Rajasthan (23° 4' - 30° 11' North and 69° 29' - 78° 17' East) with an area of 34.22 million ha, which constitutes 10.41 % of the land area of the country, is one of the largest states of India.

Rajasthan, which literally means, “abode of kings” is a vibrant, exotic State where tradition and royal glory meet in a riot of colours against the vast backdrop of sand and desert. The panoramic view of the State is mesmerizing, with its lofty hills of the Aravallis and the golden sand dunes of the Great Indian Desert. The land is endowed with forts, magnificent palaces, havelis, rich culture and heritage, beauty and natural resources. This princely State is one of the most exotic locales for tourists the worldover. It is so rich in history that every village has its own tales of valour and sacrifice whether it is for the sake of the nation or for conservation. It is the land where on the one side, the saga of Maharana Pratap is known for his sacrifice for his kingdom, and on the other the Bishnois (community of northwestern Rajasthan) are known for their sacrifice for the great cause of conservation. History indicates that the land was once full of wild fauna. The wetlands have a large number of waterbirds. The green forests of the Aravallis and the eastern half of the State were full of big cats and game birds which is evident from the old photographs of Maharajas and the old paintings of royals who went on shikar (hunting) frequently.

The State can be divided into four major physiographic regions, (a) western desert with barren hills, level, rocky plains and sandy plains, (b) the Aravalli hills: running southwest to northeast starting from Gujarat and ending in Delhi, (c) the eastern plains with rich alluvial soil and (d) the southeastern plateau. The major rivers of the State are the Mahi, the Chambal and the Banas.

**Western Desert:** The Thar or Indian Desert is one of the smallest deserts in the world, but most thickly populated. The Thar desert is located at the crossing where the Palaearctic, Oriental and Saharan elements of biodiversity are found (Baqri and Kankane 2002). The Thar is also known for its great civilization in Ghaggar and the Indus river basin. It occupies about 9% of India’s geographical area and covers 208,751 sq. km in Rajasthan alone (Rahmani 1997a). The desert extends to the Ferozepur, Sangrur and Bhatinda districts of Punjab in the north and to the Mahendragarh and Hissar districts of Haryana in the northeast. The major part of the Thar is occupied either by dry open grassland or by grassland interspersed with trees and thorny bushes (Gupta 1975). The main grass type of the Thar is *Dichanthium-Lastiurus-Cenchrus* (Dabadghao and Shankarnarayan 1973). Bhandari in 1990 wrote: “in general the vegetation in the arid region is sparse. Plants with only xerophytic adaptations are able to establish themselves. The bulk of the vegetation consists of stunted, thorny or prickly shrubs and perennial herbs capable of drought resistance.” Nearly 58% of the Thar is covered with sand dunes and interdunal valleys. Many shifting dunes which have stabilized are covered with *Capparis decidua*, *Calotropis procera*, *Calligonum polygonoides*, *Acacia senegal*, *Prosopis cineraria*, *Aerva javanica*, *Aristida adscensionis* and other psammophytic species (Shetty 1994).
There are several saline depressions in the Thar with characteristic halophytic vegetation. The major grasses and sedges are *Eleusine compressa*, *Eragrostis ciliaris* and *Dactyloctenium aegyptium*. The most famous saline depressions are Talchhapar, Didwana, Pachpadra, Lunkaransar and Kuchaman.

The mammalian fauna of the Thar Desert is diverse with nearly 68 species, which constitute about 18% of the total Indian mammal fauna. Two major carnivores, the Asiatic Lion *Panthera leo persica* and the Asiatic Cheetah *Acinonyx jubatus venaticus* have become extinct during the last 100 years, and the Wild Ass *Equus hemionus khur* has become extinct in Rajasthan during the last four decades but has been recently sighted (Sangha 2003). Except for Chinkara *Gazella bennetti* and in some areas Blackbuck *Antilope cervicapra*, the status of the all the larger mammals is unsatisfactory and a few like Caracal *Felis caracal* are highly endangered. Of the 68 species, 29 species are listed in the Indian Wildlife (Protection) Act, and hence, need protection, though to a varying degree.

Chinkara and Blackbuck are considered sacred by the Bishnoi community and hence are present in large numbers around the Bishnoi villages. The Nilgai *Boselaphus tragocamelus* has a wide distribution in Rajasthan but in the Thar Desert, like the Blackbuck, it is not seen in the extreme arid areas where surface water is not available for most part of the year. However, with the development of canals and agriculture fields, both the Blackbuck and Nilgai are likely to spread.

The Desert National Park was established in 1981 to protect the fauna and flora of the Thar Desert. The main purpose of declaring this area a National Park was to protect the Great Indian Bustard *Ardeotis nigriceps*. It is here that 70% of the Indian Bustard population is found (Rahmani 1986). IBAs at three sites of the desert have been identified in Rajasthan, namely Diyatra, Desert National Park and Talchhapar Blackbuck Sanctuary.

**Aravalli hills**: The Aravalli hills run diagonally across the State from northeast Delhi to the southwest up to the plains of Gujarat, covering a distance of about 692 km with an average height of 600 m above msl. Within Rajasthan State, the ranges run from Khetri in the northeast to Khed Brahma in the southwest for a length of about 550 kms. The southwest part has the prominent peaks, the highest being Guru Shikhar (1,727 m) in Mount Abu. It is the major water divide within the State. The area to its east is well drained by several integrated drainage systems, while the area to the west has only one integrated drainage system, i.e. the Luni drainage system in the southeastern part of the desert. The Mewar hills and Marwar hills are off-shoots of the Aravallis.

**Eastern Plains**: The eastern plains have rich alluvial soils drained by seasonal rivers. They cover most of Alwar, Bharatpur, Sawai Madhopur, Bundi and Kota districts. The region of the Banas plain is broad with an altitude of 150 to 300 m MSL, sloping towards the east. The plain is drained by the Banas river through the northern part of Chittorgarh and Udaipur district and several of its tributaries. Banas is the major tributary of the River Chambal which ultimately joins the River Yamuna. The alluvium deposits become thin towards the west where the plain is higher and more irregular, while in the east the thickness of alluvium increases. Another zone comprises the Chappan plains which lie in the southeastern part of Udaipur, Banswara, Dungarpur districts and in the southern part of the Chittorgarh district. The area is drained by the tributaries of the Mahi river which ultimately reaches the Arabian Sea through the Gulf of Cambay.

**Southeastern Plateau**: Southern and southeastern Rajasthan is mostly a plateau. The Hadoti plateau, with intrusions of black volcanic rocks into the Vindhya, extends to a great part of the Jhalawar, Baran and Kota districts. The Malwa plateau also extends into the southern part of the Chittorgarh and Banswara districts; the average altitude is 500 m above MSL and the plateau is dotted with isolated low ranges in some parts. This plateau in Rajasthan occurs in the upper catchment of the Chambal river to the southeast of the Mewar plains. The greater part of this area is drained by the River Chambal and its right bank tributaries like the Kali Sindh, the Parwan and the Parvati. This plateau has two defined units of Vindhyan scrubland and the Deccan lava plateau.

The climate of Rajasthan varies from semi-arid to arid. The temperature in the State ranges from 2 °C to 50° C. The rainfall ranges from as low as 150 mm in the arid regions to 1,000 mm in the southeastern plateau. The total population of Rajasthan is 56.47 million (2001 census), which constitutes 5.5% of the country’s population. Of the total population, 76.6% is rural and 23.4% urban. The population density is 165 persons per sq. km.

**Vegetation**

The total forest area is 3.2 million ha which constitutes 9.5% of the geographical area of the State (Ministry of Environment and Forest 2001). By legal status Reserved Forest constitutes 36.5%, Protected Forest 54.3% and Unclassed Forest 9.2% (Ministry of Environment and Forest 2001). There are two forest types, namely Tropical Dry Deciduous and Tropical Thorn Forest. Forests are mostly confined to the eastern and southern parts of the State. The western part of the State is devoid of forests because of the prevalence of hot arid conditions. In Banswara and Jhalawar, forest cover has remained unchanged, and all the districts reflect an increase in cover. A significant increase has been registered in Kota, Tonk, Bundi, Chittorgarh, Jhunjhunu and Bhilwara (Ministry of Environment and Forest 2001). The increase in forest cover is mainly due to plantations raised under various projects such as the Aravalli Afforestation project, the Indira Gandhi Canal project and the Desert Development programme. The important species of plantations are *Acacia* spp., *Dalbergia sissoo* and *Azadirachta indica*. Protection of the forests by raising *Prosopis chilensis* (= *juliflora*) along the fences has also contributed to the increase of forest cover (Ministry of Environment and Forest 2001).

**IBAs AND PROTECTED AREAS**

There are four national parks and 24 wildlife sanctuaries, covering an area of 0.96 million ha, which constitutes 2.80% of the geographical area of the State (Rodgers et al. 2000). Ranthambore and Sariska are the two tiger reserves, both are identified IBAs. Keoladeo National Park in the Bharatpur district is of international importance for its rich avifauna and for migratory Siberian Crane *Grus leucogeranus*. This site meets all the four criteria of an IBA. Keoladeo is one of the World Heritage and Ramsar sites of the country. Another identified IBA which is also a Ramsar site is the Sambhar lake.
Important Bird Areas in India - Rajasthan

Number of IBAs and IBA criteria

A1 = Threatened species; A2 = Restricted Range species; A3 = Biome species; A4 = Congregatory species

IBAs of Rajasthan

<table>
<thead>
<tr>
<th>IBA site codes</th>
<th>IBA site names</th>
<th>IBA criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN-RJ-01</td>
<td>Alniya Dam</td>
<td>A1, A4iii</td>
</tr>
<tr>
<td>IN-RJ-02</td>
<td>Bardha Dam</td>
<td>A1, A3, A4i</td>
</tr>
<tr>
<td>IN-RJ-03</td>
<td>Desert National Park</td>
<td>A1, A3</td>
</tr>
<tr>
<td>IN-RJ-04</td>
<td>Diyatra</td>
<td>A1</td>
</tr>
<tr>
<td>IN-RJ-05</td>
<td>Gawana Arain, Mangaliyawas, Ramsar, Goyal, Ratakot, Badar</td>
<td>A1</td>
</tr>
<tr>
<td>IN-RJ-06</td>
<td>Jaisamand Lake and Wildlife Sanctuary</td>
<td>A1, A4i, A4iii</td>
</tr>
<tr>
<td>IN-RJ-07</td>
<td>Keoladeo National Park</td>
<td>A1, A4i, A4iii</td>
</tr>
<tr>
<td>IN-RJ-08</td>
<td>Khichan</td>
<td>A1, A4i</td>
</tr>
<tr>
<td>IN-RJ-09</td>
<td>Kumbhalgarh Wildlife Sanctuary</td>
<td>A1, A3</td>
</tr>
<tr>
<td>IN-RJ-10</td>
<td>Mount Abu Wildlife Sanctuary</td>
<td>A1, A3</td>
</tr>
<tr>
<td>IN-RJ-11</td>
<td>National Chambal Wildlife Sanctuary</td>
<td>A1</td>
</tr>
<tr>
<td>IN-RJ-12</td>
<td>Phulwari Wildlife Sanctuary</td>
<td>A1</td>
</tr>
<tr>
<td>IN-RJ-13</td>
<td>Ramsagar Dam</td>
<td>A1, A4iii</td>
</tr>
<tr>
<td>IN-RJ-14</td>
<td>Ranthambore Tiger Reserve</td>
<td>A1, A3</td>
</tr>
<tr>
<td>IN-RJ-15</td>
<td>Sajangarh Wildlife Sanctuary</td>
<td>A1, A3</td>
</tr>
<tr>
<td>IN-RJ-16</td>
<td>Sambhar Lake</td>
<td>A1, A4i, A4iii</td>
</tr>
<tr>
<td>IN-RJ-17</td>
<td>Sarer Dam</td>
<td>A1, A4iii</td>
</tr>
<tr>
<td>IN-RJ-18</td>
<td>Sariska National Park</td>
<td>A1</td>
</tr>
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<td>IN-RJ-19</td>
<td>Sei Dam</td>
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<td>IN-RJ-20</td>
<td>Sitamata Wildlife Sanctuary</td>
<td>A1, A3</td>
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<tr>
<td>IN-RJ-21</td>
<td>Sonkhliya</td>
<td>A1</td>
</tr>
<tr>
<td>IN-RJ-22</td>
<td>Talchapper Wildlife Sanctuary</td>
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</tr>
<tr>
<td>IN-RJ-23</td>
<td>Udaipur Lakes Complex</td>
<td>A1, A4i</td>
</tr>
<tr>
<td>IN-RJ-24</td>
<td>Bagdarrah Closed Area</td>
<td>A1, A3</td>
</tr>
</tbody>
</table>

AVIFAUNA

About 510 species of birds can be seen in the state of Rajasthan (Grimmett and Inskipp 2003). Almost 60% of the geographical area of Rajasthan is under desert. The remainder is hilly terrain along with plateau in the southeastern parts, and plains in the northeastern region. Thus, the avifaunal composition of the State represents species which have mainly adapted to the desert environment with either sandy plains or scrubland as the preferable habitat. The grassland patches in the Eastern Rajasthan hold significant numbers of the Lesser Florican *Sypheotides indica*.

The Thar desert despite being one of smallest deserts of the world, has a high avian diversity. The Thar desert, however, is not isolated, and the avian endemicity is very low. Most of the birds of this desert have a wide distribution (Rahmani 1997a). Nearly 300 birds have been recorded in the desert region by various workers such as Adam (1873, 1874), Barnes (1886), Ticehurst (1922), Whistler (1938) and Rahmani (1997b). The most important threatened bird species found in the desert region is the Great Indian Bustard *Ardeotis nigriceps*, one of the rarest bustards of the world. It is one of the Endangered birds enlisted in the Red Data Book of IUCN. According to historical records, the Great Indian Bustard was plentiful in the past in Rajasthan (Jerdon 1864, Barnes 1886, 1891, Blanford 1898,
Baker 1929). Studies by Rahmani and Manakadan (1990) on the bustards estimated that more than half of the Great Indian Bustards in India are present in Rajasthan, mainly in the Thar desert. Of the 11 arid and semi-arid districts of Rajasthan (Chouhan 1988), the GIB is found in six districts, namely Bikaner, Jodhpur, Jaisalmer, Barmer, Pali and Jalore (Rahmani 1986).

One other most important threatened bird of the desert is Stoliczka’s Bushchat *Saxicola macrorhyncha* which is a small localized bird of the arid and semi-arid areas of northwest India (Ali and Ripley 1987). During the surveys of 1993-94, Rahmani (1994, 1997b, 1997c) reported 86 individuals from 18 sites. Green Munia *Amandava formosa* is the other Vulnerable bird reported by Rahmani (1996) from some of the areas of Jaisalmer. Beside these, two species of vultures, namely the Oriental White-backed Vulture *Gyps bengalensis* and the Long-billed Vulture *G. indicus* were commonly seen (Rahmani 1997b) in the desert area, but their population has declined at an alarming rate that has brought these species into the category of Critically Endangered (BirdLife International 2001).

The southern hilly tracts of the State are known to hold considerable populations of the Vulnerable Green Munia *Amandava formosa* (Lodhiya 1999) and Pied Tit (Tiwari 2001). The grasslands found near the waterbodies in the eastern half of the Aravallis are also reported to hold a considerable population of the Sarus Crane *Grus antigone* (BirdLife International 2001). Besides these species, the State has many more species of birds such as two widely distributed species of vultures, namely the Oriental White-backed *Gyps bengalensis* and Long-billed *G. indicus* and Indian Skimmer *Rynchops albicollis*.

