchers and conservationists alike.

The Thar Desert, often called an 'ocean of sand', covers a large area of western Rajasthan. The fragile ecosystem of the Thar supports unique and varied wildlife. In this vast ocean of sands lies the famous Desert National Park, which provides an excellent example of the ecosystem of the Thar Desert and its diverse wildlife adventure.

The vegetation is sparse, and patches of sewan grass and aak shrub (*Calotropis*) can be seen. The landscape includes craggy rocks and compact salt lake bottoms, as well as intermediate areas and both fixed and shifting dunes. Around 20 percent of the vast expanse is covered with sand dunes.

Mammals: desert fox, Bengal fox, desert cat, wolf, hedgehog, chinkara.^[3]

Reptiles: spiny-tailed lizard, monitor lizard, saw-scaled viper, Russell's viper, common krait.

Avifauna: sandgrouse, Indian bustard, partridges, bee-eaters, larks and shrikes are year-round residents, while demoiselle crane and houbara bustard arrive in winter. Raptors include tawny and steppe eagles, long-legged and honey buzzards, and falcons

Habitats that are found in the park include open grassland, thorny bushes, and dunes. 168 plant species have been recorded in the park. Some species of trees that inhabit the park include *Tecomella undulata*, *Moringa concanensis*, *Helitropium rariflorum*, and *Ammannia desertorum*.

Indian bustard: The endangered Indian bustard is the major attraction of Desert National Park. Brown and white in colour, the bustard is a metre tall and has long bare legs and a long neck. One can spot this tall and graceful ground-dwelling bird near the Sudashri waterhole.

Sam Sand Dunes: These dunes are located near the Thar Desert.

Gadsisar Lake: This lake is among the tourist places in Jaisalmer, Rajasthan. Thousands of migratory birds come to this place every year.

Discussion

The Thar Desert in north-western India is a unique and the only habitat of its type in the Indian subcontinent. The Aravalli hills mark the eastern-most boundary limit of the Thar desert while the western limit is defined by the fertile plains of the Indus. The Great Rann of Kutch forms a sharp boundary in the south while its northern limits are formed by the riparian sub-Himalayan plains. The Desert National Park (DNP) covers an area of 3162 km² of which 1900 km² is in Jaisalmer district and remaining 1262 km² is in Barmer district of Rajasthan State. The area falls in the extreme hot and arid region of very low rainfall zone (<100mm) of the country. DNP was gazetted in the year 1980.[4]

Across the landscape of Jaisalmer, altitudes are low, ranging from 210-300m (320m) above mean sea level. Kar (1989) classified the landforms in Jaisalmer into eleven terrain categories; the predominant forms being sand dunes (44.8% of the area), and flat buried pediments/pavements/structural plains (28.4%). More ecologically relevant is the classification of natural desert habitats into sandy, gravelly, and rocky.

Sandy areas dominate the western parts of Jaisalmer district, while gravelly and rocky areas are scattered throughout central, southern and eastern areas. The DNP is barren with several sand dunes and a few hills in the north-western region. The Park forms a vast sandy and undulating terrain. From Khuri to Sam, the topography is gravel, rocky with a few isolated ridges. Interdune (caused by wind) and sandy plains are other topographic features.

The vegetation of major part of the arid region of the Thar falls under thorn forest type (Champion and Seth 1968). Khejri *Prosopis cineraria* is commonly found, which is revered and protected by the local communities specially the 'Bishnois'. The vegetation of DNP is quite sparse with open grassland, thorny bushes, plantation and dunes as the broad habitat types. One-sixty eight plant species belonging to 48 families have been reported from this area (Pandey et al. 1985). Tree species viz. *Commiphora wightii*, *Ammannia desertorum*, *Acacia spp.*, *Dipcadi erythraem*, *Enneatogon*, *Ephedra foliata*, *Glossonema varians*, *Helitropium rariflorum*, *Limeum indicum*, *Tecomella undulata brachystachyus* *Moringa concanensis*, *Rhynchosia schimpari*, *Seddera latifolia*, *Sesuvium sesuvioides*, *Tephrosia falciformis*, *Tribulus rajasthanensis* and *Ziziphus truncate* provide sustenance to the desert fauna.

The biota of Thar has both mesic and desert elements owing to location of the Thar in the Saharo-Tharian Basin. 69% of herpetofauna and 54% of mammalian fauna represent the Sahraian affiliation. Sixty species of mammals, 8 species of amphibians, 51 species of reptile are known from the Thar. The endemic reptile species of the Thar Desert are Laungwala Toad-headed Agama *Bufo laungwalansis*, Sindh Awl-headed Snake *Lytrochilus paradoxus* are also found in DNP. Many more endemic and endangered mammal, bird and reptile species are found in DNP. Fourteen species of lizards and 7 species of snakes have been recorded from this area. Records of important reptile species such as Indian Spiny-tailed Lizard *Uromastyx hardwickii* Dwarf Gecko *Tropicolotes persicus euphorbiacola*, Persian Gecko *Hemidactylus persicus*, Desert Monitor *Varanus griseus* and Saw-scaled Viper *Echis carinatus sochureki* have been established based on recent studies. More than 100 bird species have been listed from DNP including a good population of the Great Indian Bustard (locally called Godawan) and is a home for migrant Houbara Bustard. The important mammal species of the area includes Chinkara *Gazella bennetti*, Desert Fox *Vulpes vulpes*, Indian Fox *Vulpes bengalensis*, Desert Cat *Felis silvestris*, Hairy-footed Gerbil *Gerbilus gleadowi*, Desert hare *Lepus nigricollis dayanus* and Long-eared hedgehog *Hemichinus auritus*. [5]

