

ILLUSTRATED FLORA OF KEOLADEO NATIONAL PARK, BHARATPUR, RAJASTHAN pdf

1: National Parks and Wildlife Sanctuaries in Rajasthan, India - Rajasthan Tourism

Illustrated Flora of Keoladeo National Park, Bharatpur, Rajasthan: A general guide to the wetland flora of the Gangetic plains Hardcover - May 7,

A unique feature of the wetland ecosystem of KNP is its origin from a natural depression, which was an evanescent rainfed wetland Vijayan later extensively modified and managed. Subsequently, several earthen bunds, which divide the Park into compartments or blocks, were constructed containing sluice gates at certain points to regulate the water level. This water remains in the Park till it dries naturally in the summer. The Park is the wintering ground of an enormous congregation of migratory waterfowl and home to resident avifauna. It is the only wintering ground for the central population of the rare and highly endangered Siberian Crane *Grus leucogeranus* in India. A large number of breeding colonies of fish-eating birds occur in the monsoon and autumn months. The Park provides an opportunity to birders to watch birds from close proximity. Salim Ali in his autobiography, *The Fall of a Sparrow*, describes it thus: The area of the Park is a natural depression which is believed to be part of a riverbed, probably that of Yamuna, which subsequently changed its course. Anon. For the first time in the year , this reserve was flooded with water released from the Ajan Bund, which was built in the mids by the then ruler of Bharatpur, Maharaja Suraj Mal Drake-Brookman , Gasquire , Pandey Lord Curzon formally inaugurated the reserve with an organized duck shoot in On November 12, , the world record of duck shooting " birds in a day " was set here by Lord Linlithgow, the then Viceroy of India. The duck shoot record is mentioned in an inscription on a pillar near the Keoladeo Temple. Sport of waterfowl hunting was the prime reason for the creation of this reserve. Although there were other reasons too such as the need for a grazing facility for the village cattle and protecting Bharatpur from frequently occurring floods. In , its boundaries were notified, and since then the reserve also served as a refuge for old, infirm cows which were left there by locals. The forest reserve continued to be a hunting preserve for the rulers but was simultaneously also the primary natural resource for the local economy. Anon. At a nominal fee per cattle head a person could graze their cattle inside and even use the other forest resources for different purposes. It was in the year , with the enforcement of the Bharatpur Forest Act that formal management of the reserve was initiated. The erstwhile Shikar Department was brought under the Forest Department in accordance with the rules for protection of wildlife and forests of Rajasthan, framed for the period ranging Management of the shooting reserve, especially the plantation, was carried out according to the working plan of After Independence, with the consistent efforts of Dr. The shooting though continued till The rulers retained hunting rights until these were withdrawn in A brick wall was constructed around the sanctuary perimeter from to When India became a Contracting Party to the Ramsar Convention in , Keoladeo became one of the first of two wetlands in the country Chilika Lake, Orissa being the other to be listed as a Ramsar site in October On August 26 the site was declared a National Park an area of All forms of biodiversity exploitation inside the park were stopped in accordance to the Wildlife Protection Act, Geographical Features Location Fig 1: It is flat with a gentle slope towards the centre, forming a depression of about 8. This 29 sq km reserve is 50 km away from Agra and km from Delhi. It experiences extreme climatic conditions. The diurnal temperature varies from 0. Rainfall occurs in the southwest monsoon season, mainly during July-August. The area consists of an artificially created flat patchwork of marshes in the Gangetic plain which is maintained by a system of canals, sluices and dykes. Normally, water is fed into the marshes from inundations of the rivers, which are impounded on arable land by means of an artificial dam Ajan Bund. It is flooded to the depth of m throughout the monsoon July-September. From February onwards it begins to dry out and by June water remains in a few pockets only. For much of the year the area of wetland is only 1, ha. Biodiversity Floral Diversity and Habitats The Park has a remarkable diversity of habitats which harbor a varied group of aquatic, semi-aquatic and terrestrial wildlife. The flora of the Park has been studied extensively by Prasad and his team , , and Its unique mosaic of habitat types ranges from temporary swamps and potholes, which hold water for a