### List of threatened birds with IBA site codes

<table>
<thead>
<tr>
<th>Critically Endangered</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Oriental White-backed Vulture</td>
<td><em>Gyps bengalensis</em></td>
<td>IN-RJ-02, 03, 04, 06, 07, 08, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 24</td>
</tr>
<tr>
<td>Long-billed Vulture</td>
<td><em>Gyps indicus</em></td>
<td>IN-RJ-03, 04, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 24</td>
</tr>
<tr>
<td>Siberian Crane</td>
<td><em>Grus leucogeranus</em></td>
<td>IN-RJ-07</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Endangered</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Great Indian Bustard</td>
<td><em>Ardeotis nigriceps</em></td>
<td>IN-RJ-03, 04, 08, 21</td>
</tr>
<tr>
<td>Lesser Florican</td>
<td><em>Sypheotides indica</em></td>
<td>IN-RJ-05, 21</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vulnerable</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Spot-billed Pelican</td>
<td><em>Pelecanus philippensis</em></td>
<td>IN-RJ-07, 23</td>
</tr>
<tr>
<td>Lesser Adjuntant</td>
<td><em>Leptoptilos javanicus</em></td>
<td>IN-RJ-07, 14</td>
</tr>
<tr>
<td>Lesser White-fronted Goose</td>
<td><em>Anser erythropus</em></td>
<td>IN-RJ-07</td>
</tr>
<tr>
<td>Baer’s Pochard</td>
<td><em>Aythya baeri</em></td>
<td>IN-RJ-07</td>
</tr>
<tr>
<td>Pallas’s Fish-Eagle</td>
<td><em>Haliaeetus leucoryphus</em></td>
<td>IN-RJ-07</td>
</tr>
<tr>
<td>Greater Spotted Eagle</td>
<td><em>Aquila clanga</em></td>
<td>IN-RJ-03, 07, 18</td>
</tr>
<tr>
<td>Eastern Imperial Eagle</td>
<td><em>Aquila heliaca</em></td>
<td>IN-RJ-07, 14, 18, 22</td>
</tr>
<tr>
<td>Sarus Crane</td>
<td><em>Grus antigone</em></td>
<td>IN-RJ-01, 02, 05, 07, 09, 11, 13, 14, 17, 18, 19, 21, 23, 24</td>
</tr>
<tr>
<td>Sociable Lapwing</td>
<td><em>Vanellus gregarius</em></td>
<td>IN-RJ-07</td>
</tr>
<tr>
<td>Indian Skimmer</td>
<td><em>Rynchops albicollis</em></td>
<td>IN-RJ-01, 07, 09, 11</td>
</tr>
<tr>
<td>Stoliczka’s Bushchat</td>
<td><em>Saxicola macrorhyncha</em></td>
<td>IN-RJ-03, 04, 07, 08, 14, 21</td>
</tr>
<tr>
<td>Pied Tit</td>
<td><em>Parus nuchalis</em></td>
<td>IN-RJ-09, 10, 12, 15, 16, 19, 23</td>
</tr>
<tr>
<td>Green Munia</td>
<td><em>Amandava formosa</em></td>
<td>IN-RJ-09, 10, 19</td>
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<table>
<thead>
<tr>
<th>Conservation Dependent</th>
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<tbody>
<tr>
<td>Dalmatian Pelican</td>
<td><em>Pelecanus crispus</em></td>
<td>IN-RJ-07, 16, 17, 18</td>
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</table>

<table>
<thead>
<tr>
<th>Near Threatened</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Darter</td>
<td><em>Anhinga melanogaster</em></td>
<td>IN-RJ-01, 06, 07, 12, 14, 18, 20, 23</td>
</tr>
<tr>
<td>Painted Stork</td>
<td><em>Mycteria leucocephala</em></td>
<td>IN-RJ-01, 06, 07, 12, 14, 16, 18, 20, 21, 23</td>
</tr>
<tr>
<td>Black-necked Stork</td>
<td><em>Ephippiorhynchus asiaticus</em></td>
<td>IN-RJ-01, 06, 07, 14, 23</td>
</tr>
<tr>
<td>Oriental White Ibis</td>
<td><em>Threskiornis melanocephalus</em></td>
<td>IN-RJ-01, 06, 07, 14, 18, 20, 21</td>
</tr>
<tr>
<td>Lesser Flamingo</td>
<td><em>Phoenicopterus minor</em></td>
<td>IN-RJ-07, 16, 23</td>
</tr>
<tr>
<td>Ferruginous Pochard</td>
<td><em>Aythya nyroca</em></td>
<td>IN-RJ-06, 07, 12, 14, 20, 23</td>
</tr>
<tr>
<td>White-tailed Sea-Eagle</td>
<td><em>Haliaeetus albicilla</em></td>
<td>IN-RJ-07</td>
</tr>
<tr>
<td>Greater Grey-headed Fish-Eagle</td>
<td><em>Ichthyophaga ichthyaeus</em></td>
<td>IN-RJ-07</td>
</tr>
<tr>
<td>Cinerous Vulture</td>
<td><em>Aegypius monachus</em></td>
<td>IN-RJ-03, 07, 14, 16, 21, 22</td>
</tr>
<tr>
<td>Red-headed Vulture</td>
<td><em>Sarcogyps calvus</em></td>
<td>IN-RJ-03, 06, 07, 12, 14, 15, 16, 18, 20, 21, 22</td>
</tr>
<tr>
<td>Pallid Harrier</td>
<td><em>Circus macrourus</em></td>
<td>IN-RJ-07, 23</td>
</tr>
<tr>
<td>Macqueen’s Houbara</td>
<td><em>Chlamydotis macqueenii</em></td>
<td>IN-RJ-03</td>
</tr>
<tr>
<td>Beach Stone-Plover</td>
<td><em>Esacus magnirostris</em></td>
<td>IN-RJ-12</td>
</tr>
<tr>
<td>Black-bellied Tern</td>
<td><em>Sierca acuticauda</em></td>
<td>IN-RJ-07, 14</td>
</tr>
</tbody>
</table>
The wetlands, wherever they occur in this arid State, are extremely important for waterfowl. Many larger villages and towns have wetlands (e.g., Gajner, Dhiyatra, Kolayat and Jaisalmer), which may not have more than 20,000 waterfowl in each but in total add up to several thousand birds. The wetlands of Keoladeo in the eastern plain, a recognized Ramsar site, have also acquired the status of a World Heritage site. The site is famous for holding a considerable population of many globally threatened species. The Siberian Crane Grus leucogeranus is perhaps the most famous one. Keoladeo is known to be a heaven for birdwatchers. Sambhar lake in the semi-arid region is another Ramsar site which holds significant congregations of Greater Flamingo Phoenicopterus ruber. The surrounding environs of the lake support Vulnerable bird species of scrubland, namely, the Pied Tit or White-naped Tit Parus nuchalis. Khichan in the arid region of the State is known for a large congregation of the winter visitor, the Demoiselle Crane Grus virgo (Sharma 1991; Rahmani 1997a, 1997b; Pfister 1997; Gordon and Tipling 2001).

**BIRDS FOR WHICH RAJASTHAN IS IMPORTANT**

**Great Indian Bustard Ardeotis nigriceps** *Endangered*

The Great Indian Bustard which is categorized as Endangered, has been declared the State Bird of Rajasthan by the State Government. The State Forest Department has also given attention to the protection of this bird by declaring some closed areas such as Sonkhaliya, Sorsan and Dhiyatra. The bird is present in nine districts of the State, namely Kota, Ajmer, Bhiwara, Jalore, Pali, Bikaner, Jodhpur, Jaisalmer and Barmer (Gorip and Vardhan 1980). During studies on Bustards in the 1980s, Rahmani and Manakadan (1990) estimated that more than half of the Great Indian Bustards in India are present in Rajasthan, mainly in the Thar Desert. Sites which have been identified as IBAs in Rajasthan with reference to this bird include the Desert National Park, Dhiyatra, Sonkhaliya and Sorsan. During the last 20 years, there has been a considerable reduction in the number of bustards, mainly due to poaching and destruction of their grassland habitat.

**Lesser Florican Sypheotides indica** *Endangered*

Old records indicate that the Lesser Florican was once a common monsoon visitor to many parts of eastern, southern and central Rajasthan (Sankaran 1996). Chittorgarh, Bhiwara, Pali, Ajmer and Banswara were the important districts where the maximum number of Lesser Florican were said to occur (Sankaran 1996). Beside these, some parts of Nagaur, Jodhpur, Tonk and Bharatpur are also reported to be sites of occurrence of this species. But only four areas (with many sites within them) are known to get a fairly sizeable population of the Florican during the monsoon, two locations in Chittorgarh and one each in Pali and Ajmer (Sankaran 1996). The patches of grasslands in Ajmer, namely Gagwana Arain, Mangaliyawas, Ramsar, Goyal, Ratakot and Bandar together form important sites for the Lesser Florican and due to this, these patches have been collectively identified as an IBA. Beside these sites, Sonkhaliya is the other IBAs where this bird is seen.

**Houbara or Macqueens’s Bustard Chlamydotis undulata** *Near Threatened*

The Houbara is a winter migrant to India (Ali and Ripley 1987) from Central Asia. It can be seen from early November to mid-March in northwestern India, mainly in the desert region of the State. It is distributed in the eleven districts of Rajasthan, but the major concentrations are present in Bikaner, Jodhpur, Barmer and Jaisalmer (Rahmani 1997a). In their winter quarters they are seen in flocks of 3-10 birds. Extensive poaching of this bird has been reported from the area. Its presence has also been reported from another IBA site of Rajasthan i.e., Sorsan (Singh 1996).

**Stoliczka’s Bushchat or White-browed Bushchat Saxicola macrorhyncha** *Vulnerable*

This small bird is localized in the arid and semi-arid areas of northwest India (Ali and Ripley 1987). Eighty-six individuals on 18 sites were seen during four surveys done by Rahmani (1994, 1997a) in the State. Although it is found in other semi-arid areas, the vast waterless, sandy plains of the Thar Desert serve as the main stronghold of this bird (Rahmani 1997a). Habitat alteration in the marginal areas has caused a sharp decline in its numbers. This bird is present in six IBA sites of Rajasthan, namely the Desert National Park, Dhiyatra, Ranchhambore National Park, Sonkhaliya, Khichan and Keoladeo National Park.

**Pied Tit or White-naped Tit Parus nuchalis** *Vulnerable*

The White-naped Tit is endemic to India, occupying a restricted range with two isolated populations. The first, and best known occurs in an area of northwestern India: central and southeastern Rajasthan, Kutch and northern Gujarat. The second is in southern India: the Eastern Ghats in Andhra Pradesh, west, central and south Karnataka and northern Tamil Nadu (BirdLife International 2001). In Rajasthan, this bird is found at the juncture of the arid and semi-arid regions of Jodhpur, Nagaur, Jaipur, Ajmer, Pali, Jalore and Sirohi districts due to the availability of scrubland, which is the most preferred habitat of the Pied Tit. The excessive fragmentation of its habitat intermingled with human settlements, is causing a continuous decline in its population. The survival of this threatened species depends mainly on the conservation of its habitats i.e., Tropical Thorn Forest (Tiwari 2001). Kumbalgarh Wildlife Sanctuary, Sajjangarh Wildlife Sanctuary, Phulwari, Sambhar Lake, Sei Dam surroundings and Udaipur Lake complexes are the IBA sites of the State where the presence of this bird has been recorded.

**Green Munia Amandava formosa** *Vulnerable*

According to Ali and Ripley (1987), the Green Munia is very locally and unevenly distributed in Central India from Rajasthan to Orissa. It is a popular cage bird in both domestic and international markets (Ahmed 1997, 1998). Due to this, trapping and trading of the bird is the biggest threat to its population. The species usually prefer scrubland and grasslands, which are fast decreasing in extent due to their conversion into agricultural land. In Rajasthan, conversion of the habitat of the Munia into mustard fields is a major threat (BirdLife International 2001). Conditions are further deteriorated by habitat fragmentation that is causing the isolation of its population.
Important Bird Areas in India - Rajasthan

(Ahmed 1998). The severely fragmented population of this bird was observed at several places. Southern Rajasthan, especially Mount Abu is an important site, holding significant numbers of this vulnerable species (BirdLife International 2001). Mt. Abu Wildlife Sanctuary, Sei Dam (vicinity area) and Kumbalgarh Wildlife Sanctuaries are the sites where the Green Munia was observed and hence were identified as IBAs.

**Demoiselle Crane Grus virgo (Congregatory)**

The Demoiselle Crane is an important winter migratory species of Rajasthan. Thousands of these birds are seen at Khichan and Talchapar Wildlife Sanctuary (Rahmani 1997a, 1997b). In Khichan (near Phalodi), more than 5,000 birds are regularly sighted in winter each year (Singh 1990; Sharma 1991; Philippona 1995, Pfister 1997; Gordon and Tipling 2001). These birds are also present at many other desert sites such as the vicinity of the Sambhar Lake, but the number is low as compared to the former two sites (Rahmani 1997a, 1997b).

**Biomes**

According to the geographical distribution of biomes (BirdLife International, undated), Rajasthan mainly falls in two biomes, namely Biome-11 (Indo-Malayan Tropical Dry Zone) and Biome-13 (Saharo-Sindian Desert) although part of the State (northeastern) also lies in Biome-12 (Indo-Gangetic Plains). Thus, geographical distribution of three biomes could be observed in the State. Of the total 28 IBAs, 19 sites were identified based on biome criteria. One IBA site, Keoladeo National Park, represents Biome-12 and three sites, namely Desert National Park, Diyatra and Talchapar Wildlife Sanctuary, represent Biome-13. Fifteen sites represent Biome-11. Six of the 19 sites solely represent biome-restricted assemblages whereas 13 sites qualify other criteria also. The six sites which mainly hold significant populations of biome-restricted assemblages are Kumbalgarh Wildlife Sanctuary, Phulwari-ki-Nal Wildlife Sanctuary, Ranthambore National Park, Sajjangarh Wildlife Sanctuary, Sariska National Park and Sitamata Wildlife Sanctuary.

**THREATS AND CONSERVATION ISSUES**

**Indira Gandhi Canal:** In spite of the fact that the Indian Thar desert constitutes nearly 9% of the geographical area of India, there are very few sanctuaries and national parks in this interesting biogeographical zone. Owing to improved irrigation facilities, the northern part of the Thar Desert in Haryana and Punjab, and in the Ganganagar district of Rajasthan, is now more or less converted into rich cropland. The same type of habitat alteration is expected in the command area of the Indira Gandhi Nahar Project (IGNP) (Rahmani 1997a, 1997b, 1997d).

In order to protect the fauna and flora of the Thar Desert, the Government of India in 1981 established the 3,162 sq. km Desert National Park (IBA) falling in the Jaisalmer and Barmer districts. It was declared a Wildlife Sanctuary under Section 35 and 18 of the Indian Wildlife (Protection) Act, 1972. It was planned to gradually upgrade it into a park, hence its popular name, Desert National Park (DNP). At present, the area is technically not a national park because under the Wildlife (Protection) Act 1972, a park should not have any private human habitation, and in the DNP there are many villages. In addition, six satellite areas were also selected which have large populations of desert wildlife. Another step was to declare nine sites as Closed Areas, where shooting of wildlife was strictly prohibited.

Even 23 years after the establishment of the DNP, only a preliminary notification has been done. The final notification, which will take into account the rights of local people, has not been done. This is the responsibility of the District Collector, on the recommendation of the Director of the Park. Earlier there were 33 villages in Jaisalmer and 52 villages in Barmer district which were under the DNP area. Between 1980 and 1994, at least 20 new villages have come up. Actually dhanis (settlements) have been notified as villages due to an increase in human population, and also to get government aid, for which only notified villages are entitled.

The DNP is under tremendous human pressure. Recently, the Government of India has allowed oil exploration right in the middle of this IBA. However, the biggest danger is from an ill-conceived plan to develop a distributory of the IGNP from Mohangarh to Gadra Road which will

**Threats to IBAs**

A=Agriculture intensification/expansion; B=Dams/Dykes; C=Disturbance to Birds; D=Firewood Collection; E=Industrialisation/Urbanisation; F=Unsustainable exploitation; G=Others; H=Natural Events
Livestock grazing: Extensive over-grazing by livestock all over the Thar desert, and also in protected areas is one of the biggest problems of Rajasthan. Due to various development projects and increase in human and livestock populations, nomadic patterns of grazing have been disrupted. In the arid Thar desert, which used to have extensive grasslands, surface water as a limiting factor, both temporarily and spatially, no more works to limit the number of livestock as it is now easily available from the Indira Gandhi Canal. As there is no limit to water availability to livestock, now we see abnormally high populations of livestock all over the Thar desert, resulting in severe over-grazing. In the Keoladeo National Park, the lack of controlled grazing and management has played havoc with the ecosystem, resulting in the unrestricted growth of grass, sedges and weeds.

Poaching: Poaching is done mainly by tribals, Rajputs and Muslims. With large-scale colonisation of the Thar desert due to IGNP, during the last ten years, poaching has become quite common. The numbers of the Great Indian Bustard, Macqueen’s Bustard, and Chinkara have decreased everywhere including in the DNP. Poaching in other parts of Rajasthan, especially in the Aravalli Hills is also quite common. The Great Indian Bustard has decreased in Sonkhlaiya in Ajmer mainly due to poaching.

Mining: Rajasthan has the second largest mineral reserves in the country. It produces 42 varieties of major minerals and 23 varieties of minor minerals (Mohnot et al. 1987). Marble mining is the most prominent activity in the State. This could be a major irreversible threat to many sites, altering the habitat structure and disturbing the natural characteristics of IBA sites.

Population pressure: The present population density (165 persons per sq. km. 2001 census) of the State is an increase of 36 persons per sq. km since the 1991 census. This increase is enhancing urbanisation which in turn causes alteration of the pasture and fallow land into human habitation. The Thar Desert is one of the most densely populated deserts in the world, with a human population density of 85 people per sq. km.

REFERENCES

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Important Bird Areas in India - Rajasthan


Awareness and education programmes for the Great Indian Bustard have created lot of interest.
ALNIYA DAM

**IBA CRITERIA:** A1 (Threatened Species), A4iii (≥20,000 waterbirds)
**PROTECTION STATUS:** Not officially protected

**GENERAL DESCRIPTION**
Alniya is an irrigation tank that supports agriculture in the surrounding areas through minor and major canals. Many pairs of Sarus Crane *Grus antigone* use the habitat around the lake for breeding. In February 2002, Manoj Kulshreshtha, State Coordinator of IBCN, conducted a survey. He found 20-21,000 waterfowl in the lake, and 16 pairs of Sarus raising their chicks. Due to scanty rainfall in 2002, this lake was affected and reduced to one-fourth of its total capacity. With normal rainfall and consequently normal waterspread, there could be 30,000 waterfowl here. This is identified as an IBA on the basis of the large number of waterfowl that gather in this wetland in winter.

No proper floral study has been conducted in this wetland. Common plants found in the waterbody were *Ceratophyllum muricatum*, *Eichhornia crassipes*, *Ipomoea aquatica*, *Lemna aequinoctalis*, *Phragmites karka*, *Polygonum glabrum*, *Potamogeton pectinatus* and *Vallisneria spiralis*.

**AVIFAUNA**
Among the threatened species listed in the Red Data Book (BirdLife International 2001), the Sarus Crane is a regular breeding species at the lake. The other globally threatened species recorded is the Indian Skimmer *Rynchops albicollis*. Seven Skimmers were recorded in May 1989 by Vyas (1990) and one in July 1989 by Sangha and Kulshreshtha in (1998). Alniya is close to the National Chambal Sanctuary (another IBA) where the Indian Skimmer often breeds, so these birds are likely to be arriving from there.

Dalmatian Pelican *Pelecanus crispus*, classified as Conservation Dependent by BirdLife International (2001), is regularly seen at Alniya Dam (Vyas 1993). The Great White Pelican *P. onocrotalus* is also seen here.

