

Report of the Expert Team on the project "Development of water supply" to Keoladeo National Park, Bharatpur, Rajasthan.

7-8th August, 2008



Goverdhan Drain



View of KNP wet Land



Report of the Expert team on the project "Development of water supply" to Keoladeo National Park, Bharatpur

1. Context

A proposal for water supply to Keoladeo National Park, Bharatpur was forwarded by the Government of Rajasthan seeking assistance from Planning Commission as advised and approved by the Ministry of Environment and Forests. 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. The park is in danger of being removed as a Ramsar Site, due to severe drought and abandoning of the park mid way by nesting birds last year.

2. Visit itinerary

A team comprising Dr. Indrani Chandrasekharan, Adviser, Planning Commission, Prof. Arun kumar, IIT Roorkee and Shri Pramod Krishnan, AIG (WL), MoEF visited the national park, the Goverdhan drain and adjoining areas and held discussions on 7th and 8th August, 2008.

3. The Keoladeo National park (KNP):

This is a man-made and man managed wetland. The reserve protects Bharatpur from frequent floods, provides grazing grounds for village cattle and earlier was primarily used as a waterfowl hunting ground. This was notified as a bird sanctuary in the year 1956 and declared as Ramsar site and elevated to a National Park in 1982. In 1985, the Park was declared as a World Heritage Site under the world Heritage Convention It is a reserve forest under the Rajasthan Forest Act, 1953 and, therefore, it is the property of the State of Rajasthan of the Indian Union. Information on the park along with a list of fauna is at Appendix-1.

The 29-sq. km. Reserve is locally known as Ghana, is a mosaic of dry grasslands, woodlands, woodland swamps, and wetlands. These diverse habitats are home to 366 bird species, 379 floral species, 50 species of fish, 13 species of snakes, 5 species of lizards, 7 amphibian species, 7 turtle species, and a variety of other invertebrates.

Every year thousands of migratory waterfowl visit the park for wintering breeding etc. The highlight of the park is that it is the only known wintering area of the highly endangered central population of Siberian Cranes. The Sanctuary is the richest bird area in the world. It is known for nesting of its resident birds and visiting migratory birds including water birds. The rarest Siberian cranes arrive here to winter. According to Sir Peter Scott Keoladeo Sanctuary is the world's best bird area.

By virtue of being one of the best bird watching sites of Asia more than 100,000 visitors come to the park every year. The range of visitors varies from very serious birdwatchers to school children and general tourist of which nearly 45,000 foreign tourist. In addition the location of the park is such that tourist visiting Agra, Mathura and Jaipur invariably stop over at Bharatpur.



Darter



Sarus Crane

One third of the KNP habitat is wetland systems with varying types of microhabitats having trees, mounds, dykes and open water with or without submerged or emergent plants. The uplands have grasslands (savannas) of tall species of grass together with scattered trees and shrubs present in varying density. A similar habitat with short grasses, such as *Cynodon dactyl on* and *Dicanthium annulatum* also exists. Woodlands

with thickets of huge Kadam trees (*Mitragyna parvifolia*) are distributed in scattered pockets. Richness and diversity of plant life inside the Park is remarkable. The Park's flora consists of 379 species of flowering plants of which 96 are wetland species.

Macro invertebrates such as worms, insects and mollusks, though more abundant in variety and numbers than any other group of organisms, are present mostly in aquatic habitats. They are food for many *fish* and *birds*, as well as some animal species, and hence, constitute a major link in the food chain and functioning of the ecosystem. Land insects are in abundance and have a positive effect on the breeding of land birds.

Keoladeo National Park is popularly known as "bird paradise". Over 370 bird species have been recorded in the park. Ornithologically, the park assumes significance in two respects. One because of its strategic location being a staging ground for migratory waterfowl arriving in the Indian subcontinent before dispersing to various regions. Further waterfowl converge here before departing to breeding grounds in western Palearctic region. In addition, the wetland is a wintering area for massive congregations of waterfowl. Two, it has been the only regular wintering area in India for the rare and highly endangered Siberian Crane.

Mammalian fauna of KNP is equally rich with 27 identified species. Blue bull, feral cattle, and spotted deer are common while Sambhar are few. Wild boar and porcupine are often spotted sneaking out of the Park to raid crop fields. Two species of Mongoose, and the small Indian mongoose, and the common mongoose are occasionally found. Two species of lesser cats – the jungle cat and the fishing cat and two species of civets – common palm civet and small Indian civet though rare are present. The smooth Indian otter can be seen attacking birds such as coots and at times crossing the woodlands. Jackals and Hyaenas 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.

Fish fauna of the park comprises 43 species, of which 37 enter the park along with the water from Ajan Bund, and six species are breeding residents. During good rainy season the park receives a maximum of around 65 million fish fry and fingerlings. The fish population and diversity are very important as they form the food source of many birds.

Herpetofauna of KNP is very rich. Out of the 10 species of turtles that are seen in Rajasthan, seven are present in this park. Besides this, there are five lizards species, thirteen snakes species and seven species of amphibians. The Bullfrog and skipper frog are commonly found in the wetlands. It is very easy to see a python basking in the sun out its burrow on a sunny winter day. The common monitor lizard, Indian porcupine

and Bi-coloured leaf-nose Bat have been seen in the same burrow as that of the python. The poisonous snakes found in the park are krait, cobra and Russel's viper. The checkered keel back water snake is very common and is fed upon by herons, storks, and the Sarus cranes. The common Indian monitor preys upon eggs of birds and pythons. All seven species of turtles are aquatic, although the dominant species, the Indian flap-shell moves on to drier areas for aestivation. The sight of a turtle upside down, being torn from its shell by a scavenger vulture in the dry marsh, is quite common in the summer.

