

UNESCO-IUCN Enhancing Our Heritage Project:
Monitoring and Managing for Success in Natural World Heritage Sites

Technical Report No. 05

Keoladeo National Park World Heritage Site

●

*Review of Protection Strategies and
Suggestion to Enhance their Effectiveness;*

●

*Development of a Comprehensive
Capacity Building Plan for Frontline Staff*



Project Team

Dr. V.B Mathur
Professor & Project Coordinator

Sh. P.R. Sinha
Director, WII & Project Leader

Consultant

Sh. Manoj Mishra

**Improving Protection and Building Capacity of Staff
At
Keoladeo National Park**



By

Manoj Kumar Misra

Sponsored by

UNESCO-IUCN-WII

August 2005



178-F, Pocket - 4, Mayur Vihar - I, Delhi - 110 0091.

KEOLADEO NATIONAL PARK (RAJASTHAN)

Project Title:

Enhancing our heritage: Managing and Monitoring for Success in World Natural Heritage Sites.

Project Objectives:

- 1) Review of Protection Strategies and suggestion to enhance their effectiveness
- 2) Development of a Comprehensive Capacity Building Plan for Frontline Staff.

Methodology:

Relevant background information was sought from the park management. The park (KNP) at Bharatpur (Rajasthan) was visited from 7.2.05 till 11.2.05. The existing management plan of the park was perused for relevant information and one to one discussions were held with the Director of the park and other park officials. Field visits were made to various locations in the park to get a first hand impression of the field situation and requirements and to elicit the views of the staff posted at various camps / chowkies. An expert review of the park's wireless communication system was also carried out.

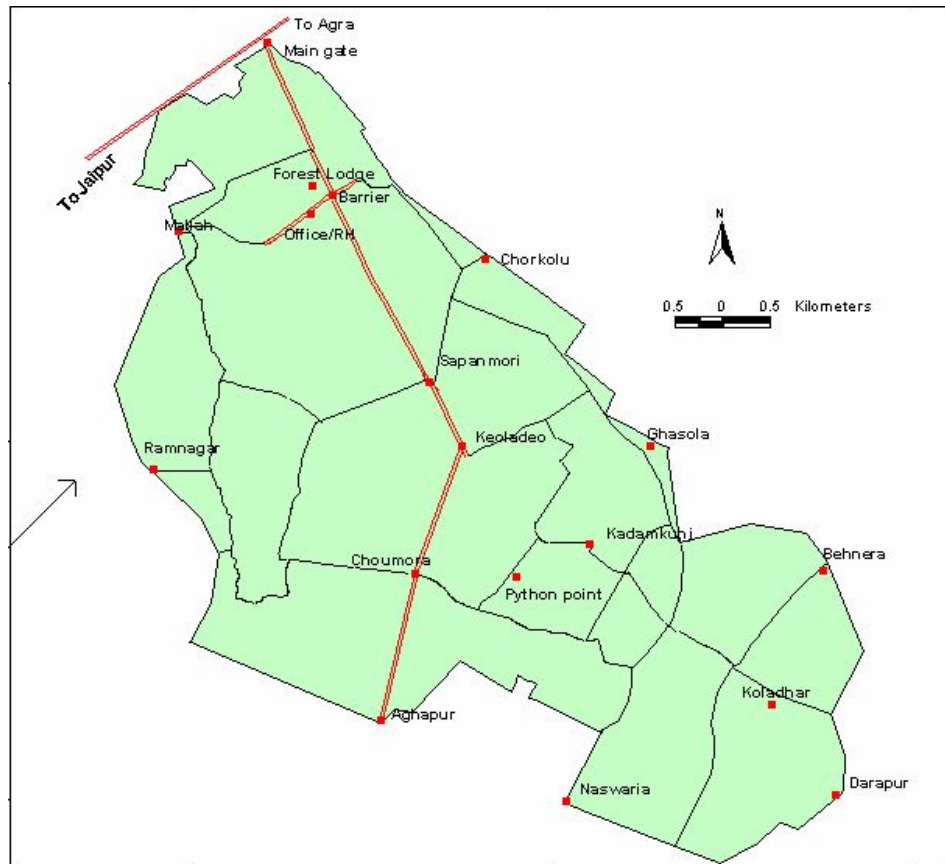
A one-day workshop was held on 10.2.05 for different levels of field staff to elicit their views regarding the park, its protection requirements as well as their training needs through an adaptive SWOT process. Pictures where appropriate were also taken. Additional relevant information about the park was procured from the park Director's office.

Findings:

Project Site

Location:

Keoladeo National Park in the Bharatpur district of the state of Rajasthan, lies between 27°7'6" N – 27°12'2" N latitude and 77°29'5" E – 77°33'9" E longitude. It covers an area of around 29 sq km. It is named after Keoladeo (Shiva) temple located in the centre of the park.



The park is located at a distance of 2 km from the Bharatpur town, 50 km west of Agra (UP) and 180 km south of Delhi (National capital).

Characteristics (Source: Management Plan)

Habitat

One third of the habitat of the park is a wetland 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.

Vegetation

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.

Invertebrates

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

Birds

KNP is popularly known as a 'bird paradise'. Over 370 bird species have been recorded in the Park. It had been the only regular wintering area in India for the rare and highly endangered Siberian crane.

Mammals

Mammalian fauna of KNP is equally rich with 27 identified species.

Amphibians and Reptiles

Herpeto fauna of KNP is very rich. Out of the 10 species of turtles that are reported from the state of Rajasthan, seven are present in the park. Besides this, there are five lizard species, thirteen snake species and seven species of amphibians in the park.

Context: The protection imperatives at the park

Historical:

The history of the area and the creation and maintenance of KNP provides it a relevant context for actions in the present and for future planning.

'The area occupied by the Park constitutes a natural depression believed to be part of a riverbed, probably that of the Yamuna, which subsequently changed its course. Old records describe the depression as supporting thick forest (hence the name 'Ghana'), that was subjected to seasonal flooding.' (Management Plan)

Major events:

- | | |
|-----------|---|
| 1726-1763 | Ajan Bandh was constructed by Maharaja Suraj Mal, the then ruler of the princely state of Bharatpur on the river Gambhir. |
| 1899 | Prince Harbhanji of Morvi state in Gujarat was appointed as an administrator for the Bharatpur State. He was responsible for converting the natural depression into a duck shoot reserve by getting bandhs and dykes constructed in order to increase the water holding capacity of the area. |
| 1901 | The reserve area was flooded for the first time and a regular water distribution system was devised. The inundation resulted in suitable habitat conditions attracting a large number of water birds. |
| 1919 | Boundaries of the duck shooting reserve were demarcated. |
| 1956 | Keoladeo Ghana was notified as a protected area and a bird sanctuary. Hunting rights remained with the Maharaja of Bharatpur, his guests, and a few state guests. |
| 1967 | Keoladeo Ghana was declared as a reserved forest area under the Rajasthan Forest Act, 1953. |
| 1972 | Ruler's hunting rights were withdrawn. |

- 1977-81 A masonry wall was constructed all around the park.
- 1981 Keoladeo Ghana was declared as a Ramsar site. The sanctuary was upgraded to a National Park. Park – people conflicts escalated.
- 1985 The park was declared as a World Heritage site under the World Heritage Site Convention. Serious fire incidents reported in the park.

While the Keoladeo forest reserve continued to be a duck hunting preserve of the rulers, it also constituted the primary source of natural resources around which the local economy revolved. The rulers permitted the local villagers to graze their cattle (for a small fee per cattle), harvest small timber and to collect wood and dung for fuel. Also permitted were the harvest of grass for thatch, fruit for consumption, medicinal herbs for treatment, *Veteveria* roots for perfumery, and other non-wood forest produce.