few weeks only, to floodplains where water flows over for several months. The wetlands of KNP have 90 species of flowering plants, of which *Paspalum distichum*, a perennial grass, is the most dominant species. Woodlands with thickets are distributed in scattered pockets. Each of the major types is further divided into subdivisions according to dominant or characteristic species and based on the density of trees or thickets. Broadly, the habitats could be classified as wetlands 11 sq km and terrestrial habitats 18 sq km which include grasslands 5 sq km and woodlands 13 sq km. Wetlands constitute one-third of the KNP and are the lifeline of the Park due to their unique biodiversity. It is the wetland habitats that attract thousands of migratory waterfowl. The migratory as well as resident birds use wetlands for a part of or all of their life-cycle. Apart from the avian variety, several species of microbes, insects, amphibians, reptiles, fish, and mammals are part of this ecosystem. The grassland habitat is dominated by khus grass *Vetiveria zizanoides*, a tall coarse grass whose roots contain oil famous for its aroma, interspersed with few other trees and shrubs. The grassland provides an excellent habitat for insects, insectivorous birds rollers, drongos and flycatchers, partridges, quails and mammals such as spotted deer, blue bull, and wild boars. Other terrestrial habitats like woodlands are frequented with mammals such as the blue bull, spotted deer and jackal. Overall, the flora of the Park comprises of species of angiosperms. The richness of the varying habitats provides feeding and breeding sites for many invertebrates. Macro-invertebrates constitute a major link in the food-chain and functioning of the ecosystem. Among the key groups, about 50 species of butterflies and approximately 16 species of odonates were recorded from KNP. Around 50 species of fishes were recorded in and around KNP. Herpetofaunal lists accounted 8 species of amphibians and 28 species of reptiles. The number of reptile species found in KNP is high considering its size Bhupathy, which is probably due to its strategic location bordering the dry semi-arid and wet Gangetic flood plains. KNP has 7 species of turtles, 8 species of lizards and 14 species of snakes. KNP holds a considerable number of birds in its diverse habitat. One of the major conservation values of the Park is its role as a wintering habitat for a multitude of migratory waterfowl belonging to 21 species Bhupathy et al. The Park also acts as a staging ground during immigration and emigration of waterfowl from the Palearctic Region. Avifauna is the most studied component of the Park. In all, 28 species of mammals, including 6 species of larger herbivores such as sambhar, cheetal, nilgai, blackbuck, wild boar and feral cattles; and 6 species of carnivores such as jackal, hyena, jungle cat, fishing cat, civet and otter are found within the Park. A panther was reported before the s Deptt. In , a tigress was sighted inside the Park for a few months Deptt. Blackbucks are now rarely sighted only in as compared to hundreds in the s. Hanuman Langurs individuals are of rare sighting at the Aghapur check-post side. Avifaunal Research The Park is an important study centre for scientists and naturalists. Although it also has a rich variety of flora and fauna, the prime focus for the workers and visitors is avifauna. Therefore, a large percentage of the research studies concentrate on birds, which is evident from the objective of its origin. The presence of large congregations of resident and migratory waterfowls, along with the only central population of the Siberian Crane *Grus leucogeranus* in the whole country, has made it an important site for bird studies. Heronries made by several breeding species of storks, cormorants, herons, egrets, ibises, spoonbills, darters and a number of ducks, coots, rails, etc. Siberian Crane *Grus leucogeranus* The most important species of KNP is the Siberian Crane, which is one of the endangered species of cranes in the world Archibald et al. Every year a major part of its western population covers a distance of around 6, km from Siberia to reach KNP Bharatpur Sauey The population of the Siberian Crane visiting the Park began declining between and and from there has not been a single sighting in KNP. Only very few records of their sightings outside the Park are available Sauey et al. Vijayan mentioned a single individual through information from Dr. Bhave at Urmila Sagar, Dholpur in February Thereafter no confirmed reports are available to prove the occurrence of the Siberian Crane in India. It has remained a spectacular avifauna refuge especially for water birds. Given the importance of the wetland as a waterfowl habitat, various management measures have been taken to protect the Park from human beings and domesticated animals. The removal of fuelwood and fodder by villagers as well as cattle grazing have been considered as severe problems. The wading of buffaloes in the water disturbs the birds, damages their eggs,

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and stirs up the mud. To thwart their entry, a brick wall was built around the Park and in cattle were banned from grazing in Keoladeo Ghana Gopal. In the present scenario, the main concern is the irregular water supply to the Park. Another critical issue has been plant species such as *Paspalum distichum* and *Prosopis juliflora*. Last but not least are the socio-ecological issues which need immediate attention for the success of conservation programs around KNP.

