

MANAGEMENT OF BIO-DIVERSITY OF KEOLADEO NATIONAL PARK

Arvinder S. Brar

The Keoladeo National Park, a bird haven, since its inception in 1899, figured on the world map due to its wide diversity of flora and fauna. A natural depression, lying 174 M to 178 M above MSL, it is a part of indogangetic great plains, spread over an area of which nearly 8sq. km. is fresh water swamp. Lying in a semi-arid zone it receives an average rainfall of 662 mm spread over 36 days in a year. It is fed by seasonal rivers, Gambhir and Ban Ganga which drain water into Ajan Dam, half a km from the boundary of the park. Bharatpur was a flood prone area originally. It lost its character with the construction of Pachana Dam. The area is divided into 10 blocks, each with a sluice gate to control the water level. The boundary of the park is a 2m high and 32km long masonry wall which prevents human and domestic livestock from trespassing.

The park is being managed with the objective of maintaining an ecological seral stage and arresting the process of plant succession at a stage which is suitable to bird life. Along with this, a mosaic of habitat is to be maintained to cater to the needs of different species. Continuous monitoring is needed to study any changes in the ecosystem. Along with this, one of the objectives is to educate and entertain visitors to the park.

Vegetation is diverse as it includes woodlands, shrubs, grasslands and wetland species. Faunal diversity encompasses members from aquatic invertiberates to large mammals and representatives of fish, reptiles and aves. Its importance reached its zenith with diversity of nearly 369 species of avifauna and being the only winter resort for the highly endangered species - the siberian cranes.

Water intake to the park is appropriate in the end of July. By mid of July the openbill storks, the

earliest breeders, settle on the branches of *Acacia nilotica* trees. At this time there should be water bringing in the fingerlings otherwise these birds abandon the nests.

The filling of the blocks needs to be done in the least time. The main objective is to arrest the growth of the grass. There are two vital factors which play a role in the growth of the grass. First is onset of monsoon in the park, second is the filling of blocks. If the onset of monsoon in the park is before the intake of water the growth of grass precedes the filling and subsequent slow filling gives a boost to the growth of the grass. That is why it is required that the filling of the blocks should be preferably before the onset of the monsoon and in the least time. To decrease the time of filling, water has to be taken block by block so that there is at least 3ft. column of water in the beginning. This helps checking *Paspalum disticum* growth. Instead *Pseudoraphis spinenscens* replaces it which has lesser turn-over period and which has lesser biomass per unit area.

The ducks and geese feed on the grass. There are clear signs of grazing and clipping of grass which are noted. And it is observed that while the ducks and the geese migrate they tend to flock together in the beginning and keep feeding by rotation in different blocks. It has been observed that the behaviour of nigli and feral cow has changed as these animals have adopted to swampy areas. Thus they play an active role in the growth of the grass. Sambar, a deer species, is well adapted to swamp. Its number needs to be increased with introduction of more animals as its population varies between 40-50 animals.

Over the century the bird population has shown decline in population. this seems to be a world wide phenomenon as the importance of wet-



land was not realised and they were considered to be wasteland. Thus with disturbance in the breeding grounds and conversion of the wetlands to the agriculture fields there has been a downward trend but it seems to have stabilized on the place where conservation measures have been taken.

Whatever grass matures it settles under the surface water only to be collected by the villagers, for which they are given the permit.

It is only during drought that the water area shrinks and this is hazardous because *Vetiveria zizanioides* invades the water areas and *Acacia nilitica* and *Prosopis juliflora* seeds germinate. Flooding these areas checks the growth of the saplings but in case they recruit to poles during drought periods, these have to be manually removed.

To remove water hyacinth, it has to be a continuous process because it propagates very fast and since water is taken from one block to another block, it spreads very fast.

Siberian cranes number is showing a regular decline from 1961 to 1982. It has decreased from 200 to 36 and the number has gone down from 36 to barely 5 from 1982 to 1993. The reason for their decline lies somewhere on the route of migration. It is a slow breeder adding one individual every year per family. Because of hunting on these migratory routes, the number of birds added cannot compensate the number of birds killed every year. Stopping of grazing has nothing to do with the decline in the

population as grazing was going on from 1964 to 1982. With the management practice for the year 1991 to 1993 there have been indicators which indicate a diverse and healthy habitat in Keoladeo National Park.

With these management practices being followed there have been encouraging results. Eighteen species nest in the breeding colonies. Over 5000 nest were recorded in 1991 and over 6000 nest in 1992. The number of the nest of the painted stocks increased from 449 in 1991 to 959 in 1992. There has been marked improvement in the nesting of the Sarus Cranes inside the park. Eleven and thirteen nest were recorded during 1991 and 1992 respectively. Eight during 1991 and nine pairs during 1992 had two chicks respectively. It is a sign of undisturbed habitat. There were even 4 successful nests of Black necked stork which bred successfully with two chicks each in three nests and three chicks in one nest.

Duck count conducted in March 1991 showed a marked improvement when compared with figures of 1986 and 1985. The number went up from a total of 2411 in 1985 to 15098 in 1991. It was observed that the number of diving ducks increased from 231 in 1985-86 to 386 in 1992. It is an indicator of open water habitat devoid of grass.

The relations with the local villagers improved as the result of permitting them to collect grass. The observation shows that there was no disturbance from August to April as they did not come for illegal collection of grass.

"The simplicity, the integrity, the one thing at a time, of a good animal's eyes is a great beauty, and is apt to cause us to exaggerate our sense of their expressiveness."

— Alice Meynell