The Thar desert is the most thickly populated desert in the world with an average density of 83 persons/km² (compared to 7km² of other deserts). However, the human population within the DNP is low (4-5 persons per km²). There are 73 villages and also settlements or Dhanis existing within the Park. These communities have

inhabited this area for hundreds of years and with their rich culture and tradition they are an integral part of this ecosystem.

The Thar desert though one of the smallest deserts in the world it harbours a wide array of flora and faunal species. It is only place where Rajasthan State Bird (Great Indian Bustard), State animal (Chinkara) and State tree (Khejri) and State flower (Rohida) are found naturally. Thar desert has representatives of Palaearctic, Oriental and Saharan elements and is an outstanding example of geological history representing the different stages of evolution. It also has fossil evidences dating back to the Jurassic Period (180 mya) indicating hot and humid climate characterized by dense forests. The fossilized remains of these 180 million-year-old forests are preserved in Wood Fossil Park at Akal, located 17 km from Jaisalmer, in the outskirts and under the jurisdiction of the Desert National Park.

The DNP is the most important site for the long-term survival of the Globally Threatened Great Indian Bustard and other endemic fauna and flora. Other birds of significance include the endangered Oriental White-backed vulture *Gyps bengalensis* and Long-billed *Gyps indicus*, Stoliczka's Bushchat *Saxicola macrorhyncha*, Green Munia *Amandava formosa* MacQueen's or Houbara Bustard *Chlamydotis maqueeni*. Eleven bird species representative of Biome-13 have been identified by BirdLife International. The Thar desert is rich in herpetofauna, being the home of 11% of the 456 reptile species found in India. The prominent among them are Toad-headed Agama, Sindh Awl-headed Snake, Indian Spiny-tailed Lizard, Dwarf Gecko, Persian Gecko, Desert Monitor and Saw-scaled Viper.

Criteria (vii): DNP is spectacular representative of the desert ecosystem with exceptional beauty with endless expanse of sand, sand dunes, broken rock formations and an interesting array of unique flora and fauna.

Criteria (viii): The Wood Fossil Park at Akal has significant fossil evidences dating back to the Jurassic period.[6]

Criteria (x): The fauna of the Thar Desert includes species with palearctic, northwestern and oriental affinities. The endemic species of the Thar Desert are the Hairy-footed Gerbil *Gerbillus gleadowi*; the reptiles *Bufo laungwalansis* (Laungwala Toad-headed Agama), *Lytorhynchus paradoxus* (Sindh Awl-headed Snake); and Stoliczka's Bushchat *Saxicola macrorhyncha*. A viable population of the threatened Great Indian Bustard is found in DNP.

Based on an initiative of the Government of India to protect an area representative of the desert bio-geographic zone, the Desert National Park was demarcated and notified in the year 1980. The DNP represents exceptionally beautiful landscape, diverse flora and fauna representative of desert ecosystem, low human population, traditional land-use and compact stretch of 3162 km² of the Thar desert. Its values are well protected because of its National Park status. The Thar desert is more recent when compared to other deserts of the world. The DNP falls under zone 3 (Indian Desert) and is the only representative of this biogeographic zone, within India. DNP has its unique and diverse flora and fauna including many rare and endangered species. Additionally, the DNP includes sites that signify the evolutionary history of this landscape. Therefore, in comparison with other deserts ecosystems of the world, DNP is an important site with its own distinctive cultural and natural heritage.

Located 85 km from Churu in Shekhawati District, Tal Chhappar Sanctuary is known as the home of blackbuck and a variety of birds in Rajasthan. The sanctuary is flanked by the Great India Desert, Thar and boasts a unique ecosystem and is an important birdwatching destination in India It has tall grasses and is dotted with numerous small ponds where the rain water accumulates.

Tal Chhappar Sanctuary is one of the top halting places for migratory birds such as harriers. The migratory birds pass through Tal Chhappar Sanctuary during September. The commonly seen migratory birds in the sanctuary are harriers, eastern imperial eagle, tawny eagle, short-toed eagle, sparrow, and little green bee-eaters, black ibis and

demoiselle cranes, whereas skylarks, crested larks, ring doves, and brown doves are seen round the year. Apart from birds, desert fox and desert cat can be spotted in the sanctuary.[7]

Tal Chhapar Wildlife Sanctuary is situated near Chhapar town of Churu district of Rajasthan. Churu is located in the Thar Desert and part of the famous Shekhawati region. Tal Chhapar was given the status of a sanctuary on May 11, 1966.