Water Crises The region has a history of floods and droughts, the frequency of these has changed over the decades, with a decrease in floods and increase in droughts during the s Bhatnagar et al. The Banganga and Gambhiri rivers were the sources of water for the Ajan Bund but since the s, Gambhiri is the only surviving source. In the subsequent years, the water flow of Gambhiri also reduced due to the construction of the Panchana Dam upstream, which resulted in the drying up of the river downstream. The ponds and reservoirs along the course of the river which were the main source of fish for the Park were adversely affected. Although the Dholpur-Bharatpur Chambal Water Project fulfills its measurable water requirement, the Park is facing an acute shortage of water from its traditional sources.

Prosopis juliflora Invasion *Prosopis juliflora* was introduced in the Park in the s Dept. In , the Park Management began the work of uprooting it with the help of local people. The success depends on the inundation of the Park with water.

Paspalum distichum The results of preventing cattle from entering the Park to check the damage from grazing are worthy of attention Donahue

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2: Keoladeo National Park – eRajasthan Tourism

Illustrated Flora of Keoladeo National Park, Bharatpur, Rajasthan: A general guide to the wetland flora of the Gangetic plains by Prasad, V. P.; Mason.

Nearest airport at Agra is only 65 km away By Train: Bharatpur is on the Delhi to Mumbai broad-gauge line. Bharatpur is connected to the rest of India with good Bus service The Keoladeo Ghana National Park Each year before the advent of winter in the northern hemisphere thousands of birds wing their way across the frozen waters of Siberia, Mongolia, Tibet and the high reaches of eastern Europe to the warmer subcontinent of India. One of the choicest destinations for these avians is the marsh of Bharatpur lying between the cities of Agra and Jaipur in the north-west. More than species of birds are found in this small park of 29 sq. The sanctuary derived the first part of its name Keoladeo from a temple dedicated to Lord Shiva situated in the central zone of the park. The other part Ghana of the name is a Hindi word denoting dense and thick forests. In earlier times, Bharatpur town used to be flooded regularly every monsoon. In , an earthen dam Ajan Dam was constructed, to save the town, from this annual vagary of nature. The depression created by extraction of soil for the dam was cleared and this became the Keoladeo lake. At the beginning of this century, this lake was developed, and was divided into several portions. A system of small dams, dykes, sluice gates, etc. This became the hunting preserve of the Bharatpur royalty, and one of the best duck - shooting wetlands in the world. Poaching was banned by the government in and large-scale conservation efforts began by famous ornithologist Dr. Salim Ali led the sanctuary to be declared as a National Park in March The Keoladeo Ghana National Park is home to an astonishing range of flora and fauna. Birds come to this national park in waves. From August through November, it is indigenous water birds. In early October the first migrants arrive from the high plateaux of Central Asia, Mongolia and Siberia, the most eagerly awaited of the lot being the gravely threatened Siberian crane. There are only two wintering places, left for this extremely rare species. One is in Feredunkenar in Iran, and the other is Keoladeo Ghana. The journey to Bharatpur takes them 6, kms from their breeding grounds, in Siberia. They arrive in December and stay till early March. Unlike Indian cranes, the Siberian crane is entirely vegetarian. It feeds on underground aquatic roots and tubers in loose flocks of five or six. The month of March sees most of these migrants leave the national park. But animals that have made it their home-the nilgai blue bull , sambar, jungle cat and mongoose-spend the entire summer here. A bike or rickshaw ride through the length and breath of this sanctuary is an unforgettable experience. Most parts of the sanctuary can be reached by using bicycles or rickshaws that can be hired from the office of wildlife authorities situated at the main gate. Binoculars and English-speaking trained guides can also be hired to increase your chances of sighting a Siberian crane, the most famous of its migratory guests. With almost bird species already spotted at Bharatpur, the place is certainly one of the most inviting bird sanctuaries in the world. Bharatpur Government Museum Located in the centre of the famous Lohagarh Fort, the Bharatpur Museum houses a rich collection of archaeological wealth of the nearby areas as from the old Bharatpur State. The huge palatial building Kachahari Kalan, once the administrative block of the rulers of Bharatpur state, was converted into a Museum in Later on, the Kamra Khas personal chamber building on the first floor was added to the museum. It exhibits sculptures found during the excavation of old villages e. Noh, Mailah, Bareh, Bayana etc.