It was first only in the year 1972 (following the promulgation of the Wildlife Protection Act) that restrictions were put on the local villagers on harvest of resources from the park. The restrictions became still more prohibitive once the Keoladeo National Park was declared in 1981, the wall came up around the park (1977-1981) and the grazing of cattle in the park was banned and strictly enforced.

Summing Up

*Like many other wildlife reserves in the country, Keoladeo National Park also has a history of transformation from an almost free access to its resources by the local people to a regulatory regime that increasingly prohibited any unauthorized entry into the park. **This fact sums up among other things the protection imperatives of the Park.***

Extant Protection Strategies and their state of effectiveness

Need and strategies

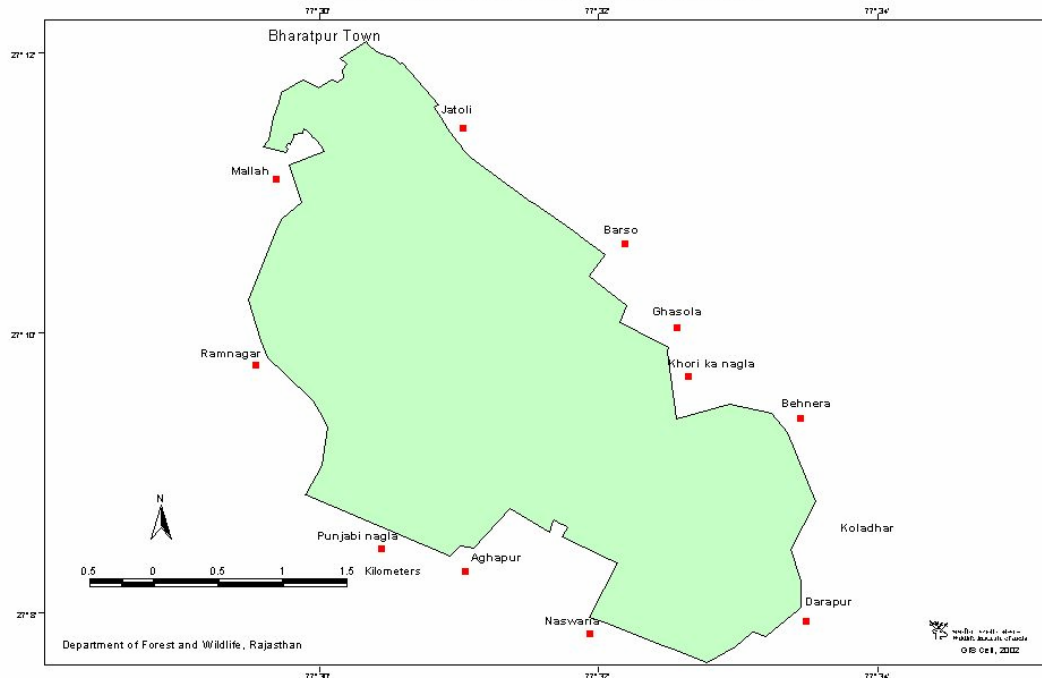
NEED

Anthropogenic pressures:

The Management Plan of the park has well summed up the anthropogenic pressures on the Park in the following terms:

“This unique man made ecosystem is surrounded by a rural landscape on 3 sides (East, West and South) and Bharatpur city (an urban landscape) towards the north. About 21 villages and hamlets are located around *Keoladeo National Park* with an approximate population of 14,509 people (Census 1991). Bharatpur city, with a total population of 150,017 also lies on the periphery of the Park.

Human Presence around the park



The entire economy of the villages outside the park is based on agriculture and dairy. Local villagers had easy access to the park resources before the area was declared as a National Park.

The basic needs of local communities residing in the villages adjoining the park are fodder, fuelwood, small timber, thatching material and minor forest produce, which continue to be partially met from the park.

Breakage of boundary wall for access, collection of fuelwood and minor forest produce, extraction of grass in the non-permit seasons, occasional pilferage of timber, clandestine grazing of cattle, illegal fishing, illegal collection of honey (sometimes leading to forest fires) and use of the park as a thoroughfare without permit are among the common violations that the people are often penalised for".

Other threats (Source: Management Plan)

- Availability of water to the park (man made ecosystem) is an issue of concern. With increasing requirement of water by villagers for agricultural purposes alternate sources of water for the park have to be explored.
- Water from the catchments area has the possibility of bringing in a very high level of toxic chemicals in to the park.
- Feral cattle present in the park compete with wild herbivores for forage.
- Frequent wild fires.
- Water hyacinth (*Eichhornia crassipes*), a fast growing weed chokes up the water bodies.
- Spread of invasive exotics like *Prosopis juliflora* and *Lantana camara* in the park.

STRATEGIES

LEGAL STATUS:

The area was first declared a Protected Forest (PF) in 1956 under the Rajasthan Forest Act, 1953 vide notification no. 13193 & 15 (8) R B 156 dated 14 July 1956.

Later in 1981, a final notification declaring 28.73 sq km area as a National Park under the Wildlife (Protection) Act, 1972 was issued vide notification no. F 3 (5) (9) Raj 8172 dated 27 August 1981. For some reasons the notified boundary of the Park was none too well defined as is evident from the following:

- North – Bharatpur – Jaipur pucca road
- East – Concrete wall and barbed wire fence
- South – Concrete wall
- West – Concrete wall

Observations

It is suggested that a proper survey of the area be carried out and boundary pillars erected at suitable locations (if need be embedded into the existing concrete wall). This is deemed necessary to ensure that no re-alignment of the park's boundary happens by design or default due to a change either in the road or the wall currently defining the park's boundary. It is also suggested that once the survey – demarcation as above has been accomplished, the park boundary be re notified through a fresh gazette notification which may also include the area definition and details of the park.

Based on the existing notification it appears that a chunk of the park's land has already been encroached upon in its north along side the Jaipur – Bharatpur highway (as is evident from a look at the Park's map).

ADMINISTRATIVE STRUCTURE

The park is headed by an officer of the rank of deputy Chief Wildlife Warden, who is the Director/ chief executive of the Park. He is assisted by a staff contingent as under:

Staff

Post	No of posts
Deputy Chief Wildlife Warden	1
Jr. Research Officer	1
Range Officer	3
Foresters	7
Asst. Forester	2
Forest Guards	25
Jr. Accountant	1
Office Assistant	1
Upper Divisional Clerk	3
Lower Divisional Clerk	3
Class IV	6
Mashalchi	2
Cook	1
Wireless Operator	1

Post	No of posts
Deputy Chief Wildlife Warden	1
Work Charge Employee	62
TOTAL	123

KNP, 2005

Administratively the park has been divided into 3 ranges (Wildlife range, tourism range and flying squad range) headed by a Range Officer, each.

Wildlife Range:

Wildlife range is the territorial range in the park. It looks after all the territorial functions (protection, park maintenance, habitat management, animal welfare, biology, research etc) in the park.