Common species are Little Cormorant *Phalacrocorax nigerr*, Common Teal *Anas crecca*, Common Pochard *Aythya ferina*, Coot *Fulica atra*, Redwattled Lapwing *Vanellus indicus*, Indian River Tern *Sterna aurantia*, Black-winged Stilt *Himantopus himantopus*, Little Grebe *Podiceps ruficollis*, Pond Heron *Ardea graysii*, Ruff *Philomachus pugnax* and Ruddy Shelduck *Tadorna ferruginea*. The Near Threatened species recorded were Darter *Anhinga melanogaster*, Painted Stork *Mycteria leucocephala* and Black-necked Stork *Ephippiorhynchus asiaticus* (Vyas 1990, 1993). Vyas has seen up to seven individuals of Black-necked Stork in January 1990 when the water of Alniya Dam was partially drained for irrigation purpose and a large shallow zone was created where fish, frogs and crustaceans were trapped. Other interesting records from this site are White Stork *Ciconia ciconia* and Black Stork *Ciconia nigra*, both winter migrants to India.

It is likely that many waterbird species are present in Alniya Dam above their 1% threshold levels determined by Wetlands International (2002). This site has been selected as an IBA based on the presence of a breeding population of the globally threatened Sarus crane (A1 criteria) and presence of more than 20,000 waterbirds (A4iii criteria).

**OTHER KEY FAUNA**
Eleven species of commercially valuable fish including *Amblypharyngodon mola*, *Catla catla*, *Channa marulius*, *Cirrhinus mrigala*, *Cyprinus carpio var. communis*, *Puntius sarana*, and *P. ticto*, were recorded from the reservoir. Not much is known about other wildlife.

**LAND USE**
- Irrigation
- Fishing
- Agriculture

**THREATS AND CONSERVATION ISSUES**
- Agriculture
- Pesticides
- Encroachment
- Eutrophication

This wetland is commonly used for agriculture, irrigation, fishing, drinking and wallowing by cattle, and clay gathering. Agricultural...
practices were seen in the dried up area of lake. Over-use of water for agriculture, use of pesticides, encroachment of the lake by local villagers, reduction in water level, and eutrophication are the major conservation issues.

**KEY CONTRIBUTORS**

Manoj Kulshreshtha, Harkirat Singh Sangha and Rakesh Vyas

**KEY REFERENCES**


BARDHA DAM RESERVOIR

IBA Site Code : IN-RJ-02
State : Rajasthan
District : Bundi
Coordinates : 25° 26' 60" N, 75° 39' 00" E
Ownership : State (Irrigation Dept)
Area : 300 ha
Altitude : 390 m
Rainfall : 7,000 mm
Temperature : 8 °C to 45 °C
Biogeographic Zone : Semi-Arid
Habitats : Freshwater Reservoir

GENERAL DESCRIPTION
Bardha Dam is a medium sized irrigation dam, with an expanse of c. 300 ha. It is situated 20 km east of the district headquarters of Bundi. The wetland supports a large number of waterfowl, particularly migratory ducks, pelicans, flamingos, Spoonbill *Platalea leucorodia*, Ruff, *Philomachus pugnax* Gadwall *Anas strepera*, Bar-headed Goose *Anser indicus* and other waterbirds. The reservoir is controlled by the State Irrigation Department, as its main purpose is to supply water to farmers.

AVIFAUNA
The reservoir hosts Dalmatian Pelican (20-30: 1% population estimate), White Pelican (250: 1% population estimate), Comb Duck (100), Gadwall (5,000), Spoonbill (200), Ruff (2,000), Bar-headed Goose (300), Sarus Crane (100: 1% population estimate) whose presence justifies its inclusion as an IBA site. Besides, it also fulfills criteria A1 (Threatened Species) and A3 (Biome Restricted Species).

Over 10,000 aquatic birds of approximately 30 species have been recorded from the reservoir. Biome-restricted species of special conservation concern are Black Ibis *Pseudibis papillosa*, Oriental White-backed Vulture *Gyps bengalensis*, Indian Peafowl *Pavo cristatus*, Indian Courser *Cursorius coromandelicus*, and Yellow-legged Green-Pigeon *Treron phoenicoptera*.

OTHER KEY FAUNA
Important fauna, other than birds are Golden Jackal *Canis aureus*, Indian Fox *Vulpes bengalensis*, Chinkara *Gazella bennettii* and Monitor Lizard *Varanus bengalensis*.

LAND USE
- Agriculture
- Fishing

THREATS AND CONSERVATION ISSUES
- Fall in water level
- Over-exploitation of fish resources

The water of this irrigation reservoir is drained through canals from the dam, for agricultural purposes. This restricts the habitat of waterfowl but, at the same time, creation of shallow areas attracts some waders. Fishing, perhaps, is the major disturbance factor, but again not much can be done as the Irrigation Department auctions the fishing rights every year. It would greatly benefit bird conservation if the fishing is restricted or even stopped for a few months in winter when migratory birds are present. Although the area does not belong to the Forest Department, the waterfowl are their responsibility. So, the Forest, Irrigation and Fisheries departments, in order to benefit farmers, fishermen and birds alike, could draw up a joint management plan.

KEY CONTRIBUTORS
Jatinder Kaur and Manoj Kulshreshtha

KEY REFERENCE
Not Available
GENERAL DESCRIPTION
In order to protect the fauna and flora of the Thar Desert, the Government of India in the late 1970s started planning the establishment of a large sanctuary or a park where human pressure could be kept to a minimum and the wildlife could be given maximum security from hunters as well as from habitat alteration. The Desert Wildlife Sanctuary (popularly called Desert National Park) was the result of this planning. It is among the one of the three protected areas of the Thar Desert (Rahmani 1997). It was notified in 1984 and it was planned to gradually upgrade it to a Park, hence its popular name Desert National Park. One of the main purposes of establishing this Park was to protect the Great Indian Bustard *Ardeotis nigriceps*.

The major objective of the Park is to develop core areas (enclosures) in which human interference is kept to a minimum and livestock grazing is totally banned. In the initial stages, Sam, Sudasari, Phulia, and Miyajlar enclosures were established. Every year, the Forest Department is adding new enclosures. Presently, there are 28 enclosures. Besides the enclosures within the Park, there are six enclosures outside the boundary, which are called satellite conservation areas (Rahmani 1989, 1997).

AVIFAUNA
This is perhaps one of the most important sites for the long-term survival of the globally threatened Great Indian Bustard. In the 1980s, there could have been between 200 to 400 Great Indian Bustards in and around this sprawling Park, but now the number has gone down to about 100. However, the bustard still breeds in many parts of the Park, especially in Sudasari, Sam and Miyajlar enclosures. Even now, if poaching and habitat degradation are stopped, increase in the number of bustards is possible.

Other birds of conservation interest are the two *Gyps* species of vultures that are still seen in the Park, although not in their former numbers. This site is also important for the Vulnerable Stolizika’s Bushchat *Saxicola macrorhyncha*. It has been seen in Sudasari, Sam and Nibha areas of the Park (Rahmani 1996a).

There are stray records of Green Munia *Amandava formosa* (Rahmani 1996b). Among the Near Threatened species, the most notable is the Macqueen’s or Houbara Bustard *Chlamydotis macqueeni (= undulata)*. Although population estimates for the Park are difficult to make, overall in the Thar Desert, Rahmani (1998) estimated a crude density of 0.31 Houbara/km² based on actual sightings and 1.05 Houbara/km² based on sightings and Houbara tracks. Houbara are regularly found in small groups of 3-5 birds in winter in Sudasari and Sam enclosures.

The Red-headed or King Vulture *Sarcogyps calvus* is widespread but generally seen solitary or in twos or threes. Two nests were found in February near Sudasari inside the Park (Rahmani 1997). The Cinereous Vulture *Aegypius monachus* is widespread in winter, along with the Eurasian Griffon *Gyps fulvus* and other species of vultures. This Park represents the typical desert ecosystem flora and fauna of the Indian Thar Desert, which is a part of the much larger Saharo-Sindian Desert. BirdLife International (undated) has identified it as Biome-13 and has listed 11 bird species. Including the Great Indian Bustard and Stolizka’s Bushchat, six more species of this Biome have been found in the Desert NP. The Greater Hoopoe Lark *Ateon alaudipes* probably breeds here, as its display was seen just outside the Park in July (Rahmani 1997). Another interesting bird found breeding was the Cream-coloured Courser *Cursorius cursor* (Rahmani and Manakadan 1989). For both these species, the Thar desert is the easternmost limit of their wide distribution from Morocco in North Africa to the whole of the Middle East, and then Iran to India.
OTHER KEY FAUNA
Among the large mammals, Chinkara Gazella bennettii is the most common. Thanks to the development of the Indira Gandhi Nahar Project (IGNP), and increase in irrigation fields, Bluebul Boselaphus tragocamelus has been increasingly sighted. Golden Jackal Canis aureus, Red Fox Vulpes vulpes pusilla and, in some areas, the Indian Fox Vulpes bengalensis are the major natural predators. The Desert Cat Felis silvestris is also found but is difficult to sight. Desert Hare Lepus nigricollis dayanus, a subspecies of the Black-naped Hare, and the Long-eared Hedgehog Hemiechinus auritus are among smaller denizens of the Park.

The Desert Skink Ophiomorus tridactylus, known as sandfish as it ‘swims’ or burrows through sand down to a depth of 30 cm, is found here. There are over 43 species of reptiles, including the Spiny-tailed Lizard Uromastyx hardwickii, Russell’s Viper Daboia russelii, Saw-scaled Viper Echis carinata and the Common Monitor Lizard Varanus bengalensis.

LAND USE
- Nature conservation and research
- Tourism and recreation
- ONGC oil exploration
- Human habitation
- Water canal

THREATS AND CONSERVATION ISSUES
- Overgrazing
- Irrigation inside the Park
- Tourism
- Construction of canal
- Lack of maintenance of enclosures
- Oil exploration by ONGC

Even after 20 years of establishment of the Desert National Park, only preliminary notification has been done. Final notification, which will take into account the rights of local people, has not been done. This has to be done by the District Collector, on the recommendations of the Director of the Park. Earlier there were 33 villages in Jaisalmer and 52 villages in Barmer district that were inside the DNP area. Between 1980 and 1994, at least 20 new villages have come up. Actually dhanis (settlements) have been notified as villages due to increase in human population, and also to get government aid, for which only notified villages are entitled.

The second greatest danger to this site is the plan to develop Gadra Road irrigation canal, a tributary of the Indira Gandhi Nahar Project (IGNP) (Rahmani 1989, 1997). This canal, if developed, will bisect the Park, and also bring settlers, as has happened in other parts of the desert. Water to villagers could instead be supplied through underground pipes, and wide, open canals should be avoided.

Recently, the Oil and Natural Gas Commission (ONGC) has approached the Park authorities to allow preliminary oil exploration in the heart of the Park. Despite opposition from conservationists, the Ministry of Environment and Forests, Government of India, has given permission to ONGC to drill in the Park.

In order to devise scientific management plans, it is absolutely necessary to intensively study the ecology, movement and habitat requirement of the Great Indian Bustard through modern techniques such as satellite tracking and radio telemetry.

KEY REFERENCES

**KEY CONTRIBUTOR**
Asad R. Rahmani
Diyatra Closed Area in Bikaner is one of the most important sites for the Great Indian Bustard *Ardeotis nigriceps* in the Thar Desert (Rahmani 1986, 1997). In the early 1980s, there were 30-50 bustards in this area, but due to intensification of agriculture, overgrazing and poaching, the number has perhaps halved.

The site used to be the hunting reserve of the Maharaja of Bikaner for Great Indian Bustard. The site is situated approximately 65 km southwest of Bikaner along the National Highway to Jaisalmer. Various departments of the Rajasthan Government have established pasture enclosures at various periods of time but most of them are neglected and over-run by livestock. If properly protected, these grassland enclosures would have provided undisturbed breeding areas to the Great Indian Bustard. However, now these enclosures are mainly used by Chinkara *Gazella bennettii*, and Nilgai *Boselaphus tragocamelus*, and rarely by the Great Indian Bustard.

Important flora of Diyatra consists of *Zizyphus rotundifolia*, *Capparis decidua*, *Calotropis procera*, *Prosopis cineraria*, *Calligonum sp.*, *Leptadenia pyrotechnica* and the grass *Cenchrus biflorus* (Satish K. Sharma pers. comm. 2003). The sandy zone, having low grasslands and scrub vegetation is dominated by *Zizyphus rotundifolia* and *Capparis decidua*.

**AVIFAUNA**

Besides the Great Indian Bustard, Diyatra Closed Area is a regular wintering ground of the Houbara or Macqueen’s Bustard *Chlamydotis macqueenii*. It is also one of the major strongholds of Stoliczka’s Bushchat *Saxicola macrorhyncha*. During a survey in 1994, thirty six were sighted in one day in Diyatra area, especially near Hadda, Tokla and Niagaon (Rahmani 1996).

Earlier, a lake near Diyatra village used to be an important watering spot for the Imperial or Black-bellied Sandgrouse *Pterocles orientalis*. The Maharaja of Bikaner had built a hunting lodge beside the lake. This rainfed shallow lake is still present, but the number of Imperial Sandgrouse has drastically decreased, some may have moved away as they get water in many other places due to irrigation by the Indira Gandhi Nahar Project (Rahmani 1997). The site lies in Biome-13 i.e., Saharo-Sindian Desert. Sharma (1986) was the first to report breeding of the Cream-coloured Courser *Cursorius cursor* within Indian limits, from Diyatra region when he saw small chicks in February. Later, this species was found breeding in the Desert National Park (an IBA) (Rahmani and Manakadan 1989).

In winter, vast flocks of Bimaculated Lark *Melanocorypha bimaculata*, Greater Short-toed Lark *Calandrella brachydactyla*, Lesser Short-toed Lark *C. rufescens* and some Hume’s Short-toed Lark *C. acutirostris* are seen. In the extant grasslands, Short-eared Owl *Asio flammeus* are often seen, sometimes 15-20 roosting in few square metres area.

The Near Threatened Cinerereous Vulture *Aegypius monachus* is frequently seen, along with other vultures.

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**Endangered**

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**Vulnerable**

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**OTHER KEY FAUNA**

Other fauna of Diyatra includes Chinkara, Red Fox *Vulpes vulpes*, Desert Monitor *Varanus griseus*, and Spiny-tailed Lizard *Uromastyx hardwickii*. Nilgai or Bluebull which was not present earlier is now increasingly seen, thanks to availability of water and irrigation facilities due to the Indira Gandhi Nahar Project.

**LAND USE**

- Agriculture
- Grazing

**THREATS AND CONSERVATION ISSUES**

- Poaching
- Agriculture expansion
- Grazing

Due to the increase in the number of settlements and villages around the site, the area of Diyatra is being brought under cultivation, resulting in disturbance to the Great Indian Bustard and Stoliczka’s...
Bushchat. Fallow land is decreasing and Capparis bushes are being uprooted to clear the ground for human activities.

Since declaring Diyatra as a Closed Area for Shooting, the Forest Department seems to have forgotten its existence! There is practically no patrolling. Sometimes, a forest guard is officially posted there but he rarely visits the area, as a result of which poaching is quite common. Hunters mainly come in search of Macqueen’s Bustard and Imperial Sandgrouse but kill Great Indian Bustard when they come across one. Hunting was observed in 1986 (Rahmani 1986). During surveys of 1993-94, and 1998 and 2000, much evidence, including feathers of bustard and jeep tracks, and reports of local people, indicated that illegal hunting was still quite common. The best indication of poaching is the dramatic decrease of bustard numbers over the last 15 years of monitoring this site.

Only strict control on poaching and an intensive environmental awareness programme among local villagers can save the Great Indian Bustards of Diyatra Closed Area.

KEY CONTRIBUTOR
Asad R. Rahmani

KEY REFERENCES
### General Description

This site is a group of several grassland areas, situated about 15 km northeast of Ajmer City, adjacent to National Highway No. 8. During a good monsoon, the Lesser Florican *Sypheotides indica* breeds in some of the better protected grasslands (Sankaran 2000). Most of these grasslands are privately owned, and are maintained for fodder production. Owing to human population pressures, legal problems and growth and division of families, these grasslands are constantly being fragmented and converted to crop fields or put to other use. Killing of floricans by grassland owners is still a problem but due to intensive publicity by Ravi Sankaran, many owners now protect this endangered bird.

Another species of conservation concern is the Sarus Crane *Grus antigone*, which breeds when rainfall is adequate. Sarus is not hunted at all, as it is considered a sacred bird. *Prosopis chilensis* and *Acacia nilotica* are the two dominant woody species, both in private and government lands. Privately protected sites are dominated by grasses, which are harvested from October-November or grazed by small herds of cattle. Common lands are heavily grazed upon throughout the year. No systematic study of the flora has been done.

### Avifauna

No detailed study has been undertaken, except for opportunistic observations made during surveys of the Lesser Floricans. Almost all bird species of seasonal semi-arid grasslands, such as larks, warblers, francolins and quail are seen. This IBA falls at the junction of three biomes *i.e.* Biome-11 (Indo-Malayan Tropical Dry Zone), Biome-12 (Indo-Gangetic Plains) and 13 (Saharo-Sindian Desert), therefore, some of the bird species representing these biomes are reported here. However, none of these biome-restricted species are presently of conservation concern.

### Other Key Fauna

No large mammal or reptile of conservation concern is found in this site.