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3: Keoladeo National Park - Wikipedia

Although the Keoladeo National Park in Bharatpur, Rajasthan covers a very small area, the number of species identified is very high. With keys to families, genera and species, this book offers a.

Sambar are a common sight at Keoladeo Ghana National Park. Wild boar and Indian porcupine are often spotted sneaking out of the Park to raid crop fields. Two mongoose species, the small Indian mongoose and the common Indian gray mongoose, are occasionally found. Cat species present include the jungle cat and the fishing cat. The Asian palm civet and the small Indian civet are also present, but rarely sighted. The smooth-coated otter can be seen attacking birds such as coots and at times crossing the woodlands. Golden Jackals and Striped hyenas are also sighted and have taken up the role of predators and feed on birds and rodents. Many species of rats, mice, gerbils and bats are also found in the park. During a good rainy season the park receives around 65 million fish fry and fingerlings. The fish population and diversity are of high ecological importance as they form the food source of many birds. The herpetofauna of Keoladeo National Park is diverse. Out of the ten species of turtles that are seen in Rajasthan, seven are present in this park. Besides this, there are five lizard species, thirteen snake species and seven species of amphibians. The bullfrog and skipper frog are commonly found in the wetlands. It is often easy to see a python out of its burrow and basking in the sun on a sunny winter day. The common monitor lizard, Indian porcupine and bi-colored leaf-nose bat have been seen in the same burrow as that of the python. Primates include the rhesus macaque and Hanuman langurs. Large predators are absent, leopards having been deliberately exterminated by, but small carnivores include Bengal fox, jackal, striped hyena, common palm civet, small Indian civet, Indian grey mongoose *Herpestes edwardsi*, fishing cat, leopard cat, jungle cat and smooth-coated otter. Ungulates include blackbuck, chital, sambar, hog deer, nilgai and wild boar and feral cattle. During and attempts were made to eradicate the mesquite *Prosopis juliflora* and specimens of the asteraceous genus *Cineraria* to prevent the park being overrun with these invasive species and to assist natural vegetation in recovering. World Heritage Site[edit] Eurasian spoonbill To be included on the World Heritage List, sites must be of outstanding universal value and meet at least one out of ten selection criteria. These criteria are explained in the Operational Guidelines for the Implementation of the World Heritage Convention which, besides the text of the Convention, is the main working tool on World Heritage. The criteria are regularly revised by the Committee to reflect the evolution of the World Heritage concept itself. The park is a wetland of international importance for migratory waterfowl. It is the wintering ground for the rare Siberian crane and habitat for large numbers of resident nesting birds. Water for the wetlands is supplied from the dam outside the park boundaries. The water level inside the park is regulated by means of dykes and artificial embankments. The alternative arrangement of water in case of emergencies such as danger of marshes and water bodies drying out completely is ensured through four boreholes so that survival of the aquatic flora and fauna is not endangered before the arrival of monsoon. The boundaries of the park are clearly delineated by a thirty two Kilometer long boundary encircling the park restricting the encroachment of humans and domestic cattle inside the perimeters of the park. The road from Bharatpur town which used to intersect the park was also closed and relocated outside the boundary to reduce the disturbance by visitors from the town which helped in bringing down the levels of pollution inside the park considerably. As opposed to most of the national parks in India and elsewhere, Bharatpur Bird sanctuary has no buffer zone. Due to the heavy density of population and more than 15 villages settled on the periphery of park, it was impossible for authorities to create a buffer zone around the bird sanctuary. Grazing and collection of firewood and grass was phased out from the park as far back as Constraints[edit] The Siberian crane, which formerly lived throughout the entire Indo-Gangetic plains of India, is reported to be no longer found in the area. Some 2, cattle and domestic water buffalo were allowed in the area up until November when grazing was banned. Predictably, the ban led to a buildup of local resentment, resulting in an attempted forced entry into the park. Police opened fire and eight people were