Tourism Range:

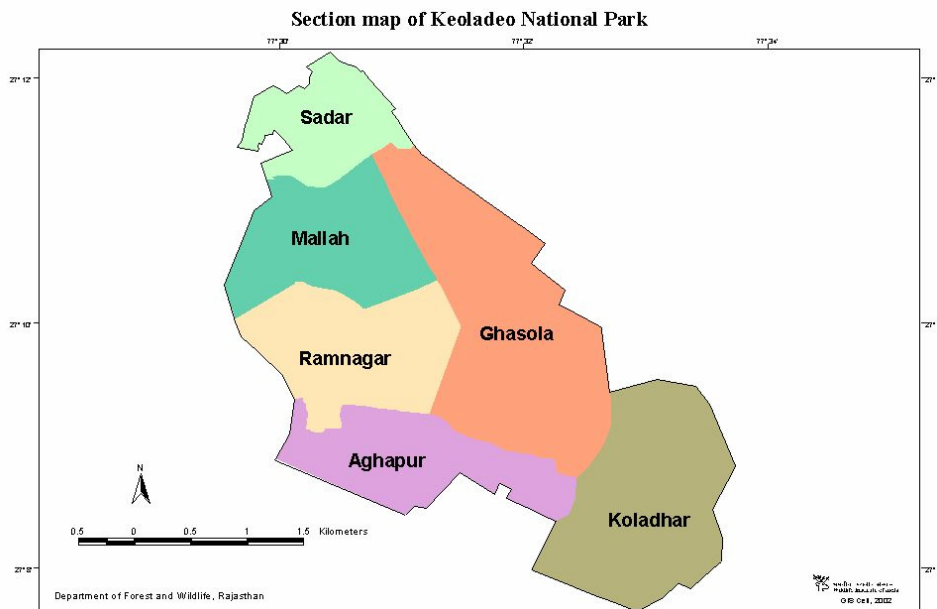
The tourism range has over lapping jurisdiction and is charged with the conduct and welfare of the tourists in the park. It looks after the entry of visitors into the park, and the management of the ticketing and the visitor facilities in the park.

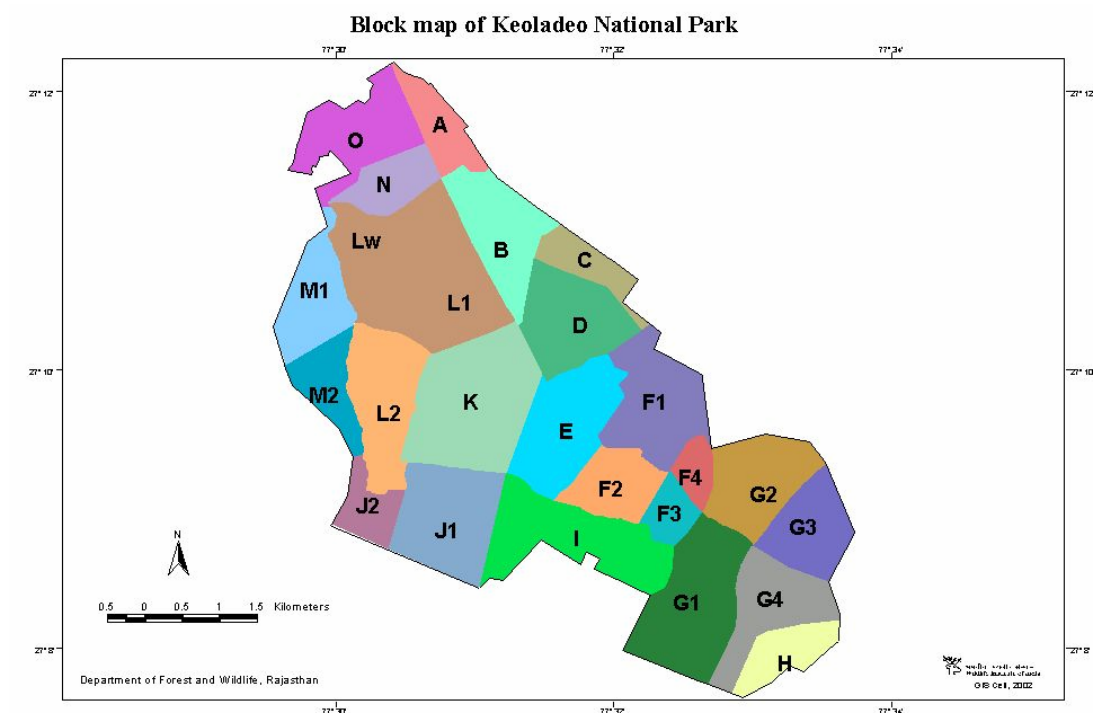
Flying Squad Range:

Headed by a range officer this range has over lapping and supportive role in the park management. It patrols the park for detection of any illegal activity in the park and provides logistical and emergency man power support in case of any out break of forest fire or during an anti poaching / illegal entry prevention operation.

Management Units:

The area of the park has been divided into convenient management units called **sections** (6) and **blocks** (25) as shown below. This arrangement is a good tool for planning as well as for monitoring purposes in the park.





Observations

Administratively the park has been well established. The shortcomings relating to capacity and other relevant matters as were found during the field visit have been dealt with separately at various places within the report.

BOUNDARY WALL:

A six feet high masonry wall over 32 running km was erected on the park's boundary between 1977 and 1981.

The purpose of this wall was

- a) Control of illegal entry into the park by people and their cattle.
- b) Control of egress of the park's herbivores (nilgai, sambhar and wild boar) including feral cattle out of the park into the agricultural fields of the adjoining villages.

An inspection of the existing wall revealed

- 1) The wall has weakened over time due to the elements of nature. (See picture 1)
- 2) The wall has been breached either by people (for illegal entry into the park or for pushing in cattle into the park) or by wild animals like wild boars (See picture 2)
- 3) The wall is either weak or ineffective along the patches where it passes over the canals dug for bringing water into the park. (See picture 3).
- 4) Repair as well as reconstruction of the wall is in progress at vulnerable patches. (See picture 4).

Observations

It is an undeniable fact that the boundary wall of the park is its most effective protection measure. It is also its defining feature since the current notification of the park delimits the park on three sides on the basis of its boundary wall.

The current effort of the Park authorities to raise / repair / reinforce the boundary wall is commendable. Since the maintenance / repair of the wall is an expensive measure, funds for the same would need to be accessed from all possible sources.

At the same time, the boundary wall of the park is the most visible sign of the park being out of bounds for the local people. So all out efforts are needed to get the local people on board through effective eco-developmental initiatives and to convince them through imaginative educational programs on the necessity of the wall for the long term welfare of the park.

COMMUNICATIONS AND PATROLLING:

The park has a good network of roads, strategically located forest chowkies and an effective wireless network covering the entire park area for quick and timely exchange of information and follow up action by the park's staff to meet any exigency.

A field inspection was carried out of the park's patrolling and communications infrastructure and its effectiveness. Forest chowkies were inspected and discussions were held with the staff on duty or present at the chowki.

The wireless network in the park was evaluated for its effectiveness.

Observations

The park has eleven chowkies. Nine chowkies are situated near the boundary wall of the Park and the two (at Keoladeo and Koladhar) are situated deep inside the Park. The design of the chowkies differs indicating that they have been constructed at different times.

Mallah Chowki – It is situated near the Mallah Village. (See picture 5). The chowki has 2 rooms but no kitchen. A temporary kitchen has been constructed by the staff. The chowki needs repair. The Mallah village just across the wall is one of the sensitive villages from the park's protection point of view. The boundary wall close to the chowki has been repaired (in patches) and has also been increased in its height. (See picture 6).

Sadar Chowki - This chowki is close to the main entrance of the Park. Hence the staff posted here often assists the work of the Tourism Forest Range Office, which operates out of a building near the main gate. (See picture 7).

Chorkulu Chowki – This is situated between the Jatoli and Barso villages. This old chowki has one kitchen and one room. Three persons stay in this Chowki.

Ghasola Chowki – This is situated between the Ghasola and Kalikarnalla village. It has two rooms and one kitchen. One guard and two cattle guards stay in this chowki.

Behnera Chowki - It is situated near the Behnera village. It has two rooms and one kitchen. Wireless facilities are available. Three persons stay in this chowki.

Koladhar Chowki cum Fire Watch Tower - It has two rooms and a temporary kitchen. It's a double storied building, which was meant to also serve as a fire watchtower. But now this building is unable to serve as a fire watchtower as it has come to be surrounded by tall trees and one could not see much from the second floor of the building. There is a well near this tower, which supplies water in case of a forest fire in the area.