### Land Use

- Pasture land
- Agriculture
- Village *Panchayatland*

### Threats and Conservation Issues

- Poaching
- Encroachment on pasture and riverine land
- Population pressure
- Easy accessibility to the site
- Habitat loss due to agriculture
- Effect of pesticides

The major conservation issue is how to protect these pockets of grassland on a long-term basis. As long as protecting these grasslands is economically favourable, villagers will protect them, but as soon as they find that by converting these grasslands into crop fields or some other use will give them greater benefit, they will do so. Being a fodder deficit state, Rajasthan needs millions of tons of grass to feed its growing population of livestock. However, very few steps have been taken to protect grasslands and harvest them at the right time. There is an urgent need to develop a system that encourages villagers to protect the grassland during monsoon and harvest it for fodder at the right time. Village level grass cooperative societies, on the pattern of milk cooperatives, could be developed.

### Key Contributors

Ravi Sankaran and Asad R. Rahmani

### Key Reference

Jaisamand Lake and Wildlife Sanctuary

GENERAL DESCRIPTION
The Jaisamand Wildlife Sanctuary is situated 50 km south of Udaipur, amidst lush green valleys of the Aravallis Range. The forest of the Sanctuary used to be a Shikargah (Game Reserve) of the erstwhile Maharanas of Mewar. The world famous Jaisamand Lake forms an integral part of Sanctuary.

Jaisamand Lake, one of Asia’s largest artificial aquatic bodies, was constructed by Maharana Jai Singh of Mewar in late 17th century (1691 AD) to provide water for the population of Udaipur. The lake now not only serves this purpose, but also provides an ideal habitat for many local and migratory birds.

A small waterbody called the Dhebar Jheel existed here originally. A wall was constructed across the Aravalli to impound several rivers, converting this waterbody into a huge expanse of water with a span of 14 km at certain places. With a circumference of 88 km, the lake covers an area of 2,100 ha. According to folklore, nine rivers and ninety-nine rivulets feed Jaisamand. The lake receives water from four main rivers, the Gomti, Jhamari, Rooparel and Bagaar.

The tree species of this IBA are representative of dry deciduous forests, and scrub forests such as Acacia leucophloea, A. nilotica, A. catechu, Tamarindus indica, Phoenix sylvestris, Anogeissus latifolia, A. pendula, Wrightia tinctoria, Azadirachta indica, Boswellia serrata, Sarcococca urera and Butea monosperma. The wetland has no major natural macrophytic population but the marginal area have rich growth of Polygonum. The weeds Lantana camara and Parthenium sp. infest the Sanctuary area to a large extent, along with Prosopis chilensis.

AVIFAUNA
This freshwater lake attracts a large number of migratory and resident birds. The islands with large reed beds provide safe nesting sites. More than 200 bird species are reported from the lake and its surrounding land area (Sharma 2002). The site qualifies Biome-11 criteria. BirdLife International (undated) has identified 59 species in this biome, out of which 27 are found here. Besides these, the lake harbours large congregations of about 20-25,000 Coot Fulica atra, as well as Bar-headed Goose Anser indicus and Greylag Goose A. anser (Raza Tehsin pers. comm. 2003). Species population estimates are not available but it is likely that many species would qualify A4i criteria (populations exceed the 1% threshold of their biogeographic populations). For instance, Wetlands International (2002) estimates that the total population of Common Coot in South Asia is 15,00,000. This IBA supports 1% population.

This site is, therefore, selected as an IBA principally based on the A4i and A4iii criteria. It also holds Critically Endangered species such as the Oriental White-backed Gyps bengalensis and the Long-billed G. indicus vultures but these species are widely distributed and Jaisamand does not have particularly significant populations.

OTHER KEY FAUNA
Leopard Panthera pardus is the top carnivore. Other predators include Jungle Cat Felis chaus and Striped Hyena Hyaena hyaena. Common Langur Semnopithecus entellus is the only primate found in the Sanctuary. Other typical species of dry tropical forest and scrub forest dwellers such as Wild Boar Sus scrofa, Chinkara Gazella bennettii, Spotted Deer Axis axis, Sambhar Cervus unicolor and Bluebull Boselaphus tragocamelus can be commonly sighted. Reptiles include: Starred Tortoise Geochelone elegans, Monitor Lizard Varanus bengalensis, Indian Rock Python Python molurus, John’s Earth Boa Eryx johnii, Rat Snake Ptyas mucosus, Common Krait Bungarus caeruleus, Indian Cobra Naja naja are also in the Sanctuary.

LAND USE
- Aquaculture
- Irrigation and Water Supply
- Tourism and Recreation
- Nature Research and Conservation

CRITICALLY ENDANGERED
- Oriental White-backed Vulture Gyps bengalensis
- Long-billed Vulture Gyps indicus

NEAR THREATENED
- Darter Anhinga melanogaster
- Painted Stork Mycteria leucocephala
- Black-necked Stork Ephippiorhynchus asiaticus
- Oriental White Ibis Threskiornis melanocephalus
- Ferruginous pochard Aythya nyroca
- Red-headed Vulture Sarcogyps calvus

IBA CRITERIA: A1 (Threatened Species), A4i (1% biogeographic population), A4iii (> 20,000 waterbirds)

PROTECTION STATUS: Wildlife Sanctuary, established in November 1955
THREATS AND CONSERVATION ISSUES

- Excessive fishing
- Boating
- Pollution
- Encroachment (Island Resorts)
- Siltation
- Weed Infestation (*Lantana*)
- Firewood Collection
- Poaching
- Grazing

The Sanctuary area is excessively infested by the exotic, *Lantana camara*, which poses a threat to the local vegetation. *Prosopis chilensis*, is also degrading the natural habitat.

The Department of Forest, Wildlife Wing along with Natural Environment-Education and Development (NEED) Organization, Udaipur conducts annual trekking for the general public and nature camps for school and college students to raise conservation awareness.

KEY CONTRIBUTORS

Raza Tehsin, Satish K. Sharma, Satya P. Mehra, and Sarita Sharma

KEY REFERENCES


**General Description**

The Keoladeo National Park, better known as the Bharatpur Bird Sanctuary, is renowned the world over for its avifauna. A great assortment of mammals can be sighted here as well.

A unique feature of the wetland ecosystem of the Keoladeo National Park is its origin from a natural depression, which was an evanescent rainfed wetland (Vijayan 1994). The construction of Ajan Bandh, a temporary reservoir, about a km from the present border of the Park, some 250 years ago, and the subsequent flooding of the area, mark the beginning of human involvement in the conversion of this natural depression into a permanent waterfowl reserve (Vijayan 1990). Subsequently, several earthen bunds and sluice gates were constructed to contain and regulate the water level.

The water inside the Park, drawn through a canal from Ajan Bandh (3,270 ha) during the monsoon, gradually recedes and the Park dries up in May-June, leaving only some pools in the deeper areas. These pools, which teem with fish, attract flocks of fish-eating birds. Apart from this, a large number of fish die in the drying pools and scavengers have a feast. Turtles become vulnerable to predation during this period, although many aestivate and some take refuge in deeper pools like Mansarovar located in the middle of the Park.

Floristic elements and vegetation of Rajasthan have been discussed in detail by Meher-Homji (1970) and Puri et al. (1983). The flora of the Park has been studied extensively by Prasad et al. (1996). The forest areas, which are small pockets mostly in the northeast section of the Sanctuary, are dominated by *Mitragyna parviflora*, *Syzygium cumini*, *Acacia nilotica* and an occasional *Azadirachta indica*. The open woodland is mostly *Acacia nilotica* with a small proportion of *Zizyphus mauritiana*. The scrubland is dominated by *Zizyphus*, *Capparis aphylla*, *Salvadora oleoides* and *S. persica*. *Lantana camara* and *Adhatoda vasica* are common shrubs. The wild species of rice *Oryza rufipogon*, water lilies *Nymphaeae* spp., and *Trapa* are the important wild macrophytes. Grasses such as *Khus Vetiveria zizanioides*, *Scirpus* sp. and *Desmostachya bipinnata* grow in the uplands, which are flooded for a short duration.

**Avifauna**

One of the richest bird areas of the world, Keoladeo supports more than 350 bird species (Vijayan 1991). The site falls in Biome-12 representing the bird species of Indo-Gangetic Plains, besides the bird species of Biome-11 (Indo-Malayan Tropical Dry Zone) are also found.

The Park qualifies as an IBA under A1 (Threatened Species), A4i (1% threshold population), and A4iii (≥ 20,000 waterbirds). During good monsoon years, it is not uncommon to see a hundred thousand birds. It is one of the major breeding centres of the Painted Stork *Mycteria leucocephala*, Asian Openbill *Anastomus oscitans*, Darter *Anhinga melanogaster* and various egrets, herons, ibises and other storks. Many ducks, coot and rails occur much above their 1% threshold numbers. Up to five pairs Black-necked Storks breed in the Park. Two pairs of Pallas’s Fish Eagle *Haliaeetus leucocephalus* used to breed till the late 1980s but now, this bird occurs only as an occasional winter visitor. Similarly, Greater Adjutant *Leptoptilos dubius* has also stopped coming. However, the most famous disappearance of any species is of Siberian Crane *Grus leucogeranus*, which has declined from 200 birds in the 1960s to none in 2002.

*Keoladeo is the only IBA in India where the Siberian Crane used to come regularly till 2002.*
More details are given in Vijayan (1991) and subsequent papers.

**Critical Endangered**
- Oriental White-backed Vulture *Gyps bengalensis*
- Long-billed Vulture *Gyps indicus*
- Siberian Crane *Grus leucogeranus*

**Vulnerable**
- Spot-billed Pelican *Pelecanus philippensis*
- Lesser Adjutant *Leptoptilos javanicus*
- Lesser White-fronted Goose *Anser erythropus*
- Baer’s Pochard *Aythya baeri*
- Pallas’s Fish-Eagle *Haliaeetus leucoryphus*
- Greater Spotted Eagle *Aquila clanga*
- Eastern Imperial Eagle *Aquila heliaca*
- Sarus Crane *Grus antigone*
- Sociable Lapwing *Vanellus gregarius*
- Indian Skimmer *Rynchops albicollis*
- Stoliczka’s Bushchat *Saxicola macrorhyncha*

**Conservation Dependent**
- Dalmatian Pelican *Pelecanus crispus*

**Near Threatened**
- Darter *Anhinga melanogaster*
- Painted Stork *Mycteria leucocephala*
- Black-necked Stork *Ephippiorhynchus asiaticus*
- Oriental White Ibis *Threskiornis melanocephalus*
- Lesser Flamingo *Phoenicopterus minor*
- Ferruginous Pochard *Aythya nyroca*
- White-tailed Sea-Eagle *Haliaeetus albicilla*
- Lesser Grey-headed Fish-Eagle *Ichthyophaga ichthyaetus*
- Cinereous Vulture *Aegypius monachus*
- Red-headed Vulture *Sarcogyps calvus*
- Pallid Harrier *Circus macrorhyncha*
- Black-bellied Tern *Sterna acuticauda*

**OTHER KEY FAUNA**
- Important herbivores of the Park include the Cheetal *Axis axis*, Sambar *Cervus unicolor*, Bluebull *Boselaphus tragocamelus* and Wild Boar *Sus scrofa*, whereas the commonly sighted predators include Golden Jackal *Canis aureus*, Jungle Cat *Felis chaus* and Fishing Cat *Prionailurus viverrinus*. Striped Hyena *Hyaena hyaena*, and Smooth Indian Otter *Lutra perspicillata* are also found in small numbers. Leopard *Panthera pardus* is sometimes sighted, and recently, a Tigress *Panthera tigris* was seen for some months. Blackbuck *Antilope cervicapra* has become extinct in recent years, mainly due to habitat changes. Among reptiles, the Indian Rock Python *Python molurus* is quite common and a major tourist attraction.

**LAND USE**
- Tourism and recreation
- Nature conservation and research

**THREATS AND CONSERVATION ISSUES**
- Invasive species
- Livestock Grazing
- Irregular supply of water to the Park
- Pesticides from agricultural fields

Visitors to the Park have increased, especially in recent decades, their numbers fluctuating with the abundance of migratory waterfowl and colonial breeding birds. In the late 1980s, the number of visitors in a year averaged about 90,000 (Vijayan 1991). The revenue earned through entry fees and transport facilities inside the Park is significant. Local guides and rickshaw-pullers earn a sizeable income in the peak season, and so do the local food vendors, shopkeepers and hoteliers. Since 30% of the visitors are from abroad, including many bird watchers, nature lovers and photographers, the Park also helps earn foreign exchange for the country.

Major threats to the system arise from the paucity of water, extensive growth of vegetation inside the Park, and the dependence of the Park on the neighbouring villages and waterbodies. Illegal grazing is an acute problem and has become a social issue. Growth of *Paspalum* and *Prosopis chilensis* also threatens the local species. Based on 10 years study (Vijayan 1990, 1991) the BNHS has given recommendations for the management of this world-famous IBA. These recommendations should be followed strictly to restore the glory of this site.

**KEY CONTRIBUTORS**
- V. S. Vijayan and Bholu Khan

**KEY REFERENCES**
Khichan, 150 km north of Jodhpur in the northern part of the Thar Desert, Rajasthan, is a small village off the main tourist track. The village has recently been recognized as a tourist spot by the Rajasthan Tourist Development Corporation, mainly due to the presence of large wintering flocks of Demoiselle Cranes *Grus virgo*.

Khichan is located in a sandy desert area, so it has the typical xerophytic vegetation of the Thar. Among the tree species, *Prosopis cineraria* and *Salvadora sp.* are the commonest plants.

**AVIFAUNA**

Every year towards the end of August and in early September, just after the monsoon ceases, Demoiselle Cranes fly in from their breeding grounds on the steppes of Eurasia and Mongolia. The village is transformed overnight into a noisy crowded place, as *krok-krok* calls fill the air. The cranes have been attracted because for the last 150 years, villagers traditionally have fed them in a feeding house locally known as *Chugga ghar*. The number is about 4,000 (Rahmani 1997) but villagers claim that sometimes up to 10,000 are seen. The West Central Asia breeding population, which comes to the Indian subcontinent (especially western India) is estimated to be 100,000 birds, (Wetlands International 2002).

Khichan has been selected as an IBA because it holds more than around 4% of the wintering population. Besides the Demoiselle cranes, Khichan holds most of the desert fauna and flora. The Great Indian Bustard *Ardeotis nigriceps* is sometimes seen in the vicinity, especially during summer when it comes to drink water from the two lakes, which also attract assorted numbers of ducks and waders, but not in any significant number. The Black-capped Kingfisher *Halcyon pileata*, a coastal wetlands bird (Grimmett *et al.* 1998) has been sighted here.

Among the globally threatened species, Oriental White-backed *Gyps bengalensis* and Long-billed *Gyps indicus* vultures are still seen, albeit in very small numbers. Stoliczka’s Bushchat *Saxicola macrorhyncha* may be present in the surrounding scrub areas.

**OTHER KEY FAUNA**

The common mammals found in Khichan are the Red Fox *Vulpes bengalensis* and Chinkara *Gazella bennettii*, Bluebull *Boselaphus tragocamelus* is spreading due to availability of water from the Indira Gandhi Canal Project.

**LAND USE**

- Human settlement
- Tourism and recreation

**THREATS AND CONSERVATION ISSUES**

- Disturbance to birds by stray animals and visitors
- Encroachment

Since the Demoiselle cranes were often disturbed by dogs and passing villagers, a small feeding place (50 x 60 m) was set up at the edge of the village. However, this area has now become too small for the huge flocks of cranes that come to feed, so a new
solution should be found. Further problems have ensued from new settlers encroaching upon vacant government land, and building houses, which now hamper the preferred flight-path of the birds. This has created tension in the village between conservationists who want to assure the safety and peace of the cranes, and politicians who see the new settlers as potential voters, and support their stand. The local authorities have already had some of the unauthorised constructions removed under police escort, but the opposition continues to pressurize them.

The Rajasthan Tourism Department wanted to build a hotel very close to the crane roosting site ‘to boost tourism’, but this ill-conceived plan was dropped after protests by the conservationists that the tourist complex would disturb the movement of the cranes.

**KEY CONTRIBUTORS**
Asad R. Rahmani, Manoj Kulshreshtha, Krishna Kumar Vyas and Satyanarain Rajpurohit

**KEY REFERENCE**


General Description

The Kumbalgarh Wildlife Sanctuary in the Aravalli ranges is situated in the hilly tracts of Rajsamand, Udaipur and Pali districts. These wooded tracts formed the dividing line between the erstwhile states of Mewar and Marwar and were favourite hunting grounds of the rulers of these states.

Kumbalgarh commands a spectacular view of the vast sandy plains of Marwar in the west, the northeast to southwest streak of parallel ranges of the Aravalli in the middle, and the undulating plains of Mewar in the east. The Sanctuary also forms a dividing line between the two major watersheds of Rajasthan. To its eastern side is found the source of the River Banas, which flows into the Bay of Bengal routed through the rivers Chambal, Yamuna and Ganga. The rainwater on the western slope forms small rivers including Sukdi, Mithadi, Sumer and Kot which form the tributaries of River Luni that flows out in the Great Rann of Kutch. The Sanctuary is well known for the presence of a large population of Grey Junglefowl (Gallus sonneratii) and Grey Wolf (Canis lupus). It is also one of the best protected forests left in the Aravalli mountains. The Sanctuary is connected by road to Udaipur (75 km), Rajsamand (40 km) and Pali (80 km). The nearest railway station is Falna.

Avifauna

The Sanctuary, with perennial waterbodies and streams supports dense forest cover. More than 200 bird species are reported (Sharma 2002, Chhangani 2002). The threatened bird species are Sarus Crane (Grus antigone) and Indian Skimmer (Rynchops albicollis), reported by Sharma (2002) and Chhangani (2002) respectively.

Kumbalgarh is an excellent representative of the natural vegetation and avifauna of the Aravalli. Twenty five out of 59 bird species of Biome-11 (Indo-Malayan Tropical Dry Zone) are found here. The site was selected on the basis of criteria A3 (Biome restricted assemblages), although some threatened species are also found.