Details about Tal Chhapar Wildlife Sanctuary

Tal Chhapar Wildlife Sanctuary is situated near Chhapar town of Churu district of Rajasthan. Churu is located in the Thar Desert and part of the famous Shekhawati region.

Tal Chhapar was given the status of a sanctuary on May 11, 1966. Tal Chhapar was a hunting reserve of the erstwhile royal family of Bikaner.

The Tal Chhapar Sanctuary is situated on the border of the Great Indian Thar Desert. Tal Chhapar is a distinctive shelter of the most graceful Antelope seen in India, “the Blackbuck”.

This Sanctuary has nearly flat territory and combined thin low lying region this has got open and wide grasslands with spread Acacia and Prosopis plants that offer it a look of a characteristic Savanna.

The “Tal” word is Rajasthani word means plane land. The water during the rain goes through thin little lying regions and gets in the tiny seasonal ponds of water.

Tal Chhapar is an ideal place to see Blackbucks which are more than a thousand in number here. It is a good place to see the desert animals and reptile species.

Approximately 122 species of both migratory and resident birds reside here. The migratory birds come from Central Asia and Europe.

The other usually spotted birds in Tal Chhapar are Harriers, Eastern Imperial Eagle, Pale Harrier, Marsh Harrier, Short-toed Eagle, Tawny Eagles, Sparrow Hawks, Crested Larks, Demoiselle Cranes, Little Green Bee-Eaters, Skylarks, Green Bee-eaters, Brown Doves and Black Ibis.

Tal Chhapar Sanctuary has become one of the must-visit destinations for the bird lovers, who visit the sanctuary in the winter in large numbers.

The entire Shekhawati region is famous for its painted Havelis. The towns of Mandawa, Churu, Fatehpur, and Ratangarh, etc are close to the sanctuary to see the beautiful murals and frescos. Also, Shekhawati region has got ancient step wells, cenotaphs, and forts.[8]

Results and Conclusions

Tal Chhapar, located in the Churu district of Rajasthan, was established in 1966. Finding its base in the fringe of Thar Desert, this spot is a refuge of unique antelope, popularly known as blackbuck. Though it was always one of the popular sanctuaries in the country, it received immense popularity after Salman Khan’s blackbuck case. In fact, even those who never put this sanctuary in their travel bucket list, are now infused with curiosity to visit this region and catch a sight of blackbucks.

Though small in size, this sanctuary boasts of rich biodiversity. Once here, you get to spot several animals, such as jungle cat, desert cat, chinkara and blackbuck. Also, described as being on the pathway of migratory birds, if you plan your trip to this place aptly, you will enjoy your visit along with the company of birds. Chhapar is a quaint village located in the Churu district of Rajasthan. Even with a known lack of rainfall, the sanctuary has protected

grasslands though. This place also once used to serve as the hunting ground of the Maharaja of Bikaner; the palace in which the maharaja used to stay, currently serves as a school.[9]

Tal Chappar Sanctuary established in this region is located at a distance of around 350 km from Delhi and 200 km from Jaipur, further making it an option for a refreshing quick getaway. Though throughout the routes, sand dunes will be accompanying you, the moment you enter the sanctuary, the scenery goes for a flip. It seems like entering a canvas as your path leads to a beautiful flat grassland.

Rich biodiversity is one of the strongholds of this sanctuary. Not just the migratory birds and blackbucks, the entire scenery inside the sanctuary will overwhelm you for sure. One can reach this sanctuary easily via road or train from Delhi. Because of its location, reaching this spot will not be a huge issue. Further, having Delhi and Jaipur in closer proximity, Tal Chhappar Sanctuary is well-connected to all major cities via flight as well as trains. The best time to plan a trip to this sanctuary is from November to February. The climate here actually reaches extreme in all summer and winter seasons. On May and June, this part experiences extremely hot weather that pushes most of the animals to their dens; so not a good time to visit.

From November to February, however, the temperature drops to as low as 5 degree Celsius, whereas from mid-December to mid-January, the fogs will clear your way only post 9 AM. However, as compared to extremely hot weather, this period is a good time to visit this place.

Desert National Park is different, and therefore fascinating, because it is an example of the ecosystem of the Thar Desert. Unlike other popular wildlife sanctuaries & national parks of Rajasthan which are covered with dense forests & lushness, the landscape here is dotted with sand dunes which make their appearance at regular intervals, craggy rocks & scant vegetation. Taking a wildlife safari in this famous national park in Rajasthan lets you observe a variety of interesting animals like Black Buck, Desert Fox & Chinkara. You can spot a variety of reptiles too like Monitor Lizard, Russell's Viper & Common Krait.[10]

Bird lovers will especially enjoy a visit to Desert National Park, as it is home to a variety of bird species. The most famous among these, the Great Indian Bustard, a critically endangered bird species found only in India, can be spotted here.

Other birds which inhabit the park are Eastern Imperial Eagle, Saker Falcon, Sandgrouse, Partridges & Bee Eaters, to name a few of them. November to March is the best time to visit the Desert National Park.[11]

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