Darapur Chowki - It is situated near the Darapur village. There are two buildings, of which one is smaller than the other. It has two rooms and a staircase to go to the roof.

Naswaria Chowki - It is situated between the Naswaria and Barpura village. It has one room and a kitchen.

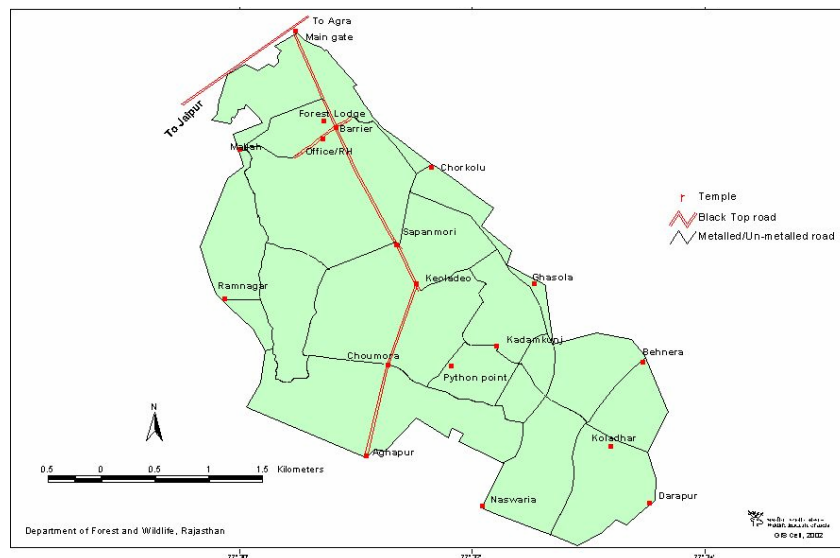
Aghapur Chowki - It is situated near the Aghapur village. It is a very old chowki with 2 rooms and a kitchen. But the building is in a dilapidated state and is not fit for habitation. (See picture 8). There is another old building with one room also nearby. Six persons stay in these two buildings.

Ramnagar Chowki - It is situated near the Banjara Nangla village. It has two rooms and a kitchen. Three persons stay in this chowki.

Road Network in the Park

The park has a good network of black topped and fair weather roads. In recent times a fair weather road has also been constructed along the park's periphery.

Road network



Wireless network and other infrastructure in the Park

Communication

The park is equipped with a good wireless network system, including fixed as well as mobile hand held sets.

Vehicles

There are two petrol Jeeps (Gypsy), one mini truck (Canter), one tractor, 2 motorcycles and 18 boats in the park. Recently an electro van has been donated to the park by WWF India.

Vehicles & Boats

S.No	Type	Year of Purchase	Quantity	Remarks
1	Gypsy (Petrol)	1993	1	Old vehicle.
2	Gypsy (Petrol)	1996	1	-
3	Truck, Canter	2003	1	-
4	Tractor	2000	1	-
5	Motor cycle	1991	1	-
6	Motor Cycle	1990	1	-
7	Electro Van	2003	1	Donated by WWF
8	Truck (Canter)	1988	1	Out of order
9	Boats	-	18	-

KNP 2005

Fire arms

There are three 12-bore single barrel guns, three 12-bore double barrel guns and one 32-bore revolver. These have been issued to the park staff that is on protection duties.

Observations

1) Administration: There is an urgent need to fill the position of Research Officer cum Deputy Director at the Park.

2) Roads: The peripheral road inside the Park's walled boundary needs an urgent up gradation into an all weather black topped road so that patrolling of the park's boundary could be carried out with ease and at all times of the year (see picture 9).

3) Wireless network:

There is a good functional wireless network existing in the park. The control room of the wireless network is in the Shanti Kutir forest guest house close to the park director's office-cum-residence. Each incoming and outgoing message on the network is registered here. The wireless control room is operational round the clock and works in three shifts of 8 hrs each.

The officer in-charge of the wireless service in the park is a sub-Inspector with the Rajasthan Police, who is on deputation to the park. He is from the Radio/Wireless Operations unit of the Police department and has been trained at the Police Wireless Training School at Jaipur. But his 3 assistants who man the

control room on a rotational basis have not undergone any training, other than on the job training that he has given them.

The wireless system operates on 159 MHz frequencies, which has been allocated to the Forest department. There are 14 fixed installations of Motorola GM – 300 systems, with a power output of 25 watts. As the control room antenna has been placed on the terrace of Shanti Kutir the VHF set at the control tower has ample coverage over the whole park.

Other 25 watt fixed installations are at the following places in the park:

- 1) Sadar Chowki (Main Gate)
- 2) Kaleodeo Chowki
- 3) Jatoli Chowki (Chor kulu)
- 4) Ghasola Chowki
- 5) Bahnera Chowki
- 6) Darapur Chowki
- 7) Kaula Dhar Chowki
- 8) Ram Nagar Chowki
- 9) Aghapur Chowki
- 10) Mallah Chowki

The same system has also been fitted on three vehicles (2 gypsies and mini truck) of the park. Two standby sets are also available. The wireless set batteries at the chowkies are charged using solar panels.

Fourteen hand held portable wireless sets (2 watt output) are also available.

These are of two types:

GP – 2000 (4 sets)

GP – 300 (10 sets)

The following staff at the Park is using these sets

Director	-	1
ACF	-	1
Ranger (Wildlife)	-	1
Ranger (Tourism)	-	1
Ranger (Flying squad)	-	1
Foresters and Asst. Foresters	-	9

Documentation:

A logbook is maintained at the control station at Shanti Kutir. Entries therein are made as under:

- 1) Four hourly reports from all chowkies
- 2) Duration when a chowki remains unmanned due to the staff there proceeding on field patrol.
- 3) Report of any illicit cutting of trees.
- 4) Report of the entry of over 4 persons from across the boundary wall or in numbers, which may be beyond the control of the staff at the chowki.
- 5) Any suspected poaching incident or sound of the use of a firearm.
- 6) Any attempt at breaking of the boundary wall.
- 7) Any incidence of quarrel of the staff with the villagers.
- 8) Any message to be delivered at a later time.

Maintenance of the equipment:

Small repairs are undertaken under the supervision of the officer in charge (Sri Nawab Singh) at the local Police line wireless workshop. For any major repair the equipment has to be sent to the authorized repair centre of the motorola company. The operators themselves re charge the batteries using solar chargers.

Standby Equipments:

2 fixed sets are available for standby use. No extra fuses are available but can be procured locally at Bharatpur.

Information exchange protocol:

No formal protocol is being followed to signal the end of message or the repetition of a message to confirm its understanding by the receiver. However when the 'control' conveys a message then since both the parties are hearing it, corrections if any, are informed by the caller. Messages, which are to be delivered at a later time, are logged down in writing at the control.

It is recommended that every park functionary in the park should be equipped with at least a hand held wireless set to ensure quick and effective communication system to meet any emergency / exigency. This would mean procurement of another 100 portable wireless sets of 2 watt output each. A set protocol for exchange of message over the wireless system also needs to be devised at the park. This is necessary so as to avoid any miscommunication over the system which might result in an avoidable situation / mishap at a future date.

An example from the Kaziranga National Park is worth emulation here. There a local NGO (Aranyak) in collaboration with an international donor agency (David Shepherd Foundation) has taken on the supply and maintenance responsibility of the wireless network in the park for a period of 10 years. In return the NGO gets due recognition and most importantly derives a satisfaction of contributing to one of the most important aspect of the park management.