Other Key Fauna

Among the large mammals, the Sanctuary harbours Leopard (Panthera pardus), Sloth Bear (Melursus ursinus), Wild Boar (Sus sp.)
Kumbalgarh WLS is one of the few IBAs where Pied Tit Parus nuchalis is seen.

*scrofa*, Sambar *Cervus unicolor*, Spotted Deer *Axis axis*, Chinkara Gazelle *Gazella bennettii*, Four-horned antelope *Tetracerus quadricornis* and Bluebull *Boxelaphus tragocamelus Common Langur Semnopithecus entellus* is a commonly seen primate of the Sanctuary. Grey Wolf *Canis lupus*, Golden Jackal *C. aureus*, Hyena *Hyaena hyaena*, Indian Fox *Vulpes bengalensis*, Pangolin *Manis crassicaudata*. Porcupine *Hystrix indica*, Mongoose *Herpestes edwardsii* and Black-naped Hare *Lepus nigricollis* are the more commonly observed smaller mammals.

**LAND USE**
- Tourism and recreation
- Nature conservation and research
- Water management
- Plantation

**THREATS AND CONSERVATION ISSUES**
- Grazing
- Poaching
- Illegal felling of trees
- Agricultural expansion
- Human settlements
- Firewood collection
- Man-animal conflicts
- Paucity of water
- Invasive species (*Lantana camara* and *Prosopis chilensis*)

Due to village settlements in adjacent areas, activities such as collection of firewood, illegal felling of trees and poaching are known to occur inside the Sanctuary area. Strict patrolling is needed to prevent such activities. Awareness campaigns are required to control poaching and killing of animals. The Muchalla Maharaj Temple Trust is helping the Forest Department to look after the injured animals inside the Sanctuary, as well as the other wild fauna. The Trust has opened a small hospital to provide medical aid to the animals in and around the Sanctuary.

The site has very rich flora with dense cover in the core area, which has not yet been studied due to its remote undulating landscape. This area needs field surveys to document the fauna and flora. Rodgers and Panwar (1988) have strongly recommended establishment of at least a 20,000 ha national park as core area to prevent biotic pressures, and also have important water conservation benefits locally.

**CONTRIBUTORS**

**KEY REFERENCES**
MOUNT ABU WILDLIFE SANCTUARY

GENERAL DESCRIPTION

Being the only hill station in Rajasthan, Mount Abu is considered one of the most beautiful locations in the state. It comprises the famous Arbuda Hills (1,250-1,700 m) of the Aravalli Range made up of several valleys and steep mountain slopes. Guru Shikhar (1,722 m) in the Arbuda Hills is the highest peak between the Himalaya and the Nilgiri Hills.

Mount Abu has a very rich floral diversity with xeromorphic Subtropical Thorn Forest at the foothills to Subtropical Semi-evergreen Forest along watercourses and valleys at higher altitudes. Due to this wide range of habitats, Mount Abu harbours rich avifaunal diversity. Good populations of Grey Junglefowl *Gallus sonneratii* and Red Spurfowl *Galloperdix spadicea* are found in the Sanctuary.

Mount Abu is situated in the southwest region of Rajasthan, and separates the Western Desert Region from the Eastern Plateau and hilly terrain. By road, it is 28 km from Abu Road, which is c. 85 km from the district headquarters, Sirohi.

The site contains about 830 plant species from 112 families of which 328 species are of medicinal value. *Dicliptera abuensis* is strictly endemic to Abu. The dominant plant species are *Anogeissus sericea*, *Boswellia serrata*, *Mangifera indica*, *Phoenix sylvestris*, *Ficus bengalensis*, other *Ficus* spp., *Carissa opinarum*, *Caesalpinia* spp. and *Zizyphus* spp.

AVIFAUNA

Nearly 135 bird species have been reported by Sharma (2002), including two Critically Endangered species, Oriental White-backed Vulture *Gyps bengalensis* and Long-billed Vulture *G. Indicus*, and two Vulnerable species, Green Munia *Amandava Formosa* and Pied Tit *Parus nuchalis*. Mount Abu is a good example of the relict extant natural vegetation of the Aravalli. It lies in Biome-11 (Indo-Malayan Tropical Dry Zone). BirdLife International (undated) has identified 59 bird species from this biome. This site is selected as an IBA mainly on the basis of its biome assemblage of birds of Tropical Dry Deciduous and its relict patch of Tropical Semi-evergreen Forests, and also for the presence of good populations of Green Munia and Pied Tit.

Green Munia appears to be well distributed in this IBA. Tiwari and Varu (1999) have seen six in agricultural fields near Salgaon area, five near Adhar Devi Temple forest, and three near Teachers’s Training Centre and Kanyakumari Temple. Presence of this globally threatened species was further confirmed by Lodhiya (1999) when he saw it four times near Oriya village, 8 km from Mount Abu, and three times behind Mini Nakki Lake, 2 km from the famous Delwara Temple.

Mount Abu WLS has a disjunct population of Grey Junglefowl *Gallus sonneratii*. They were quite abundant on the Shanti Shikar Hill and Guru Shikhar region but are now much reduced in number due to trapping by tribals (Prakash and Singh 1995). This species is not threatened (BirdLife International 2001) but its presence, in the small surviving relict semi-evergreen forests in an otherwise very dry area, is of interest. The nearest other population of this basically south Indian species is Pachmarhi (c. 22° 30’N and 78° 25’E) in Madhya Pradesh (Ali and Ripley 1987).

This site is selected as an IBA mainly on the basis of its biome assemblage of birds of Tropical Dry Deciduous and its relict patch of Tropical Semi-evergreen Forests, and also for the presence of good populations of Green Munia and Pied Tit.

BirdLife International (undated) has identified 59 bird species from this biome. This species is not threatened (BirdLife International 2001) but its presence, in the small surviving relict semi-evergreen forests in an otherwise very dry area, is of interest. The nearest other population of this basically south Indian species is Pachmarhi (c. 22° 30’N and 78° 25’E) in Madhya Pradesh (Ali and Ripley 1987).

The Vulnerable Green Munia *Amandava formosa* is found in Mount Abu.
Another taxon worth noting is the Aravalli Red Spurfowl *Galloperdix spadicea caurina*, a subspecies of the Red Spurfowl (Ali and Ripley 1987). Although the Red Spurfowl is not a threatened species, the Aravalli subspecies has a very small distribution, with Mount Abu as its principal stronghold. Protection of this site is important for the survival of this subspecies.

**OTHER KEY FAUNA**

The most common large mammals in the Sanctuary are Langur *Semnopithecus entellus*, Sambar *Cervus unicolor*, Spotted Deer *Axis axis* and Chowsingha or Fourhorned Antelope *Tetracerus quadricornis*. Leopard *Panthera pardus* and Bear *Melursus ursinus* are occasionally sighted, generally near water holes. Small Indian Civet *Viverricula indica*, Jungle Cat *Felis chaus*, Porcupine *Hystrix indica*, Ratel or Honey Badger *Mellivora capensis*, Pangolin *Manis crassicaudata*, Indian fox *Vulpes bengalensis* and Golden Jackal *Canis aureus* are the common smaller mammals.

**LAND USE**

- Tourism and recreation
- Nature conservation and research
- Watershed management
- Plantation
- Pilgrim centre

**THREATS AND CONSERVATION ISSUES**

- Forest Fires
- Poaching
- Illegal felling of trees
- Disturbance to birds by tourists
- Invasive species (*Lantana camara*)
- Introduction of exotics *Eucalyptus* and *Grevillea*
- Tourism pressure
- Pilgrim pressure

The Sanctuary has a large human settlement. Urbanization is increasing due to the importance of Mount Abu as a tourist location. The Government of Rajasthan has ordered a check on new constructions in Mount Abu but strict implementation is lacking. Besides the heavy tourist traffic, introduction of exotic plant species *Eucalyptus* and *Grevillea robusta*, and infestation by the exotic *Lantana camara* has also disturbed the natural vegetation of Mount Abu Region. Several NGOs conduct nature camps and awareness camps inside the Sanctuary with the collaboration of the Forest Department. To some extent, this helps to create awareness, among the local people, of the need to protect Mt. Abu from further deterioration. Rodgers and Panwar (1988) have suggested declaration of a 5,000 ha core area as National Park, to provide better protection, as Mount Abu is of considerable biogeographical and ecological importance as an island of semi-evergreen forest in a semi-arid location.

**KEY CONTRIBUTORS**

Raza Tehsin, Satish K. Sharma, Sarita Sharma, Satya P. Mehra

**KEY REFERENCES**


NATIONAL CHAMBAL GHARIAL SANCTUARY

IBA Site Code : IN-RJ-11
State : Rajasthan
District : Kota, Bundi
Coordinates : 20° 40’ 29” N, 78° 04’ 59” E
Ownership : State
Area : 5,200 ha
Altitude : 252 m
Rainfall : 600 mm
Temperature : 3 °C to 48 °C
Biogeographic Zone : Semi-Arid
Habitats : Wetland, Riverine Vegetation

IBA CRITERIA: A1 (Threatened Species)

PROTECTION STATUS: Wildlife Sanctuary (Gharial Sanctuary), established in 1978

GENERAL DESCRIPTION
National Chambal Gharial Sanctuary is one of the most important riverine sanctuaries of the country. It was created in 1978 specifically for the protection of the endangered aquatic reptile, Gharial Gavialis gangeticus. It extends over 650 km across the states of Rajasthan, Madhya Pradesh, and Uttar Pradesh. The area in question is a 26 km stretch of river between Jawaharsagar Dam and Kota Barrage. The river flows through a 100-150 m gorge. The evergreen flora of the valley is in marked contrast with the Anogeissus forest of the uplands.

The vegetation of the Sanctuary mainly comprises of the riverine species along the coast of the river and the deciduous species in the region away from the river. Riverine species present near the waterline include Terminalia arjuna, Ficus glomerata and Syzygium cumini. The surrounding forest area is dominated by Anogeissus pendula, Boswellia serrata and Sterculia urens. (Satish K. Sharma pers. comm. 2003)

AVIFAUNA
About 150 bird species are reported from the site (Vyas 1998). Five species of vultures, four species of storks, Great Horned Owl Bubo bubo, Sarus Crane Grus antigone, Indian Skimmer Rynchops albicollis, Small Indian Pratincole Glareola lactea, and lapwings are some of the common residents. During winter, large congregations of Large Cormorant Phalacrocorax carbo, Brahminy Duck Tadorna ferruginea, and Black-headed Gull Larus ridibundus may be seen. Approximately 150-200 nests of Long-billed Vulture Gyps indicus have been sighted from the area in the past but the present number is not known. Egyptian Vulture Neophron percnopterus and Woolly-necked or White-necked Stork Ciconia episcopus have been recorded in the Sanctuary.

In India, it is one of the most important sites for the breeding of Indian Skimmer.

OTHER KEY FAUNA
Gharial Gavialis gangeticus and Marsh Crocodile Crocodylus palustris are common and the most important fauna after which the Sanctuary is named (Rao 1998). Red Crowned Roofed Terrapin Kachuga kachuga, Chitra Turtle Chitra indica, Ganges Soft Shell Aspideretes gangeticus and Small Indian Otter Lutra lutra constitute other important fauna. (Satish K. Sharma pers. comm. 2003)

LAND USE
- Nature conservation and research
- Tourism and recreation
- Irrigation

THREATS AND CONSERVATION ISSUES
- Logging
- Quarrying
- Fishing
- Repeated drought

The water from the site is overused for irrigation purposes as well as for quarrying. This, accompanied by the shortage of rainfall, decreases the water level in the river. The overuse of water should be checked to maintain the water level throughout the year for the residential avifauna.

KEY CONTRIBUTORS
Rakesh Vyas and Satish K. Sharma

KEY REFERENCES
PHULWARI WILDLIFE SANCTUARY

GENERAL DESCRIPTION

Phulwari Wildlife Sanctuary is among the few sanctuaries in Rajasthan having a rich floral diversity. It abounds in flowering plants, shrubs, herbs and climbers, hence the name Phulwari, i.e. the abode of flowers. It was the hunting ground of the erstwhile rulers of Bhomat, the region by which it is popularly known. It was declared as a Sanctuary in 1983 in recognition of its biodiversity. It comprises Tropical Dry Deciduous forests of miscellaneous species with rich growth of bamboo. The area is mostly inhabited by Meena, Garasiya and Kathodia tribals who still live in primitive conditions.

The Sanctuary is situated amidst the Aravalli Range in Udaipur district of Rajasthan, c. 123 km southwest of Udaipur. It borders Gujarat state to the south and southeast. The terrain is mainly hilly with a network of streams and nullas. The main river, Wakal, flowing southwards, divides the Sanctuary into two and debouches into Sabarmati river in Gujarat State.

The Sanctuary can be approached by road from Udaipur and Ahmedabad, which are 123 km and 140 km away respectively.

The important woody vegetation along the watercourses in the Sanctuary comprises tall trees such as Buchanania lanzan, Pongamia pinnata, Madhuca indica, Terminalia arjuna, Syzygium cumini, Ficus bengalensis and Phoenix sylvestris. The upper and middle slopes of the hills bear Terminalia tomentosa, Lannea coromandelica, Wrightia spp., Anogeissus latifolia and Diospyros melanoxylon.

AVIFAUNA

Phulwari Sanctuary is one of the most neglected sanctuaries of Rajasthan. Nevertheless, 202 bird species are reported from this site (Sharma 2002). Except for the two species of vultures recently classified as Critically Endangered (BirdLife International 2001), and the Vulnerable Pied or White-winged Black Tit Parus nuchalis, not many threatened bird species are found in Phulwari Wildlife Sanctuary, but the extant, albeit fragmented forest, harbours 30 out of 59 Biome-1 (Indo-Malayan Tropical Dry Zone) species.

The Sanctuary is also a good example of the representative faunal diversity of the Aravalli mountains. It also harbours five Near Threatened species in the waterbodies and streams but their numbers are not significant.

The Great Stone-Plover Esacus recurvirostris is reported from Phulwari WLS.

OTHER KEY FAUNA

General biodiversity of this Sanctuary has been well studied with long lists of reptiles, amphibians and mammals available (Sharma 1995, 1997, 2002). The key reptilian species of the Sanctuary are the Marsh Crocodile Crocodylus palustris, Monitor Lizard Varanus bengalensis and Indian Rock Python Python molurus. Among primates, Common Langur Semnopithecus entellus is very common. Leopard Panthera pardus, Sloth Bear Melursus ursinus, Golden Jackal Canis aureus, Hyena Hyaena hyaena, Indian Fox Vulpes bengalensis and Wild Boar Sus scrofa are also encountered.
Chinkara *Gazella bennettii* and Four-horned antelope *Tetracerus quadricornis* are the herbivores which provide food for the top carnivores. Chundawat *et al.* (2002) also reported Large Brown Flying Squirrel *Petaurista petaurista*. Along with Sitamata WLS (an IBA), Phulwari is the westernmost limit of the distribution of this species in India.

**LAND USE**
- Tourism and recreation
- Nature conservation and research
- Water management
- Plantation

**THREATS AND CONSERVATION ISSUES**
- Poaching
- Illegal felling of trees
- Human settlements
- Firewood collection
- Repeated drought
- Construction of dam
- Alteration of habitats

Due to village settlements situated inside and adjacent to the Sanctuary, activities such as collection of firewood, illegal felling of trees and poaching of animals including birds are known to occur. The Kathodias (also known as ‘Monkey-eating Tribe’) use traditional techniques for trapping and killing of wildlife, especially monkeys. Strict patrolling as well as awareness campaigns are required to check such activities.

Damming of the Mansi-Wakal river is in progress, which will stop the continuity of water flow in the river and will cause significant destruction of the habitats along the watercourses. This will, in turn, affect the faunal and floral diversity. The site has a rich flora, with dense cover in the core area. Field surveys should be undertaken to document the fauna. The Department of Forests (Wildlife Division) is conducting eco-trekking and camping for tourists to sensitize them, and create awareness of the necessity for protecting the Sanctuary.

**KEY CONTRIBUTOR**
Satish K. Sharma

**KEY REFERENCES**


**RAM SAGAR LAKE (Hindoli)**

**IBA Site Code**: IN-RJ-13  
**State**: Rajasthan  
**District**: Bundi  
**Coordinates**: 25° 36' 00" N, 75° 02' 60" E  
**Ownership**: State  
**Area**: 400 ha  
**Altitude**: 295 m  
**Rainfall**: 900 mm  
**Temperature**: 10 °C to 43 °C  
**Biogeographic Zone**: Semi-Arid  
**Habitat**: Freshwater Reservoir  

**IBA CRITERIA**: A1 (Threatened Species), A4iii (≥20,000 waterbirds)  
**PROTECTION STATUS**: Not officially protected

**GENERAL DESCRIPTION**

The Ram Sagar Lake is about 24 km north of Bundi and 170 km south of Jaipur. It is an irrigation tank watering agricultural land in the surrounding areas through canal systems. The lake was constructed by the erstwhile Maharaja of Bundi for irrigation. More than 10,000 waterfowl are recorded during winter. Many pairs of Sarus Crane use the surrounding areas for breeding. In February 2002, during survey 8,000-10,000 waterfowl and two pairs of Sarus raising their chicks were recorded (Kulshreshtra, in litt. 2002). Due to scanty rainfall in 2002, this lake was reduced to 25% of its total capacity.

Seventy-five percent of the wetland has submerged vegetation, dominated by Najas graminea, N. minor, Hydrilla verticillata, and Vallisneria natans. Only about 25 % of the area has emergent vegetation, which is found towards the periphery of the wetland. The species are mainly Ipomoea carnea and I. aquatica. Floating vegetation covers only 25% of the area. The major species are Nymphoides cristatum, Nymphaea pubescens and N. indica, Eichhornia crassipes and Cladophora. Lotus is commercially grown in the Lake.