killed: The Rajasthan government has rejected a proposal from the Bombay Natural History Society to allow limited grazing, since this would conflict with the law. Furthermore, recycled nutrients from the large quantity of dung deposited by livestock probably supported considerable numbers of insects. Larvae of the Lepidopteran *Paraponyx diminutalis* has also been a serious pest, and considerably inhibited the growth of *Nymphoides cristatum* during June–July. High levels of pollutants in Ajan Bund are believed to be responsible for the increasing number of piscivorous birds seen in a dazed state and unable to fly. Fewer birds were recorded in than in previous years. Four sarus cranes and 40 ring-necked doves were found dead outside the park during and early , possibly due to pesticide poisoning, and a study of the impact of pesticide use in surrounding areas on the park has been initiated in addition to studies on heavy metal contamination. Disturbance from visitors can be a cause for concern, especially during December and January when visitors come to see the cranes. This is significantly altering the habitat for many bird species, and is a serious management problem. Attempts to control the species have been ineffectual to date. Tourism and visitor facilities[edit] By virtue of being one of the best bird watching sites of Asia, more than , visitors come to the park every year. The range of visitors varies from very serious birdwatchers to school children. Of the visitors, 45, are foreign tourists. In addition the location of the park is such that tourists visiting Agra, Fatehpur Sikri and Jaipur invariably stop over at Bharatpur. The park opens from sunrise to sunset around the year. Food and accommodation facilities are available within the precincts of the park. Bharatpur Forest Lodge is a quaint hotel in the vicinity of natural treasure trove of the park and has a total of 16 rooms to offer to visitors. Its circuit house and dak bungalow also offer good accommodation options. An array of 3 star hotels and resorts are also located in the vicinity of the park where visitors can stay cozily. The society has recently intensified its operations and has established a hydro-biological station to monitor the ecology of the wetland. Particular attention will be given to any in dramatic change in the vegetation following the ban on grazing. Limnological studies have been carried out by the Zoology Department of the University of Rajasthan, Jaipur. The park authorities are monitoring the bird populations. The park has considerable potential for education, more so than other wetland sites in India, in view of it being relatively near to the cities of Agra, Delhi and Jaipur. The project focused on releasing captivity bred cranes into the wild, tracking migratory routes of common cranes, and building up the resident crane population in the park. Although the project did not yield the desired results, the successful survival of introduced cranes in the park has given sufficient hope to develop a viable resident population in the future. Keeping in view the uniqueness of the eco system and the capacity to attract a variety of migratory birds the project was thought to be approved in principal with the caveat that the cost be firmed up after a visit to the site by an expert team. As per the MoEF, the proposal is beyond the purview of the existing centrally sponsored scheme of the MoEF, seems to be viable and has the potential to put an end to the eternal water scarcity in Bharatpur National Park. Due to acute water scarcity the ecosystem of the Park has been affected badly and this has resulted in reduction in the arrival of migratory birds in the National Park. Water supply is essential for the National Park, which is a wetland and a Ramsar site facing acute shortage of water for the last few years. Through a small canal dug last year water from Khokhar Weir Bees Mora is also available. The total requirement of water for the Park is estimated at about . The supply from Ajan Bund is irregular and subject to the bund being full to the extent of reservoir level at 8. During the last several years either water is not supplied or supplied insufficiently. The estimated cost of the project as proposed by the State Government was to the tune of Rs millions. The project proposed was to channelize water from Govardhan drain to meet the water deficit of KNP during the months of July to September at the time of requirement.

4: Bombay Natural History Society

www.enganchecubano.com: Illustrated Flora of Keoladeo National Park, Bharatpur, Rajasthan: A general guide to the wetland flora of the Gangetic plains () by V. P. Prasad; Daniel Mason; Joy E. Marburger; C. R. Ajith Kumar and a great

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