4) Chowkies:

It is evident that most chowkies in the park today need minor to major repairs (to make them reasonably habitable by the staff). The chowkies have obviously been constructed at different times and hence do not conform to any set model. Urgent action is needed to carry out minor to major repairs in most chowkies as under:

Chowki	Repair status	Requirement	Comments
Mallah	Minor	A kitchen needs to be added	Relatively new construction
Sadar	Minor	A kitchen needs to be added	-
Chorkhulu	Major	One room needs to be added	Old construction
Ghasola	Minor	Minor repairs	-
Behnera	Minor	Minor repairs	-

Koladhar	Minor	Minor repairs	The utility of this chowki as a Fire watchtower has been compromised due to the trees around it having obstructed the clear line of vision.
Darapur	Minor	Minor repairs	-
Naswaria	Minor	Minor repairs	-
Aghapur	Major	The chowki is in a bad shape and unsafe for habitation.	Old Construction. A new chowki needs to be constructed in place of the existing one.
Ramnagar	Minor	Minor repairs	-

5) Fire watchtower:

It is recommended that a new fire watch tower be erected in the Koladhar area. In addition every alternate chowki at the park be converted into a chowki cum watch tower for ease of patrol duties as well as for keeping a watch on the out break of fire during the fire season.

WATER SUPPLY

Keoladeo National Park (KNP) is primarily a bird sanctuary with important waterfowl values.

The park has the largest congregation of waterfowl and heronries in the region and provides a unique habitat for both resident and migratory birds. The park's location within the golden triangle of Indian tourism (New Delhi - Jaipur - Agra) attracts a large number of domestic as well as international visitors each year. (Management Plan)

It being a man made ecosystem requires adequate water supply from its lifeline namely the *ajan bandh* to maintain its integrity as a waterfowl habitat. Since the park lies in an arid zone (mean annual rainfall of 650 mm spread over 2 months) in years of water scarcity or failed monsoon, water supply to the park has been a matter of widespread concern and ameliorative efforts as exemplified by a series of high level meetings held in 1991, 2001 and 2004 on the matter and the steps recommended therein.

Yet again this year (2004-05) the park has faced a crippling water shortage as can be seen by ground water being pumped out to provide a semblance of water presence in the critical water fowl habitats within the park. (See picture 10).

Observations

The water problem facing the park was beyond the ambit of this study as it is a politico - social issue requiring more than an infrastructural or management fix. But it is urgent that a permanent solution is found to the water supply problem that the park faces from time to time.

INVASIVE SPECIES:

Prosopis juliflora and water hyacinth are two invasive species, which are adversely affecting the health of the terrestrial and the wetland habitats respectively in the park.

The park's management plan while identifying invasive species, as a threat to the park does not provide for it with in the Park's Protection Plan except for the following in relation to control of illicit woodcutting in the park by the villagers:

'Permit cutting of *P. juliflora* trees from specified blocks like A, B, C, N as an ecodevelopment and management practice so that the spread of *P.juliflora* is checked with minimal budget from the Government'.

A para under research activities in the management plan suggests the following:

'Water hyacinth (*Eichhornia crassipes*) drifts into the park along with the water released from Ajan Bandh. It is a fast growing weed and chokes up the wetlands. This required continuous manual removal on war footing to counter its invasion'.

A large number (about 1800) of *feral cattle* also roam inside the park, competing with the park's herbivores for food and space.

Observations

The ill effects of invasive species on the park's habitat must be seen as a protection problem and given priority consideration within the management strategy of the park.

*Manual removal of both *Prosopis juliflora* and *Eichhornia crassipes*, which are useful sources of biomass for the local villagers, should be taken up on a priority basis as an ecodevelopmental activity. The park management should take up the matter with the Supreme Court (in view of the Apex court's restrictions on use of bio resources from any wildlife area in the country) to allow the park to harvest these invasive species for the park's benefit.*

The problem of feral cattle in the park also needs to be addressed keeping in view the religious sentiments of the local people.

FOREST FIRE

The park saw some debilitating fires in mid 1980's after the creation of the National park. At least two expert committees one led by Sri Bharat Singh and the other by Sri R. Ramakrishna went into the problem of forest fires in the park.

The following management practices to protect the park from wild fires have been prescribed:

1) `3 metre wide strips be cleared at a distance 6-10 meter of one another or along a road / natural boundary. The strip in between be cool burnt so that a 30-50 meter wide fire line gets created. In Koladhar and other grassy area the fire lines should be maintained periodically by controlled burning during November to January. In order to ensure that the fire does not spread or goes out of control, the grass on both the sides of the strip should be scraped manually/using tractor and the cut grass should be dumped in the middle'.

Observations:

The recommendation as above is being followed as was seen during our field visit to the Koladhar area of the park. (See picture 11)

2) 'Grass permits would be issued to the villagers as a management practice for an average period of 6 to 8 months depending on the productivity of grasses in the protected area. In the marshes permits would be given in between February and June. In the grassland area the permits would be given in between Oct and May. These permits are to be issued subject to exclusion of the bird nesting and roosting areas. The grasslands would be managed by carrying out cutting and burning in a mosaic manner with a rotation of three years time. This would help enlist the cooperation of the local communities as an ecocodevelopment activity'.

Observations

While the prescription as above is well placed, it seems the restrictive instruction of the Supreme Court (Godavarman case) prohibiting removal of even grass from a national park has turned this prescription inoperable. The park management as well as the state government needs to approach the Hon Supreme Court to get the said prohibition lifted for the prevention of wild fires in the park and for better park – people relations.

It was observed that the people's need of grass from the park is overriding so much so that they would even risk arrest and prosecution to meet their needs. (See picture 12).

3) 'Round the clock vigil should be kept during the fire season i.e. from March to June. For this machans should be built on some big trees and existing chowkies from where a commanding view can be had. Watch towers could also be positioned at appropriate places according to need'.

Observations

As our visit to the park was during the non-fire season, we could not observe the effectiveness or otherwise of the suggested prescriptions. Still it is suggested that fire watch towers be erected at suitable places inside the park.

In addition the following prescriptions of the management plan are all well placed:

- (1) The persons on fire vigilance duties should regularly keep in touch with the control tower with the help of wireless sets.
- (2) The fire watch chowkies of Koladhar and Keoladeo should always be kept equipped with the fire fighting equipment.
- (3) All possible water sources close to fire prone areas in the park should be explored and developed so that water in case of need is readily available for fire fighting.
- (4) All fire fighting equipment should be periodically checked and kept in working condition at all strategic places.
- (5) Fire fighting drill for the staff be organised periodically so that in the event of a fire in the park the staff does not get panicky and the fire fighting operations proceed smoothly. Experts from the ammunition depot in Bharatpur can be invited to impart fire fighting skills to the park staff.
- (6) Help in fire fighting from Ammunition depot and district authorities in Bharatpur should be taken when required.

- (7) Smoking, carrying of cigarettes, matchboxes and lighters should be strictly prohibited in the park. All the visitors to the park should be checked for cigarettes, lighters and matchboxes and should be made to deposit them at the entry points. Offenders if any should be made liable to heavy fines.
- (8) Picnicking and cooking inside the park must be prohibited.
- (9) Entry of tourists beyond python point should be prohibited. Villagers collecting grass from the park should be checked for *bidis* and matchboxes on their person.

Observations

The Rama Krishna Committee that went into the incidence of devastating fire in the park in 1982 had pointed out that 'the National Park is highly deficient in fire fighting resources - both of men and material. The resources of the park should be augmented by:

- (i) Purchase of 2 fire tenders mounted on jeep chassis.
- (ii) Adequate provision of fire hydrants consisting of bore well, water storage tank, diesel pump set and water hose pipe.
- (iii) Additional watch towers with eventual conversion of every forest chowki into a multi purpose chowki cum watch tower on a double story building (additional chowki / watch towers should be provided on trail-three, Python point, and Kala bahar).

As recommended by the Bharat Singh Committee on fire prevention in the park, Koladhar area which is today most fire prone but which used to be a wetland and held water in the past needs to be revived as a wet land through the reopening of the Chiksana canal, which is currently in disuse.