**AVIFAUNA**

Ram Sagar (Hindoli) is one of the most important wetlands in the semi-arid Bundi district. However, during the last few years, waterfowl numbers have declined from more than 20,000 to 8-10,000 due to scanty rainfall. During normal rainfall years when the waterspread is extensive, and shallow areas become available at the fringes, up to 10 pairs of Sarus Cranes have been observed by local people. We have included it in the IBA list due to its great potential to attract more than 20,000 waterfowl, and because it is the nesting site for the globally threatened Sarus Crane. The Lake falls in Biome-11 (Indo-Malayan Tropical Dry Zone).

**OTHER KEY FAUNA**

At the Ram Sagar (Hindoli) Lake, 13 commercially valuable species of fish were recorded from the reservoir (Kulshreshtha 2002). Not much is known about other fauna.

**LAND USE**

- Irrigation
- Fishing

**THREATS AND CONSERVATION ISSUES**

- Agriculture
- Pollution: Pesticides
- Encroachment
- Eutrophication

This wetland is commonly used for agriculture, irrigation, drinking and wallowing by cattle, and clay gathering. People use the lake for a variety of agricultural purposes. Villagers often disturb wintering flocks of waterfowl. Overuse of water for agriculture, use of pesticides, encroachment in the lake by local villagers, reduction in water level and eutrophication are all associated problems.

**KEY CONTRIBUTOR**

Manoj Kulshreshtha

**KEY REFERENCE**

**GENERAL DESCRIPTION**

The Ranthambore National Park, at the junction of the Aravalli and the Vindhyachal Ranges, is a unique combination of natural and historical richness, standing out conspicuously in a vast arid and denuded tract of eastern Rajasthan. Ranthambore is c. 14 km from the town of Sawai Madhopur (Monga 2002).

Inside the core area are a few natural ponds and depressions, notable among them being Man Sagar, Lahpur Pond, Milak Talao near Jogi Mahal and Galai Sagar near Khandar.

Ranthambore ranges over a high undulating topography, from flat topped hills (Indala, Doodh-Bhat and Chiroli) to the conical hillocks and sharp ridges, from wide and flat valleys (Lahpur, Nalghati, Khachida, Anantpur) to narrow, rocky gorges (Sharma 2000).

Inside the core area, there are remnants of the old villages like Anantpur, Chiroli, Khachida and Bherda in the north, Lakarda and Lahpur in the middle and Guda in the south. The ruins of the old buildings and the Shikargahs (hunting grounds) of the Maharajas of erstwhile Jaipur State still exist.

Two protected areas, Kailadevi WLS and Sawai Mansingh WLS, are linked by narrow corridors to the core of Ranthambore NP and all these together comprise the Tiger Reserve.

The terrain of Sawai Mansingh WLS is flat and rocky, and the Devpura irrigation dam in the Sanctuary is a useful source of water for wildlife and a good habitat for aquatic flora and fauna, especially for migratory water birds.

The Kailadevi WLS is the northern extension of the Ranthambore NP in Karauli and Sawai Madhopur districts. The Sanctuary is bound to the west by the River Banas and to the south by the River Chambal. The forest cover is fairly sparse and spread out in the other parts. Main flora of the site are *Anogeissus pendula* mixed with *Acacia catechu*, *Acacia leucoploea*, *Dichrostachys cinerea*, *Ficus religiosa*, *F. bengalensis*, *F. glomerata*, *Cassia fistula*, *Albizzia lebbeck* and *Diospyros melanoxylon*.

**AVIFAUNA**

Ranthambore is world famous for its Tigers *Panthera tigris*, but not many people know that it has rich bird life as well. The Tropical Dry Deciduous Forest and wetlands support nearly 272 bird species (Chowdhary 2000). Sarus Crane *Grus antigone*, Imperial Eagle *Aquila heliaca*, Oriental White-backed Vulture *Gyps bengalensis*, Long-billed Vulture *Gyps indicus*, Lesser Adjutant *Leptoptilos javanicus* and Stoliczka’s Bushchat *Saxicola macrorhyncha* are among the threatened species found here. Many Near Threatened species are also found in the wetlands. The site qualifies as Biome-11 and harbours species of Indo-Malayan Tropical Dry Zone. BirdLife International (undated) has listed 59 species under Biome-11, out of which 33 have been seen in Ranthambore. It holds some of the best biome-restricted bird assemblages of the Tropical Dry Deciduous Forest in India.

During winter, the wetland of Ranthambore hosts 30-40 Black Storks *Ciconia nigra* and is probably the best area in northwest India to see this species.

<table>
<thead>
<tr>
<th>Critically Endangered</th>
<th>Vulnerable</th>
</tr>
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<td>Oriental White-backed Vulture <em>Gyps bengalensis</em></td>
<td><em>Leptoptilos javanicus</em></td>
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<td>Long-billed Vulture <em>Gyps indicus</em></td>
<td><em>Aquila heliaca</em></td>
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<tr>
<td>Sarus Crane <em>Grus antigone</em></td>
<td><em>Saxicola macrorhyncha</em></td>
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Photographs:
- [Ranthambore National Park and Tiger Reserve](https://example.com)
- [Forests and waterbodies of Ranthambore NP](https://example.com)
Important Bird Areas in India – Rajasthan

Important Bird Areas in India – Rajasthan

Near Threatened

- Darter: Anhinga melanogaster
- Painted Stork: Mycteria leucocephala
- Black-necked Stork: Ephippiorhynchus asiaticus
- Oriental White Ibis: Threskiornis melanocephalus
- Ferruginous Pochard: Aythya nyroca
- Cinerous Vulture: Aegypius monachus
- Red-headed Vulture: Sarcogyps calvus
- Black-bellied Tern: Sterna acuticauda

Biome-11: Indo-Malayan Tropical Dry Zone

- Red-headed Vulture: Sarcogyps calvus
- Painted Francolin: Francolinus pictus
- Jungle Bush-Quail: Coturnix coromandelica
- Painted Bush-Quail: Perdicula erythrorhyncha
- Indian Peafowl: Pavo cristatus
- Yellow-wattled Lapwing: Vanellus malabaricus
- Yellow-legged Green-Pigeon: Treron phoenicoptera
- Sirkeer Malkoha: Phaenicophaeus leschenaultii
- Indian Nightjar: Caprimulgus asiaticus
- Grey hornbill: Ocyceros birostris
- Yellow-fronted Pied Woodpecker: Dendrocopos mahrattensis
- Red-winged Bush Lark: Mirafra erythroptera
- Ashy-crowned Sparrow-lark: Eremopterus grisea
- Black-headed Cuckoo-shrike: Coracina melanoptera
- White-bellied Minivet: Pericrocotus erythropygus
- Common Woodshrike: Tephrodornis inquisitor
- Marshall’s Iora: Aegithina nigrolutea
- Indian Robin: Saxicoloides fulicata
- Image Prinia: Prinia socialis
- Jungle Prinia: Prinia socialis
- White-browed Fantail-Flycatcher: Rhipidura aureola
- Brahminy Starling: Sturnus pagodarum
- Bank Myna: Acridotheres giganianus
- White-bellied Drongo: Dicrurus caerulescens

OTHER KEY FAUNA

Ranthambore National Park is famous for Tiger. The other predators include Leopard P. pardus, Caracal Felis caracal, Ratel or Honey Badger Mellivora capensis, Jungle Cat Felis chaus, Sloth Bear Melursus ursinus, Wild Boar Sus scrofa, Golden Jackal Canis aureus, Hyena Hyaena hyaena and Common Fox Vulpes vulpes. The herbivores comprise Chital Axis axis, Sambar Cervus unicolor, Bluebull Boselaphus tragocamelus, Chinkara Gazella bennettii and Common Langur Semnopithecus entellus.

LAND USE

- Nature conservation and research
- Tourism and recreation

THREATS AND CONSERVATION ISSUES

- Overgrazing
- Fuel wood collection
- Poaching
- Tourism

There are many villages along the periphery of the core area and the buffer zone. They put enormous pressure on the Park and the Sanctuary. Illegal grazing is a constant problem which the forest guards have to deal with, almost on a daily basis, at the boundaries of the Park. As the Park is easily accessible and made famous by visits of celebrities, there is also tremendous tourist pressure.

KEY CONTRIBUTORS

Valmik Thapar, Sunjoy Monga and G. V. Reddy

KEY REFERENCES


**SAJJANGARH WILDLIFE SANCTUARY**

IBA Site Code : IN-RJ-15
State : Rajasthan
District : Udaipur
Coordinates : 24° 38’ 00” N, 73° 39’ 15” E
Ownership : State
Area : 519 ha
Altitude : 936 m
Rainfall : 650 mm
Temperature : 4 °C to 42 °C
Biogeographic Zone : Semi-Arid
Habitats : Tropical Dry Deciduous Forest

**GENERAL DESCRIPTION**

Sajjangarh Wildlife Sanctuary is located within the environs of Udaipur City. The Sanctuary lies around the Sajjangarh Fort, built by the erstwhile Maharana Sajjan Singh of Mewar in 1874 on Bansdara Hill, which is 936 m above msl. The Sanctuary lies 5 km from the centre of Udaipur City on its western boundary. Once a dense forest holding a large variety of wild fauna, it lost its forest cover due to biotic pressure. After declaration as a protected area in 1987, it has started to regain its vegetational cover. Thus, it is a unique example of habitat revival and restoration. Apart from improving the watershed of Ahar river, it also improves ground water and supplies clean surface water to the famous Pichola and Fatehsagar Lakes. Sujjangarh was famous for tigers but the last tiger was seen during 1956 (Sharma 1998).

Bari Lake, popularly known as Tiger Lake is situated on the western slope of the Sanctuary. The clean water of this deep lake provides ideal habitat for aquatic fauna and flora.

The flora of the Sanctuary is a typical representation of the Aravalli vegetation with the dominant species of *Anogeissus pendula*, *A. latifolia* and *Boswellia serrata*. Besides the Sanctuary also represents the scrub forest with the dominant species of *Acacia leucophloea* and *Zizyphus. Commiphora wighitii* (Guggul) (threatened plant), *Vitex nigundo* (Negar) and *Barleria spp.* (Vajradanti) are the important medicinal plants that are present in the sanctuary.

**AVIFAUNA**

The site is important due to the presence of nests of the Long-billed Vulture *Gyps indicus* on the rocky cliffs. In the scrub forest region of the Sanctuary, Pied Tit *Parus nuchalis* is found (R. Tehsin pers. comm. 2003; Sharma 2002). More than 130 bird species have been reported from the site (Sharma 1998, 2002). The site lies in Biome-11 and harbours 31 species of Indo-Malayan Tropical Dry Zone. BirdLife International (undated) has listed 59 species, so more than half are found at this site. Thus, this site easily fits the A3 criteria.

**IBA CRITERIA:** A1 (Threatened Species), A3 (Biome-11: Indo-Malayan Tropical Dry Zone)

**PROTECTION STATUS:** Wildlife Sanctuary, established in February 1987

**Vulnerable**

Pied Tit *Parus nuchalis*

**Near Threatened**

Red-headed Vulture *Sarcogyps calvus*

**Biome-11: Indo-Malayan Tropical Dry Zone**

Black Ibis *Pseudibis papillosa*
Long-billed Vulture *Gyps indicus*
Red-headed Vulture *Sarcogyps calvus*
Red-headed Merlin *Falco chicquera*
White-eyed Buzzard *Butastur teesa*
Painted Francolin *Francolinus pictus*
Rain Quail *Coturnix coronandica*
Rock Bush Quail *Perdicula argoondah*
Indian Peafowl *Pavo cristatus*
Yellow-legged Green-Pigeon *Treron phoenicoptera*
Plum-headed Parakeet *Psitacula cyanocephala*
Indian Nightjar *Caprimulgus asiaticus*
Grey Hornbill *Ocyceros birostris*
Yellow-fronted Pied Woodpecker *Dendrocopos mahrattensis*
Lesser Goldenbacked Woodpecker *Dinopium benghalense*
Red-winged Bush Lark *Mirafra erythropetra*
Ashy-crowned Sparrow-Lark *Eremopterix grisea*
Black-headed Cuckoo-shrike *Coracina melanoptera*
White-throated Babbler *Dumetia hyperythra*
Small Minivet *Pericrocotus cinnamomeus*
Common Woodshrike *Tephrodornis ponderianus*
Large Grey Babbler *Turdoides malcolmi*
Jungle Babbler *Turdoides striatus*
Indian Robin *Saxicoloides fulicata*
Indian Chat *Cercomela fusca*
Ashy Prinia *Prinia socialis*
White-browed Fantail-Flycatcher *Rhipidura aureola*
Pied Tit *Parus nuchalis*
Brahminy Starling *Sturnus pagodarum*
Bank Myna *Acridotheres gingeinias*
Whitebilled Drongo *Dicrurus caerulescens*
OTHER KEY FAUNA

This small Sanctuary bordering urban areas supports mammals such as Leopard *Panthera pardus*, Jungle Cat *Felis chaus*, India Palm Civet *Paradoxurus hermaphroditus*, Sambar *Cervus unicolor*, Spotted Deer *Axis axis*, Indian Pangolin *Manis crassicaudata*, Grey Langur *Semnopithecus entellus*, Porcupine *Hystrix indica*, Hyena *Hyaena hyaena*, Indian Fox *Vulpes bengalensis*, Golden Jackal *Canis aureus* and Small Indian Civet *Viverricula indica*. The reptilian fauna is represented by the Indian Starred Tortoise *Geochelone elegans*, Monitor Lizard *Varanus bengalensis*, and many snakes (Sharma 1999).

LAND USE

- Tourism and recreation
- Nature conservation and research
- Forestry

THREATS AND CONSERVATION ISSUES

- Erosion
- Collection of firewood
- Easy access to the Sanctuary
- Man-animal conflict
- Over-grazing

Sajjangarh is located within the boundary of Udaipur city therefore, it is easily accessible, leading to illegal collection of firewood and livestock grazing. Forest fires are started by local residents, to allow new grass growth. Also, there is the problem of man-animal conflict. The wild cats kill livestock from the nearby villages. Though the Forest Department has taken important preventive measures, awareness among the people residing around the site is still needed for better implementation of protective measures.

The Udaipur based Natural Environment – Education and Development (NEED) Organization along with the Forest Department (Wildlife Division) and Department of Science and Technology has organized several awareness camps for the locals to protect the site from illegal activities and to safeguard the nesting sites of *Gyps* spp.

Treking and Nature Camps for school children are also being conducted by the Forest Department in collaboration with NEED.

KEY CONTRIBUTORS

Satish K. Sharma, Raza Tehsin, Satya Prakash Mehra and Sarita Sharma

KEY REFERENCES


GENERAL DESCRIPTION

Sambhar is a large, shallow saline lake, only about 3 m at its deepest. The maximum length of the lake basin is 22.5 km, while the width ranges from 3.2 km to 11.2 km. The lake bed is almost flat.

The lake basin is divided into two unequal parts by a 5.16 km long dam between the settlements of Jhapok to the south and Gudha to the north. The western part is a natural, undisturbed, continuous sheet of water. The eastern part, which is used exclusively for salt extraction, covers 76.8 sq. km and comprises two large reservoirs for holding brine, with a series of canals and saltpans. The pans can be approached by the narrow bunds that separate them. After the brine reaches a certain level of concentration, it is transferred from the western part of the lake to the reservoirs through two sluice gates in the dam (Gopal and Sharma 1994).

Avifauna

Sambhar Lake supports a large number of birds especially Greater Phoenicopterus ruber and Lesser Phoenicopterus minor flamingos. About 45 species of aquatic birds (including ducks, geese, and shorebirds) have been recorded from the lake and its surroundings.

The flamingos have been a regular visitor for several decades. Agarwal (1951) reported that soon after the rains, as the lake is filled, “thousands of birds, flamingos and ducks descend on the lake and feed on innumerable insects and small animals that develop in water.” The number of flamingos visiting the lake
varies considerably, depending upon the timing and amount of rainfall. Both Greater and Lesser flamingos occur, the former greatly outnumbering the latter. In dry years, the population of migratory birds as well as resident birds is very low. After a good monsoon in 1982, Prakash Gole (pers. comm.) observed an estimated population of 50,000 flamingos and 200 pelicans (probably Great White Pelican Pelecanus onocrotalus), besides many other waterfowl species. However, he did not find any flamingo in the winter of 1984. During surveys conducted in 1992-93, it was estimated that the lake attracted a population of about 5000 flamingos (mostly in the salt pans), and an approximately equal number of other waterfowl species. Sangha (undated) has listed 57 bird species in the main lake and the reservoir up to May 1998. It includes many Near Threatened species.

**THREATS AND CONSERVATION ISSUES**

- Groundwater abstraction
- Salt production
- Drainage
- Grazing
- Kilns
- Infestation by *Prosopis chilensis*

Large number of anicut formations in the catchment area reduce the influx of water in the main aquatic body, due to which the water level is decreasing. Salt manufacturers, who leach out water from the lake to get more salt, more quickly, are deteriorating the waterbody. Immediate measures are required to check these problems.