The Wetland is a part of the Indogangetic Great Plains. It is a fresh water swamp and is flooded during the monsoon. For most part of the year, effective wetland is only 10 sq. kms. The rest of the area remains dry. Dykes divide the wetland into tan units. Each unit has a system of sluice gates to control its water level. Depth of water ranges from 1 metre to 2 metre during rains (July, August and September). In subsequent months, October to January, the level gets lowered. The area starts drying from February. In May and June, the entire area dries. Water remains only in some depressions. This alternate wetting and drying helps to maintain the ecology of the fresh water swamp, ideal for water-fowl and resident water birds. Arrangement to pump water from deep tube wells to fill small depressions to save seeds, spores and other aquatic life also exist. They are also helpful in extreme years of drought

During the year 2007-2008 attempts have been made to eradicate *Prosopis Juliflora*/*Cineraria* to rid the park of mono culture and enable natural vegetation to regenerate.

4. The Project

A proposal for water supply to Keoladeo National Park, Bharatpur was forwarded by the Government of Rajasthan seeking assistance from PC as advised and approved by the Ministry of Environment and Forests vide their letter dated 10.04.2008. As per the Ministry of Environment and Forests 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. The Keoladeo National Park(KNP) is a Ramsar Wetland Site and a World Heritage site. Due to acute water scarcity the eco-system 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 absolutely essential for the National Park, which is a wetland and a Ramsar site facing acute shortage of water for the last few years. Currently apart from rain fall the Park receives water from "Ajan Bund", a temporary reservoir via the Dakan canal. 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 14.17 Million cubic metre (500 MCft). The supply from Ajan Bund is irregular and subject to

the bund being full to the extent of reservoir level at 8.5 meters. During the last several years either water is not supplied or supplied insufficiently.

The project has been prepared keeping in view the need for 400 MCFT of water during late July to August, for a period of 30 days to the Park which is to be had by diverting and lifting flood waters of Yamuna. The project thus covers diversion of water during monsoon through underground pipes with lifting arrangements over a length of 16 Kms. from the off-take point of Goverdhan drain near Santruk village. The state has desired that the project at a cost of Rs 65.00 crores, be cleared expeditiously before the onset of the monsoon this year. The time schedule and particulars regarding work and cost is at Appendix-2.



Location of Proposed Diversion at Goverdhan Drain RD 24.226 km



Goverdhan Drain

5. Field visit

The group held discussion with Secretary (ENV), DC (Bharatpur), PCCF, regional PCCF and officials of the irrigation department on 7th Aug. 2008 and traversed the entire length of the national park and the drain and visited the location of the proposed diversion on 8th Aug., 2008.

6. Recommendation of the Expert team

- (i) Water supply is absolutely essential for Keoladeo National Park, Bharatpur which is a wetland and a Ramsar site facing acute shortage of water for the last few years. Currently apart from rain fall the Park receives water from "Ajan Bund", a temporary reservoir via the Dakan canal. Through a small canal dug last year water from Khokhar Weir (Bees Mora) is also available.

- (ii) The total requirement of the water for the Keoladeo National Park is estimated to about 14.17 Million cubic metre (500 MCft). The supply from Ajan Bund is irregular and subject to the bund being full to the extent of reservoir level at 8.5 meters and for last several year either water is not supplied or supplied insufficiently.
- (iii) The project proposed would channalise water from Govardhan drain and would meet the water deficit of KNP during the months of July to September at the time of requirement. The major components of the project are construction of a head regulator with control gate at the drain located in the state, raw water reservoir with capacity of 13,000 m³., pump house, , DG sets for pumping station and laying and testing of /PCC/MS pipelines. Raw water reservoir capacity needs to be reviewed for possible cost reduction.
- (iv) The total cost of the project is Rs.65.00 crore of which Rs.56.22 crores is for the above components. The remaining amount is attributed to development of canal system within the park, creation of deeper water bodies, laying underground power cables, boundary wall construction etc.
- (v) The Rs.8.80 crores requested for other activities other than laying of the pipeline is recommended as a one time grant. It was felt that Planning Commission could advance Rs.59.5627 crores in 4 installments as special grant to the State Government immediately to enable the State Government to complete the project by the end of March, 2009. Thus enabling the State Government to operationalise the water supply by the next breeding season, i.e., in July 2009.

The requirement of Rs.50.7627 crores could be released in four installments as per the following schedule for operationalisation of the pipeline:-

September 2008 to December 2008	Rs.20.00 crore
January 2008 to March 2009	Rs.20.00 crore
	and Rs 8.80 crores.
April 2009 to June 2009	Rs.9.08 crore
and in July 2009	Rs.1.68 crore

- (vi) Considering that the wetland and the Park are likely to be degraded and removed from the Ramsar site list, if the habitat is not immediately restored, the team strongly recommends that the project for laying of pipeline to channalise water from Govardhan drain be approved.
- (vii) The team recommends that out of the said amount of Rs.56.22 crores, Rs.50.7627 which includes O&M cost for one year @ 3% per year be considered. The

remaining amount for operation and maintenance for the remaining 4 years be shared equally – 50% each by the MOEF and the Govt. of Rajasthan.