The park should design attractive and appealing signages for prevention of forest fires and launch forest fire prevention educational campaigns during the fire season.

TRESPASS AND ENCROACHMENT:

The park has around 21 villages and the Bharatpur town on its border. Local people reportedly trespass into the park, despite a masonry wall, for following purposes:

- a) Illegal collection of fuel wood and small timber
- b) Illegal collection of grass
- c) Illegal grazing by cattle
- d) Illegal use of park roads for transit from one village to another
- e) Use of park land as play field by local children and as toilet by the villagers
- f) Access to temples inside the park

Observations

The boundary wall of the park was seen to have been breached at several places especially close to the villages. There were also tell tale signs of grazing by cattle (although a good number of feral cattle also roam inside the park) and village women and children were seen collecting grass from inside the park. Park area close to the village Jatoli was seen to be degraded and over used. (See picture 13)

Although the presence of a masonry wall around the park prevents any further encroachment of the park land by local people, a comparison between the park's map and the gazette notification of the park suggests that a chunk of park land along the Jaipur – Bharatpur Road appears to have been encroached during the process of the construction of the masonry wall between 1977 – 1981.

Suggestions:

The boundary wall needs to be secured and its height raised enough to prevent on one hand the illegal entry of outsiders into the park, and on the other to prevent the park herbivores from jumping over (Nilgai and Sambhar) or sneaking through (Wild boar and porcupines) for raiding crops in the adjoining agricultural fields. It is commendable that the strengthening of the wall has been taken up by the park management on a priority basis, although the park would need good funding support to be able to cover all vulnerable stretches (specially the water channels that bring water into the park) of the wall.

POACHING

The area, which constitutes the national park today, has a history of Shikar (specially water fowl hunts) from the times of the Maharaja till 1972 when the Wildlife (Protection) Act came into force and the Maharaja lost his hunting rights.

The Protection Plan in the management plan suggests the following:

'Poaching of wild animals in this National Park is rare but cannot be completely ruled out. This park is prone to the following types of poaching: -

- (a) Poaching of fishes from the drying ponds during summer.
- (b) Poaching of the wild Reptiles & Mammals.
- (c) Poaching of table birds outside the National Park.
- (d) Poaching of porcupines by inundating the porcupine burrows

The poaching of the wild mammals and reptiles can take place on a moonlit night. The poachers are not from the adjoining villages but from one or two settlements of *Bawarias* close to *Picchuna* village. Occasionally one or two persons from the adjoining villages indulge in poaching in the garb of firing guns to keep the wild herbivores away from their agricultural fields.

Poaching of table birds like ducks and geese may take place during winter in the vicinity of the park in Ajan Bandh especially during the months of July/August. These birds have the habit of going outside the park and feeding in the fields, where they get poached.

With the approach of summer months the water in the marshes start drying and the air breathing fishes in the ponds start congregating in the shallow water and mud. Large number of fish gets restricted to small puddles of water. This is the time when these fishes are poached. Nearby Agra town is a ready market for fishes. The fishes are collected in gunny bags and sent to Agra in trucks plying on the National Highway, close to the park's boundary.

Observations:

The offence record in the park for the last three-year report only one case of poaching of a wild animal:

Offences registered (2002-2005)

Year	No. Of cases (Hunting)	No. Of Cases (grass, fuelwood collection etc.)	Remarks for hunting cases	Total
2002-03	0	165	-	165
2003-04	1	172	Killing of Sambar. JM Court challan dated 31.10.03	173
2004-05	0	145	-	145

KNP 2005.

Clearly poaching of wild animals is not a major issue at the park.

But to prevent any future upsurge in poaching incidence it would be useful to set up an intelligence network to keep a constant watch on the activities of potential poachers or other trouble makers in nearby villages as well as in the Bharatpur town.

POLLUTION

The threat to the park from air and water pollution was the subject matter of a committee of enquiry led by Sri VD Sharma in 1982. This enquiry was instituted following media reports of the likelihood of acid rains happening in and around the park.

Since then, the threat to the park from pollution has been well understood and ameliorative steps suggested in the park's management plan as under:

"The ecosystem of Keoladeo National Park is prone to the following types of pollution.

1. Water Pollution
2. Air Pollution
3. Noise pollution

Water Pollution

Keoladeo National Park is an artificial ecosystem where water is filled into the marshes every year from Ajan Bandh. The water that comes into Keoladeo National Park has to flow through many cultivated fields spread over hundreds of square kilometres. In this process the chemicals left over in the fields because of the excessive use of chemical fertilisers and pesticides get dissolved in this water which has a direct impact on water chemistry of the park, which in turn affects the aquatic vegetation and the dependent fauna.

It is proposed to conduct an integrated pest management programme in the catchment area of Ajan Bandh and in villages adjoining Keoladeo National Park in collaboration with the Agriculture department and the University of Agriculture, Bikaner.

Air Pollution

There were a number of brick kilns all round the park. The smoke coming out of the chimneys of these kilns used to pollute the atmosphere of the park. All brick kilns operating in the Taj trapezium area including the ones operating around Keoladeo National Park have been relocated to another place in compliance of the Supreme Court’s order.

An air monitoring station has been set up in the park by the nearby Mathura refinery to study the variations in SO₂ concentration in the air.

Noise Pollution

The number of automobiles has increased many folds in the recent years. Proportionately the number of vehicles coming to the park has also increased. If these vehicles were allowed to move about freely in the park it would result in avoidable disturbance and noise pollution. Therefore no vehicle of tourists is being allowed in the core / bird watching zone”.

TOURISM

The park is one of the most visited parks in the country on account of its location (lying in the tourist golden triangle of Delhi – Agra – Jaipur). The tourist traffic to the park in recent years has been as under:

Tourist visitation during the last three years

Year	Indian	Non-Indian	Students	Total no of visitors	Revenue (in Rs)
2001-02	49,999	27,385	30,536	107,720	76,85,915
2002-03	31,820	15,537	22,164	69,521	44,16,070
2003-04	47,572	30,278	32,889	110,740	83,98,105
2004-05 (till Jan)	34,387	26,283	20,707	81,377	68,27,610

KNP, 2005

On account of the small size and the limited area of the park that is open to the visitors, the visitor pressure on the park is significant. It has also been observed that the visitor number peaks during the bird watching season (December – January) and on and around the festival (Pooja, Christmas, New Year etc) days.

A study by the Durrel Institute of Conservation and Ecology, Kent (UK) on tourism, conservation and sustainable development identified the following typology of the visitors to the park:

Tourist typology (based on visitor motivation)

- Picnickers – predominantly domestic tourists that stay close to the main road. They visit the park on foot / rickshaw and usually visit on weekends and holidays.
- Casual Tourist – have limited time and take the services of park guide and rickshaw drivers
- Adventure tourist – Youngsters preferring to take a bicycle inside. They are interested in the scenery and may visit the adjoining villages also.
- Ornithologists and photographers – those who come for longer stay.

Each of the above type of tourist exerts its specific pressure on the park resources calling for type specific protection strategies.

The other key stakeholders who play an important role in tourism promotion and conduct are the hoteliers, park guides, rickshaw pullers and the park staff.

Observations

It was observed that tourism has become a mini industry in the park with the vested interests sometimes over riding the conservation requirements of the park. There is an unhealthy competitiveness amongst the rickshaw pullers - cum guide and the park guides for the attention of and monetary returns from the visitors (specially the foreigners) to the park.

It was seen that the rickshaw pullers attempted to draw the visitor's attention to 'interesting' locales (e.g. the nest of an owl) and thereby disturbed the bird sitting on the nest. According to an expert bird watcher / staff at the park, such unbecoming conduct and attention often results in 'clutch failure' at the park.