**KEY CONTRIBUTORS**

Satish K. Sharma, Brij Gopal and K. P. Sharma

**KEY REFERENCES**


Important Bird Areas in India - Rajasthan

SARERI BANDH

<table>
<thead>
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<tr>
<td>State</td>
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<td>Coordinates</td>
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<td>Area</td>
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<td>Habitats</td>
<td>Freshwater Swamp</td>
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</table>

IBA CRITERIA: A1 (Threatened Species) A4iii (≥20,000 waterbirds)

PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

Sareri Dam was built by the Department of Irrigation in 1957 on Mansi River around 24 km north of Bundi. The water from the reservoir is used for supporting agriculture in the surrounding areas through canals (Kulshreshtha 2000). Eight to ten thousand waterfowl come to this wetland during winter. Many pairs of Sarus Crane *Grus antigone* use the habitat around the lake for breeding. In February 2002, Manoj Kulshreshtha, State Coordinator of IBCN, during Wetland Surveys of Rajasthan, found 8,000-10,000 waterfowl in the lake. Due to scanty rainfall in 2002, this lake was also reduced to one-fourth of its total capacity. During normal rains when waterspread is more, there could be more than 20,000 waterfowl (M. Kulshreshtha *pers. comm.* 2002).

Lotus is commercially grown in the lake. The surrounding area is under agriculture and bears *Acacia* and some planted trees.

AVIFAUNA

Sarus Crane was among the 26 species recorded from the lake and its catchment area. The dominant birds were - Ruddy Shelduck *Tadorna fer ruginea*, Coot *Fulica atra*, Black-winged Stilt *Himantopus himantopus* and Bar-headed Goose *Anser indicus*. The lake is important for its congregations of waterfowl. Since the last couple of years, the water level of the lake is reduced, so lesser number of migratory birds are visiting it. People have seen 8-10 pairs of Sarus here (M. Kulshreshtha *pers. comm.* 2002). The dam also attracts more than 100 Brahmminy Ducks, 300 Demoiselle Crane *Grus virgo*, River Lapwing *Vanellus duvaucelii* and Dalmatian Pelican *Pelecanus crispus* in large numbers during winter.

With the data available with us, the site does not qualify as an IBA but it has great potential to be developed as an excellent waterfowl refuge if water spread is maintained and poaching is controlled. Secondly, globally threatened Sarus Crane breeds here (3-4 pairs). Therefore, we have included it in the IBA list.

OTHER KEY FAUNA

Not much is known about the aquatic fauna, but four species of fishes were identified during a short visit: *Esomus sp.*, *Heteropneustes fossilis*, *Puntius sophore*, and *P. ticto*.

LAND USE

- Fisheries
- Agriculture
- Pollution by pesticides
- Encroachment
- Eutrophication

Over-use of water for agriculture, use of pesticides, encroachment in the lake by local villagers, reduction in water level, and eutrophication are the major conservation issues. This wetland is commonly used for agriculture, fishing, and drinking/wallowing by cattle and clay gathering. Agricultural practices were observed in the dried up area of the dam.

Detailed studies on the avifauna, especially on Sarus cranes are required urgently. Conservation awareness amongst local villagers and decision makers would help in making Sareri Dam as an excellent waterfowl refuge.

KEY CONTRIBUTOR

Manoj Kulshreshtha

KEY REFERENCE

SARISKA TIGER RESERVE

IBA Site Code : IN-RJ-18
State : Rajasthan
District : Alwar
Coordinates : 27° 25' 46" N, 76° 27' 49" E
Ownership : State
Area : 86,600 ha
Altitude : 400 - 777 m
Rainfall : 600 mm
Temperature : 11°C to 37°C
Biogeographic Zone : Semi-Arid
Habitats : Tropical Dry Deciduous, Tropical Thorn Forests

GENERAL DESCRIPTION

Sariska Tiger Reserve, situated in the Aravali Hills, is located in the district of Alwar, in the semi-arid western part of Rajasthan. The tract is mainly hilly and undulating and has numerous narrow valleys, two large plateaux Kiraska and Kankwari, and two lakes Manasarovar and Somasagar. Siliserh Lake is situated along the northeastern boundary of the Reserve. The total area of the Reserve is 80,000 ha, of which 30,220 ha is the buffer zone and 49,780 ha is the core area. The Reserve was created in 1978. The ancient Kankwari Fort is situated in the centre of the Reserve. Archaeological treasures, Neelkanth and Garh Rajor dating 9th and 10th centuries respectively, are the ruins of Shiva and Jain temples.

According to Champion and Seth (1968), the vegetation of Sariska is classified as Tropical Dry Deciduous and Tropical Thorn Forest. Dhok Anogeissus pendula is the dominant tree species covering 90% of the forest area. Boswellia serrata and Lannea coromandelica grow on rocky patches. Acacia catechu and Bamboo Bambusa arundinacea are common in the valleys; Butea monosperma and Zizyphus sp. are also found.

AVIFAUNA

More than 210 species have been recorded here: 120 resident, 73 migrant visitors and 18 vagrants (Sankar et al. 1993).

The site lies in Biome-11 (Indo-Malayan Tropical Dry Zone). According to BirdLife International (undated), 59 bird species can be considered as representative of this biome. This biome includes a wide range of habitats including both forests and open country. The Aravali chain of mountains is largely denuded, except in places such as Sariska. Some of the best examples of Tropical Dry Deciduous Forest are found in Sariska. 27 out of the 59 bird species of this biome have been reported. This list is too long to be included here. Most are quite common, and also found in man-modified habitat. The most interesting species include Painted Spurfowl Galloperdix lunulata that has not been recorded from arid and semi-arid tracts of Rajasthan (Shankar et al. 1993). The Aravalli subspecies of Red Spurfowl Galloperdix spadicea cairina, endemic to the Aravali hill range, is also found in a few localities. There are three lakes: Manasarovar and Somasagar and Siliserh, which attract large numbers of waterbirds, including some Near Threatened ones also.

Although, Sariska holds six globally threatened species, none of them have significant populations in this area, except perhaps Sarus Crane which breeds in small numbers in the surrounding fields. The two Gyps species of vultures are found but Sariska does not have significant breeding populations of these vultures. The remaining three species (Dalmatian Pelican, Greater Spotted Eagle and Imperial Eagle) are migratory and found in small numbers in this IBA. Five Near Threatened species have been recorded but not in significant numbers. Therefore, Sariska, as such, is not important for the survival of any globally threatened species (as listed in BirdLife International 2001) but it has perhaps the best representative of the original Tropical Dry Deciduous and Thorn Forests of the northern part of the Aravali hill ranges (another good tract is seen around Ramhambore NP, an IBA). Sariska is mainly classified as an IBA on the basis of Biome-11 bird assemblages.

OTHER KEY FAUNA

Beside the Tiger Panthera tigris, for which Sariska is famous, Leopard P. pardus, Caracal Felis caracal, Rusty Spotted Cat Prionailurus rubiginosus, Jungle Cat Felis chaus, Sambar Cervus unicolor, Spotted Deer Axis axis, Wild Boar Sus scrofa, Bluebull Boselaphus tragocamelus, Golden Jackal Canis aureus and Hyena Hyaena.
hyena are found. Among reptiles, Indian Rock Python *Python molurus* and Monitor Lizard *Varanus bengalensis* are common.

**LAND USE**
- Nature conservation and research
- Forestry
- Afforestation

**THREATS AND CONSERVATION ISSUES**
- Livestock grazing
- Encroachment by surrounding villagers
- Disturbance to birds
- Mining
- Poaching

There are 17 revenue villages located inside or on the outskirts of the buffer zone of Sariska. The main livelihood is agriculture and rearing of cattle for milk, and illegal grazing inside the Park is a constant problem. Two highways pass through the Park, that result in many road kills, sometimes including Tigers and Leopards. There is a demand to shift these roads outside the Park. Illegal stone mining around the Park is a major conservation threat, which has not been sorted out despite strict strictures by the Supreme Court. The mining lobby in Rajasthan is very strong with significant financial and political support and thwarts all efforts of the Forest Department.

Poaching of big cats and herbivores is also a problem in the Park. Gangs of poachers operate inside the Park and despite vigilance by the Forest Department manage to kill wild animals. This is proved by regular confiscation of skins, antlers and bones.

**KEY CONTRIBUTORS**
K. Shankar and Ghazala Shahabuddin

**KEY REFERENCES**
- Champion, H. G. and Seth, S. K. (1968) *A revised survey of forest types of India*. Govt. of India Press, Delhi.
SEI DAM RESERVOIR AND SURROUNDING ENVIRONS

IBA Site Code: IN-RJ-19
State: Rajasthan
District: Udaipur
Coordinates: 24° 46' 14" N, 73° 11' 60" E
Ownership: State
Area: 300 ha
Altitude: 291 m
Rainfall: 650 mm
Temperature: 5 °C to 42 °C
Biogeographic Zone: Semi-Arid
Habitats: Freshwater Reservoir, Tropical Moist Deciduous Forest

IBA CRITERIA: A1 (Threatened Species)
PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION
Sei Dam, on the River Sei, forms a large water reservoir used mainly for irrigation by the local tribal population. The reservoir serves as an important wintering ground for migratory birds. At the peak period of migration, congregations of more than 10,000 birds can be seen at the site. Moreover, the site falls in the belt of Gogunda-Pindwara Forests, which were once considered important breeding ground for the avifauna (Satish K. Sharma pers. comm. 2003). Due to human activities, this belt is quite disturbed, leaving only fragmented patches of natural forest. Seri Dam is around 90 km by road from Udaipur City on the Udaipur-Pindwara Road. Important flora around the Sei waterbody consists of Anogeissus latifolia, Boswellia serrata, Phoenix sylvestris, Sterculia urens, Mangifera indica, Syzygium heynianum, Butea monosperma, Ficus bengalensis and Vitex negundo.

AVIFAUNA
The site harbours around 200 bird species (Satish K. Sharma pers. comm. 2003) and lies in Biome-11. The BirdLife International (undated) has listed 59 species in Biome-11. In the forests surrounding the Sei Dam, about 30 out of these 59 species are known to occur. We have included this site as an IBA mainly because a stretch of thorn forest from Sei Dam to Anadara is important for the globally threatened White-winged Black Tit or Pied Tit *Parus nuchalis* and the Green Munia *Amandava formosa*. As the thorn forest is still present, although in degraded condition, it could be quite important for these two species. Detailed studies are urgently required. In the shallow zones of the reservoir, Sarus Crane *Grus antigone* is found, but it is not known how significant this site is for this species.

Kulshreshtha (2002) has seen 17 waterbirds in the Sei Dam, including 25 Bar-headed Geese *Anser indicus* and Oriental White Ibis or Black-headed Ibis *Threskiornis melanocephalus* but none of them were in any significant numbers. Therefore, this site is identified as an IBA more for the presence of Pied Tit and Green Munia, than for its waterfowl population.

OTHER KEY FAUNA
The forest area surrounding the site harbours Leopard *Panthera pardus*, Hyena *Hyaena hyaena*, Golden Jackal *Canis aureus*, Sloth Bear *Melursus ursinus*, Four-horned Antelope, Indian Pangolin *Manis crassicaudata*, Porcupine *Hystrix indica* and Langur *Semnopithecus entellus*.

LAND USE
- Irrigation
- Tourism and recreation

THREATS AND CONSERVATION ISSUES
- Excessive fishing by tribals
- Encroachment on marginal areas

The area surrounding the Sei Dam is under the Forest Department. The tribal population around the site depends largely on fuelwood collection. Their cattle graze on the forest vegetation. To check these adverse factors in the forest areas adjoining the Dam, alternatives such as development of non-conventional energy resources (biogas plant installation) to meet the tribals fuel needs and development of pasture land to meet the problem of grazing, should be encouraged by the administration.

KEY CONTRIBUTOR
Satish K. Sharma

KEY REFERENCE

SITAMATA WILDLIFE SANCTUARY

IBA CRITERIA: A1 (Threatened Species), A3 (Biome-11: Indo-Malayan Tropical Dry Zone).

PROTECTION STATUS: Wildlife Sanctuary, established in January 1979

GENERAL DESCRIPTION

Sitamata Sanctuary is located in South Rajasthan at a distance of 130 km from Udaipur city in Chittorgarh district. The Sanctuary represents the only teak forest in Rajasthan State, and is known for the presence of an isolated population of Large Brown Flying Squirrel *Petaurista petaurista philippensis* (Tehsin 1980). Before India’s Independence, the area served as a major supplier of bamboo to the Provinces. On the southeast of the Sanctuary lies Jakham Dam on the River Jakham. High hilly tracts surround it. In the hilly part of the Sanctuary, large colonies of Long-billed Vulture *Gyps indicus* were present up to the 1990s, but now few are left (Raza Tehsin pers. comm. 2002).

The forest of the Sanctuary has mythological importance, as it is the forest where Goddess Sita is believed to have spent her last days after being banished from Ayodhya by Lord Rama. The Sanctuary thus gets its name from her. Inside the Sanctuary, River Jakham distributes its water through rivulets named Luv and Kush that rejoin after passing through the Sanctuary. It is said that the river makes thirteen bends inside the Sanctuary. The flow of these rivulets throughout the year makes the forest lush green in the plain areas, with a crown density of over 40%.

The Sanctuary is at the junction of the Aravalli and Vindhyan Ranges, which makes the biodiversity of the Sanctuary very significant. The important woody vegetation of the site comprises of Teak *Tectona grandis*, *Butea monosperma*, *Diospyros melanoxylon*, *Emblica officinalis*, *Grewia flavescens*, *Tamarindus indica*, *Diospyros melanoxylon*, *Emblica officinalis*, *Grewia flavescens*, *Tamarindus indica*, *Diospyros melanoxylon* with large patches of Bamboo *Dendrocalamus strictus*.

**AVIFAUNA**

The area is quite rich in avifauna, and 178 bird species are reported from the site (Sharma 2002). The site lies in Biome-11 (Indo-Malayan Tropical Dry Zone), where BirdLife International (undated) has listed 59 species in the biome-restricted assemblages. In forests and grasslands of Sitamata, 31 species of this biome have been recognized, hence the site is important for the biome-restricted assemblages (A3 criteria). It also has a small nesting colony of Long-billed Vultures, now much depleted. Five species recognized as Near Threatened are also found here.
OTHER KEY FAUNA

The Sanctuary is known for the presence of an isolated population of the Large Brown Flying Squirrel. Other vertebrates commonly seen are Common Langur *Semnopithecus entellus*, Wild Boar *Sus scrofa*, Bluebull *Boxelaphus tragocamelus*, Sambar *Cervus unicolor*, Spotted Deer *Axis axis*, Chinkara *Gazella bennettii*, Four-horned antelope *Tetracerus quadricornis* and Black-naped Hare *Lepus nigricollis*. The important predators of the Sanctuary are Leopard *Panthera pardus*, Sloth Bear *Melursus ursinus*, Wolf *Canis lupus*, Hyena *Hyaena hyaena*, Golden Jackal *Canis aureus* and Indian Fox *Vulpes bengalensis*. Indian Pangolin *Manis crassicaudata* and Porcupine *Hystrix indica* also occur.

LAND USE

- Forestry / Plantations
- Human settlements
- Agriculture
- Water management
- Nature conservation and research
- Tourist and recreation

THREATS AND CONSERVATION ISSUES

- Village inside the site area
- Illegal felling of trees
- Firewood collection
- Poaching
- Vehicular traffic
- Disturbance to birds due to human activities

The site bears the only natural teak forest in Rajasthan. Since teak serves as an important source of timber of high economic value, the site faces acute threat of illegal felling of teakwood. Besides this, a large human population inhabits the Sanctuary area, due to which human activities such as agricultural practices, firewood collection and poaching are severe threats.

Rodgers and Panwar (1988) have recommended that at least 20,000 ha of extant teak forest area should be declared as national park. This will help in the safeguarding of this poorly protected biome.

KEY CONTRIBUTORS

R. S. Shekhawat, Satish. K. Sharma and S. P. Mehra

KEY REFERENCES


SONKHALIYA CLOSED AREA

GENERAL DESCRIPTION
Sonkhaliya is one of the few sites which provides shelter to the Great Indian Bustard (Rahmani & Manakadan 1983; Rahmani 1987). During the few surveys done in the latter half of 1980s, the population of this bird was estimated to be c. 1,500-2,000 for the whole country, with Rajasthan holding more than half (Rahmani 1986, 1987). Sonkhaliya held a population of more than 80 bustards (Rahmani and Manakadan 1988). It is one of the preferred Bustard areas as it is more or less plain with crop fields and highly degraded scrub forest. The main natural flora of the site consists of species of Prosopis, Acacia, Capparis. Cultivated crops are also present.

AVIFAUNA
No published checklist of birds is available, but it is assumed that more than 100 species along with many threatened species are present in this IBA site.

There has been a drastic decline in the numbers of globally Endangered Great Indian Bustard. In the 1980s, it was not uncommon to see flocks of 10-15 bustards in a day’s visit. The largest flock was of 55 bustards photographed by Kailash Sankhala in early 1980s (R. S. Rathore pers. comm. 2001). During a survey in 1986, 30 bustards were sighted by Rahmani (1986) in January. However, in January 2002, only five were seen after spending almost the whole day in search.

The Lesser Florican Syphoeotides indica is still found during monsoon in small numbers. It is difficult to estimate total numbers as their population and distribution fluctuates from year to year, depending upon the rainfall pattern.

Another globally threatened species occurring at this site is Stoliczka’s Bushchat, also called White-browed Bushchat Saxicola macrorhyncha. It is found in selected dry patches but is not difficult to sight.

Among the Near Threatened species, Painted Stork Mycteria leucocephala and Oriental White Ibis or Black headed Ibis Threskiornis melanocephalus are found in pools during good monsoon but not in any significant numbers. However, Red-headed or King Vulture Sarcogyps calvus and Cinereous Vulture Aegypius monachus are regularly seen, the latter only during winter while the former could be breeding in and around Sonkhaliya. There are chances that Houbara or Macqueen’s Bustard Chlamydotis macqueeni could be occurring here during winter because the habitat looks suitable in places, and this species has been found further east, in Sorsan Bustard Area in Baran district.