A tigress mysteriously found its way into the park in 1999 and has since found a permanent home here. This fact has been well advertised and appropriate caution been posted at the park's entrance for the information of the visitors to the park. (The animal has since been found dead in the park).

It is suggested that the visitor management at the park be put at a more professional footing with a strict control over the affairs of the present system of the rickshaw pullers doubling up also as a tourist guide. It is hoped that once the newly constructed visitor centre (joint enterprise of WWF India and the Government of Rajasthan) near Shanti kuteer becomes fully functional, it would meet the requirements of the visitors in a much more professional manner.

The park has seen a mushrooming of hotels, restaurants and resorts around and close to it. It is possible that soon this developmental activity may start impacting adversely the park's habitat integrity as well as start to eat away essential buffer open spaces around the park, which today exist, in form of agricultural fields. It is therefore essential that soon a green belt is declared around the park, which should be made inviolate, by law.

RECOMMENDATIONS:

Subject	Activity	Suggested Priority	Budget	Comments
Legal status	Survey and demarcation	I	-	-
	Raising of boundary pillars	II	INR 350,000 (@ INR 5000 per pillar)	Around 70 pillars would need to be erected at an average of 1 pillar per 500 m
	Revised notification of the Park	I	-	-
	Ascertaining existing encroachment if any	II	-	Possibility of extant encroachment along Bharatpur – Jaipur Road
Boundary wall	Repair / raising the height of the wall at strategic locations	I	From the park's annual budget	A system of prompt detection and repair of broken / fallen wall is necessary to ensure its effectiveness
	Reconstruction of wall	II	INR 160 lakhs (@ INR 5 lakhs per km)	A 5 year plan to eventually reconstruct the entire boundary wall over 32 km needs to be prepared and implemented
Communications and Patrolling	Repair of field chowkis	II	From the park's annual budget	-
	Reconstruction of field chowki	I	INR 6 lakhs	The chowki at Aghapur needs an urgent reconstruction. It may be raised as a chowki cum watch tower.
	Up gradation of every alternate field chowki into a watch tower cum chowki	II	INR 30 lakhs (@ INR 6 lakhs per chowki for 5 chowki excluding the Aghapur chowki)	Chowki at Mallah, Chorkulu, Behnera, Darapur, Aghapur, Ramnagar may be considered

Subject	Activity	Suggested Priority	Budget	Comments
	Road	I	INR 300 lakhs (@ INR 10 lakhs per km)	Peripheral road (30 km) to be made all weather
	Wireless system	I	-	All field park staff to have a hand held wireless set. Kaziranga model of linkages with a local NGO to be explored.
	Vehicles	I	INR 100 lakhs (2 jeep mounted fire tenders, 2 jeeps, 2 tractors, 3 motor cycle, one for each Range Officer)	Old vehicles to be replaced. Jeep mounted Fire tenders to be procured.
Invasive species	Prosopis juliflora	I	-	To be eradicated as part of Ecodevelopment sharing of park resource with the local people.
	Water hyacinth	II	-	Same as above
	Feral cattle	II	-	Number of feral cattle in the park needs to be kept under control

Subject	Activity	Suggested Priority	Budget	Comments
Forest fire	Creation of fire lines	I	From park's annual budget	Ongoing process under the normal park management practices
	Fire watchers during fire season	I	From park's annual budget	Same as above
	Fire watch tower	I	INR 10 lakhs	Koladhar area requires a tall fire watch tower
	Fire fighting equipment	I	INR 5 lakhs for well digging and water supply equipments	Jeep mounted fire tender Digging of wells at suitable locations for prompt and easy supply of water during a wild fire.
Trespass, Poaching and Pollution	Strict vigil	I	-	-
	Anti poaching intelligence	II	From park's annual budget	
	Regular and constant Pollution monitoring	II	From park's annual budget	-
Tourism	Notification for declaring a green belt around the park	I	-	Land use around the park should not be allowed to be converted into a non-agricultural use.
	Professional conduct of the visitors to the park	I	-	-

Subject	Activity	Suggested Priority	Budget	Comments
	Visitor facilities	I	-	It is assumed that with the operationalisation of WWF supported Visitor centre, the requirement would be met
	Strict enforcement of visitor do's and don'ts in the park	I	-	-
	Assessment of the visitor carrying capacity of the park	II	INR 5 lakhs	An external agency may be asked to conduct a study

INR: Indian Rupees

I lakh = 100,000

CAPACITY BUILDING / ENHANCEMENT OF THE PARK STAFF

Introduction:

Capacity in terms of efficient and enabled human resource (staff) includes the following:

- 1) Requisite number
- 2) Right age
- 3) Right education / skills
- 4) Right infrastructure
- 5) Right motivation (staff welfare and amenities)
- 6) Administrative, financial and legal authority

Relevant information on the above was accessed from the records at the office of the Dy. Chief Wildlife Warden (Director) of the park. A day long adaptive SWOT (strengths, weaknesses, opportunities, threats) workshop followed by a training needs assessment exercise with 27 staff members (list enclosed) of the park provided an insight into the staff's views and aspirations. (SWOT report enclosed). Field visits and interactions with the staff in the field also provided an opportunity to understand the capacity building needs of the staff.

Staff

There are in all 128 staff members (inclusive of regular and work charge employees) positioned in the park.

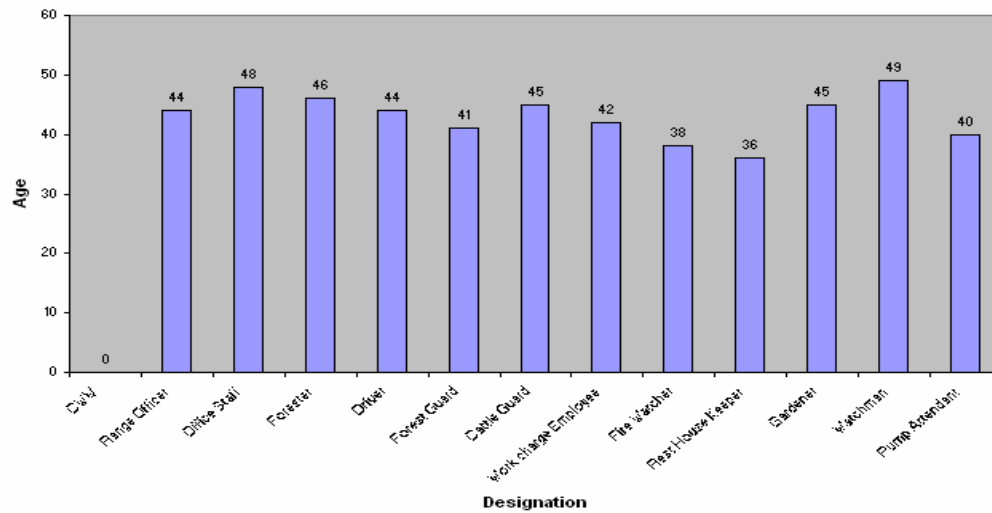
Staff (Regular)

Designation	Sanctioned Posts	Appointed	Vacancies
Deputy Chief Wildlife Warden	1	1	0
Asst. Conservator of Forests cum research officer	1	0	1
Junior Accountant	1	1	0
Office Assistant	1	0	1
Senior Clerk	3	3	0
Junior Clerk	3	3	0
Cook	1	0	1
Class IV employees	8	8	0
Wireless Operator (on Deputation)	1	1	0
Range Officer (Grade I)	2	2	0
Range Officer (Grade II)	1	1	0
Foresters	7	7	0
Asst. Foresters	3	3	0
Forest Guards	25	25	0
Drivers	4	3	1
Total	62	58	4

Work Charge Employees

Designation	Sanctioned Posts	Appointed	Vacancies
Drivers	3	3	0
Gardeners	1	1	0
Chowkidhar	5	5	0
Boatman cum Fire wire	2	2	0
Rest Houses Keepers	2	2	0
Pump attendant	2	2	0
Cattle Guards	16	16	0
Beldar	35	35	0
TOTAL	66	66	0

Average age of staff



KNP, 2005

Observations:

- 1) It is an encouraging sign that there are few vacancies against the sanctioned strength of the park.
- 2) But a look at the age graph of the staff (regular as well as work charge temporary staff) posted in the park reveals a sad state of affairs when the average age of almost all categories of staff is above 40 years.