The site lies in Biome-11 (Indo-Malayan Tropical Dry Zone), in which BirdLife International (undated) has listed 59 species as biome-restricted assemblages. In this IBA, 24 such species have been identified till now, and more Biome-11 species are likely to occur.

OTHER KEY FAUNA
The other fauna which are usually associated with bustard habitats and are present in this IBA include Golden Jackal Canis aureus and Indian Fox Vulpes vulpes. Bluebull Boselaphus tragocamelus have increased intolerably in recent years, resulting in man-animal conflicts.

LAND USE
q Agriculture

THREATS AND CONSERVATION ISSUES
q Overgrazing
q Spread of cultivation
q Poaching
q Invasive species (Prosopis)
q Mining
The site is one of the few places that harbour the Great Indian Bustard; hence, it should be prioritized for protection. Though it has been notified as a Closed Area, the continuous degradation of the habitat due to extension of crop fields is of great concern and should be checked.

Since most of the land is under private ownership (in the form of cultivated land), habitat management for the benefit of the bustard is difficult. Therefore, not much can be done except for appointment of staff and establishment of a few core areas.

Poaching in and around Sonkhalia is a major problem. This picture of tribal hunters was taken near the main bustard area.

Owing to increase in the population of Bluebull or Nilgai, many villagers have stopped growing Bengal gram *Cicer arietinum*, which is the main winter food of the Great Indian Bustard in Sonkhalia (R. S. Rathor pers. comm. 2001; also see Rahmani 1989, Bhushan and Rahmani 1992). In the surrounding areas dominated by Muslims, where Bluebull menace is not so much due to regular hunting, Bengal gram is still grown in a large area. This attracts bustards to visit these crop fields, where they are not safe due to presence of hunters. Poaching is the single most important reason for the drastic decline in the number of bustards in Sonkhalia and the rest of Rajasthan. However, except for posting one forest guard, the Rajasthan Forest Department has not taken any long-term measures to protect the bustards of Sonkhalia.

There is an urgent need to study the movement of the Great Indian Bustard through telemetry and colour banding, to find out their main breeding centres for more effective protection, and also to identify some core areas where livestock grazing can be curtailed during the breeding season of the bustard. However, the most important step would be to stop poaching by posting more guards and by an extensive environmental education programme.

The population of Bluebull should be also checked so that people can go back to their traditional crop pattern. Unless these measures are taken, the chances of survival of the Great Indian Bustard in Sonkhalia are very remote.

**KEY CONTRIBUTORS**
Asad R. Rahmani and R. S. Rathore

**KEY REFERENCES**


TAL CHHAPAR WILDLIFE SANCTUARY

IBA Site Code: IN-RJ-22
State: Rajasthan
District: Churu
Coordinates: 27° 52' 00" N, 74° 30' 49" E
Ownership: State
Area: 790 ha
Altitude: 305 m
Rainfall: 200 mm
Temperature: 2 °C to 48 °C
Biogeographic Zone: Desert
Habitats: Tropical Arid Zone

GENERAL DESCRIPTION
Although Tal Chhapar Sanctuary in Churu District is famous for Blackbuck Antilope cervicapra, it is also popular with bird lovers. It is a flat saline depression, which used to get inundated during good rainfall years but after blockage of water channels of the Gopalpura hills and illegal establishment of salt works, the water regime has been changed and Tal Chhapar does not get as much water as it used to get.

The Tal Chhapar was a hunting reserve of the Maharaja of Bikaner and it was famous for Blackbuck and Demoiselle Crane Grus virgo shoots. The Maharaja of Bikaner had 200 wooden life-size dummies of Demoiselle Cranes in various poses to hoodwink the wild cranes and induce them to come near the waiting guns (Rahmani 1997). The last crane shoot took place in 1962.

The dominant species of trees are Prosopis cineraria, Zizyphus nummularia, Capparis decidua and a variety of grasses sedges, the most important sedge being Cyperus rotundus. The Sanctuary also supports salt-loving small bushes and grasses.

AVIFAUNA
Tal Chhapar is situated in northwestern Rajasthan and thus lies on the migratory path of many birds. The most spectacular migration seen here is that of harriers. Montagu’s Circus pygargus and Marsh Harrier Circus aeruginosus are more common, while Pallid Harrier Circus macrourus and Hen Harrier Circus cyaneus are found in smaller numbers. Besides these, the globally threatened Eastern Imperial Eagle Aquila heliaca is also found. Short-toed Snake Eagle Circaetus gallicus appears to be quite common. Tal Chhapar attracts many other raptors too (Sharma 1998; Sharma and Singh 1989).

The European or Kashmir Roller Coracias garrulus passes through the area on migration during September and October, whereas the Oriental Skylark Alauda gulgula, Crested Lark Galerida cristata, Indian Ring Dove or Eurasian Collared Dove Streptopelia decaocto, Little Brown Dove or Laughing Dove S. senegalensis and Indian Roller Coracias bengalensis can be found throughout the year. Bluetailed Bee-eater Merops philippinus and Green Bee-eaters M. orientalis are commonly found, for this is their breeding ground. The Black Ibis Pseudibis papillosa is frequently seen. However, the most famous migratory phenomenon is the arrival of the Demoiselle Cranes Grus virgo in the first week of September and their stay till March. According to the records of the Forest Department, up to 2,000 of these cranes are seen. This would be twice the 1% population threshold determined by Wetlands International (2002). The cranes are attracted to the tubers of Cyperus (Rahmani 1987).

Another important species is the Bar-headed Goose Anser indicus. It is not unusual to see more than 100 birds grazing in the grasslands of Tal Chhapar. Earlier records show that they used to come in much larger numbers when the tal (wetland) used to remain under water for a much longer period.

Till the early 1990s, the Oriental White-backed or White-rumped vulture Gyps bengalensis used to breed in and around Tal Chhapar. Many nests were located, during a survey in 1993-94, on Khejri Prosopis cineraria trees, sometimes as low as 4 m (Rahmani 1987). The Long-billed Vulture Gyps indicus was also seen during winter. The Red-headed or King Vulture Sarcogyps calvus and Cinerous Vulture Aegypius monachus are the Near Threatened species found in this IBA.

Tal Chhapar was selected as an IBA mainly due to its importance as the migratory path for a large number of birds, and also as an important feeding area for Demoiselle Cranes and Bar-headed Geese.

OTHER KEY FAUNA
The most famous large mammal of Tal Chhaper is the Blackbuck Antilope cervicapra. Nearly 1,000 of these are present. The other major mammals are the Golden Jackal Canis aureus, Indian Fox Vulpes bengalensis, Red Fox Vulpes vulpes pusilla, Jungle Cat Felis chaus and Desert Hare Lepus nigricollis dayorum (Rahmani 1987). Chinkara Gazella bennettii is present in the surrounding sand dunes but rarely see in Tal Chhapar proper. Among the reptiles, Spiny-tailed Lizard Uromastyx hardwickii is abundant. The Monitor Lizard Varanus bengalensis is also found, but in comparatively small numbers.
LAND USE
- Nature conservation and research
- Tourism and recreation
- Salt mining (illegal)

THREATS AND CONSERVATION ISSUES
- Livestock grazing
- Invasive species
- Illegal salt mining

The Forest Department had introduced *Prosopis juliflora* (= *chilensis*) a couple of years ago, which has run wild. Its removal is absolutely necessary from the main grassland. Till now, only half-hearted measures have been taken by the Forest Department, pleading lack of resources, but probably lack of will is the greatest hindrance. Now, this pernicious weed covers almost half of the grasslands.

Killing of Blackbuck by village Dogs *Canis familiaris* is another menace, which coupled with over-grazing by village livestock is creating havoc. The village dogs meticulously search Blackbuck fawn who do not find enough places to hide as the grass is all grazed by livestock (Rahmani 1984, 1997). Despite Tal Chhapar being a Sanctuary for almost 45 years and posting of forest staff, the Forest Department has not been able to control the menace of over-grazing by livestock.

To top it all, the illegal establishment of salt mines after a surreptitious transfer of Sanctuary land to the Revenue Department has permanently damaged this site. Under immense political pressure, the Forest Department transferred 417 acres of land to the Revenue Department, which at once gave this land over for salt works (Sharma and Singh 1989). Constant flow of labour and trucks creates disturbance to wildlife. Further details of threats, and measures required to protect Tal Chhapar are given in Rahmani (1987).

KEY CONTRIBUTOR
Asad R. Rahmani

**KEY REFERENCES**
GENERAL DESCRIPTION
The lake complex of Udaipur City consists of two important lakes namely Pichola (960 ha) and Fatehsagar (2,070 ha), interconnected by Rangsagar and Swaroopsagar lakes. The complex of lakes is situated in the western part of Udaipur City. The former rulers of Mewar had built these lakes.

Fatehsagar has four islands within it. One has been converted into a garden, Nehru Park; on another smaller island, a Solar Observatory has been erected; the third, a rocky outcrop, has been converted into a fountain; and a fourth island is near the northwestern shore. Pichola has two important island masses on which the Lake Palace, Hotel and Jag Mandir, are located.

The main source of water for Pichola Lake is Sisarma river. From Pichola, water is diverted to interconnecting waterbodies, which in turn supply the water to Fatehsagar. Fatehsagar also receives water from a small canal, Madar-ka-Nallah, connected to River Berach. Before India’s Independence, the water from Fatehsagar was hardly used for any purpose and the lake remained more or less full throughout the year. Presently, these lakes serve as the important water supply bodies for the domestic purposes of the city. Due to shortage of rainfall during the last ten years (from 1992); these lakes are getting water from Jaisamand. Nevertheless, the water levels of both the lakes are decreasing every year. This is affecting the number of migratory birds visiting the lakes.

Despite the fact that these lakes are within the growing Udaipur City, they attract a large number of waterfowl. Up to 10,000 could be seen in these lake complexes.

The macrophytic community is composed of 14 species at Pichola Lake and 16 species at Fatehsagar Lake (Sankhla et al. 1996). Eichhornia dominates Pichola and Nelumbo and Nymphaeoids alternatively dominate Fatehsagar in the floating zone community, whereas Hydrilla dominates in the submerged zone community in both the lakes, throughout the year. The emergent zone community is dominated by Paspalidium geminatum and Elaeocharis palastris.

AVIFAUNA
More than 85 bird species (Tehsin 1989; Sharma 2002) have been reported from this site and its environs. These include species of Biome-11 (Indo-Malayan Tropical Dry Zone).

Large congregations of Spot-billed Duck Anas poecilorhyncha, Northern Shoveller Anas clypeata, Black-winged Stilts Himantopus himantopus and Cormorants Phalacrocorax carbo can be seen during the peak of winter.

Spot-billed Pelican Pelecanus philippensis is a regular sighting from this Lake complex and more than 150 were counted in the winter of 2002 (R. Tehsin pers. comm. 2003). The visits of Sarus Crane Grus antigone (1-2 pairs) during winters is frequently observed in the surrounding field areas of the Lake Pichola whereas Pied Tit Parus nuchalis is most commonly sighted from the forest area in the catchment of the Lake Fatehsagar (Jamunia Ki Nal) (R. Tehsin pers. comm. 2003).

Vulnerable

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<tbody>
<tr>
<td>Spot-billed Pelican Pelecanus philippensis</td>
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<td>Sarus Crane Grus antigone</td>
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<td>Pied Tit Parus nuchalis</td>
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Near Threatened

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<td>Darter Anhinga melanogaster</td>
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<td>Painted Stork Mycteria leucocephala</td>
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<td>Black-necked Stork Ephippiorhynchus asiaticus</td>
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<td>Lesser Flamingo Phoenicopterus minor</td>
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<td>Ferruginous Pochard Aythya nyroca</td>
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<td>Pallid Harrier Circus macrocirus</td>
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</table>
OTHER KEY FAUNA

The environs of the lakes do not harbour any major mammalian and reptilian fauna of conservation concern.

LAND USE

- Tourism and recreation
- Nature conservation and research
- Fishing
- Agriculture
- Water management

THREATS AND CONSERVATION ISSUES

- Pollution
- Encroachment of catchment areas by human for their settlements
- Tourism
- Disturbance to the birds by water sports, habitat destruction
- Trapping and poaching of birds
- Siltation
- Invasion by *Eichhornia crassipes*
- Agricultural activities

Due to constant disturbance in the lakes by boats and around the lakes by automobiles as well as decrease in the aquatic flora, the lakes are becoming inhospitable for migratory birds. Some of the damage done to these wetlands is irreversible, such as construction around the lakes and blockage of surface water run-off from the catchment areas. Some such as habitat destruction on the islands, and excessive recreational boating could be rectified by the collective effort of the local population and administration. The Natural Environment Education and Development (NEED) Organization regularly conducts bird census in these lakes, along with mass awareness programmes with the help of Forest Department and Department of Science & Technology, Government of Rajasthan.

KEY CONTRIBUTORS

Raza Tehsin, Satish K. Sharma, NEED Organization (Udaipur)

KEY REFERENCES


Important Bird Areas in India - Rajasthan

**Baghdarrah Closed Area**

**IBA Criteria:** A1 (Threatened Species), A3 (Biome-11: Indo-Malayan Tropical Dry Zone)

**Protection Status:** Not officially protected

**IBA Site Code:** IN-RJ-24

**State:** Rajasthan

**District:** Udaipur

**Coordinates:** 24° 28' 00" N, 73° 52' 00" E

**Ownership:** State

**Area:** 342.19 ha

**Altitude:** 508 m

**Rainfall:** 650 mm

**Temperature:** 4 °C to 42 °C

**Biogeographic Zone:** Semi-Arid

**Habitats:** Freshwater Swamp, Tropical Dry Deciduous Forest

**General Description**

The Baghdarrah Nature Park is situated 15 km east of Udaipur on the Udaipur-Jhamar Kotra Road, amidst the ancient Aravalli Hills. As the name indicates, the area used to have Tigers *Panthera tigris*. Records reveal that the forest included in the Protected Area used to be the shikargah of the erstwhile rulers of Mewar.

Baghdarrah Lake, a waterbody spreading over 30 ha, provides an ideal habitat for aquatic flora and fauna. A number of migratory waterfowl could be seen in the lake during winter. The site provides an excellent natural home for crocodiles *Crocodylus palustris*, which were seen freely floating on the pond water.

The surrounding vegetation of this closed area represents the dry deciduous forest type. The tall trees of the forest patch provide nesting for the vultures. The important tree species of the forest includes *Sterculia urens*, *Butea monosperma*, *Terminalia* spp., *Ficus* spp., *Acacia* spp., *Cassia fistula* and *Boswellia serrata*. Major aquatic flora include *Polygonum glabrum*, *Typha angustata* and *Trapa natans*.

**Avifauna**

More than 130 bird species are reported from this IBA site (Sharma 2002). The site qualifies as biome 11 (Indo-Malayan Tropical Dry Zone). Sarus Crane has been observed frequently, possibly coming from other lakes of Udaipur (Satish K. Sharma pers. comm. 2003).

Critically Endangered

- Oriental White-backed Vulture *Gyps bengalensis*
- Long-billed Vulture *Gyps indicus*

Vulnerable

- Sarus Crane *Grus antigone*

**Biome-11: Indo-Malayan Tropical Dry Zone**

- Black Ibis *Pseudibis papillosa*
- Oriental White-backed Vulture *Gyps bengalensis*
- Long-billed Vulture *Gyps indicus*
- Red-headed Vulture *Sarcogyps calvus*
- White-eyed Buzzard *Butastur teesa*
- Painted Francolin *Francolinus pictus*
- Indian Peafowl *Pavo cristatus*
- Yellow-legged Green-Pigeon *Treron phoenicoptera*
- Plum-headed Parakeet *Psittacula cyanocephala*
- Sirkeer Malkoha *Phaenicophaeus leschenaultii*
- Indian Nightjar *Caprimulgus asiaticus*
- Indian Grey Hornbill *Ocyceros bicornis*
- Lesser Golden-backed Woodpecker *Dinopium bengalense*
- Ashy-crowned Sparrow-Lark *Eremopterix grisea*
- Black-headed Cuckoo-Shrike *Coracina melanotera*
- Small Minivet *Pericrocotus cinnamomeus*
- Indian Robin *Saxicoloides fulicatus*
- Large Grey Babbler *Turdoides malcolmi*
- Jungle Babbler *Turdoides striatus*
- Ashy Prinia *Prinia socialis*
- Brahminy Starling *Sturnus pagodarum*
- Bank Myna *Acridotheres ginnianus*

Important Bird Areas in India - Rajasthan

LEAD USE
- Human settlements
- Agriculture practices
- Forestry
- Nature conservation and research
- Tourism and recreation

THREATS AND CONSERVATION ISSUES
- Livestock grazing
- Poaching
- Pollution due to phosphate factories

Besides their main role of supplying water to the citizens, the lakes of Udaipur are important for a large number of waterfowl. However, due to scanty rainfall in recent years, especially 1998 onwards, these lakes are facing water shortage. At the same time, disturbance to bird life is increasing due to human activities (recreational boating, pumping of water, pollution by sewage and garbage). As a result, many birds leave these city lakes and turn to Baghdarrah, where increasingly large numbers of water birds (around 8,000) can be seen now.

Baghdarrah is a away from the city environs, and the water is also not used for domestic purposes, so the lake provides a fine habitat for winter birds. Recognizing this, the Wildlife Division of Forest Department had taken steps in 2002 to safeguard the site for birds and for the Crocodile.

However, all these efforts face difficulty due to the pollution load from the developing phosphate factories in the surrounding environs. These factories release acidic emissions from their stakes, which mix in the air, and affect the air quality. Besides, the water released from the factories is deteriorating the underground water table. If measures are not taken to solve this problem, the future of this IBA site will be in jeopardy.

KEY CONTRIBUTORS
Raza H. Tehsin, Satish K. Sharma, Satya P. Mehra, Sarita Sharma

KEY REFERENCE