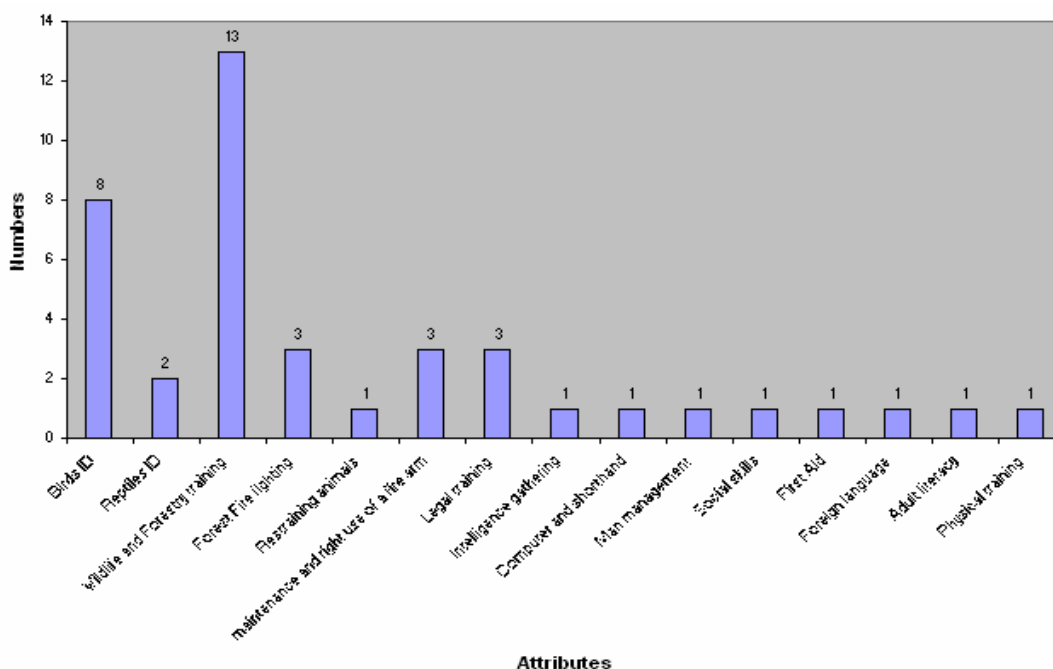
Skills:

A query to the participants revealed that of the 21 respondents 12 had not undergone any training till date. Of the rest, one or two at a time, had attended the following professional / skill up gradation training courses:

1. First Aid (Snake bite) – 1995
2. Forester Training - 1981, 1983, 1981-82, 2001
3. Forest Guard – 1997 at Ranthambhore NP, 2000
4. Protection – 2004 organized by WPSI
5. Capsule Training (Forestry) – 2002 at Jaipur (Wildlife Management)

Training 'Felt Need' of the staff:

1. Training on bird identification, netting and ringing (8) (Birds ID)
2. Wildlife and Forestry training (13)
3. Fire fighting training (how to use fire fighting equipment and how to control fire) (3) (Forest Fire fighting)
4. Training to restrain wild animals (how to tranquilize and control wild animals) (1) (Restraining animals)
5. Use of fire arm (maintenance and right use of a fire arm) (3)
6. Knowledge about reptiles (2) (Reptiles ID)
7. Forests and wildlife laws and court proceedings (3) (Legal training)
8. Protection and intelligence gathering (1) (Intelligence gathering)
9. Computer and shorthand (1)
10. Man management (1)
11. Conflict resolution (including social skills) (1) (Social skills)
12. First Aid (Emerged during discussions)
13. Language (foreign) training to interact with the foreign tourists (1) (Foreign language)
14. Adult literacy opportunities for the illiterate staff (1) (Adult literacy)
15. Physical training including training on smart turn out in uniform on the lines of police and para military forces (1) (Physical training)



Infrastructure:

It was found that the support infrastructure at the park for the staff to discharge their respective duties with effectiveness is by and large in place. In particular first hand impression on the following infrastructural items has already been provided under the chapter on review of the protection strategies at the park:

- a) Field Chowki/s
- b) Communications (Wireless system)
- c) Transport (Vehicle and boats)
- d) Boundary wall and Roads
- e) Fire arms
- f) Fire fighting equipments

In addition following infrastructural items also deserve consideration:

- 1) Supply of electric power to the park (since it is an essential element in maintaining several functions like visitor facilities; charging of wireless batteries; provision of office, street and domestic light etc in the park)
- 2) Office space and material.
- 3) Cattle pond (for impounding cattle grazing inside the park).
- 4) Canals and dykes (for ensuring supply of water to wet land areas in the park).
- 5) Visitor education.

Staff motivation (morale, amenities and welfare)

A focused group discussion during the SWOT workshop on the staff's expectations regarding welfare and amenities revealed the following:

- 1. Regular supply of uniform and related kit (boots, caps, belts, jackets etc)
- 2. Provision of staff quarters with family accommodation (Just outside the park in the land owned by the park).
- 3. Canteen facility for the staff and family members (on the lines of armed forces).
- 4. Dedicated park vehicle for transporting the staff children to school/s in the city as also to meet medical emergencies in times of need.
- 5. Special leave provision for the field staff that put in 24 hr X 7 working day duty schedules.
- 6. Construction of one additional room and a kitchen in all field chowkis. Regular repair of all the chowkis.
- 7. Efficient management of the staff welfare society.
- 8. Speedy disposal of staff claims regarding salary and allowances.
- 9. Provision of functional First aid boxes in all field chowkis, range and park Director's office as well as in all the park vehicles.

As regards the upholding of the staff's morale, following points were made during the group discussion:

- a) Lack of promotional avenues for the lower level staff was cited as the most demoralizing aspect of man management in the department.
- b) Absence of any grievance redressal mechanism within the system also emerged as a morale dampener.
- c) Lack of incentive for good workers was mentioned as a cause for frustration and demotivation amongst the staff.

CAPACITY BUILDING / ENHANCENT PLAN

Attribute	Requirement	Activity	Priority	Agency / Facilitator	Time frame	Costs
Staff Strength	Optimum number	Staff 'work - time' budget assessment	I	Third party (professional agency)	6 months assignment	INR 3 lakhs
Staff age	Younger average age	Fresh recruitment at Forest Guard and Forester levels	I	Government level	-	-
Staff skills	a) Birds identification b) Bird netting, handling, ringing	Focussed skill up gradation effort	II	a) Park researcher b) External researchers (BNHS, SACON, WII, WWF)	On going	-
	Wildlife and Forestry training (General)	Development of a capsule course of appropriate level and duration	I	a) WII b) Any other expert agency	Once a year (on site).	INR 10 lakhs per batch for a 3 months duration spread over the year
	Fire fighting	a) Introductory b) Refresher	I	a) Army ordnance centre (Bharatpur)	On set of each fire season	-
	Wild animal restraint	On site training capsule	II	WII	Once a year	INR 3 lakhs per batch for a one week course
	Maintenance and use of fire arms	Training of frontline staff in small batches	II	Local police lines	Once a quarter	-

Attribute	Requirement	Activity	Priority	Agency / Facilitator	Time frame	Costs
	Forest and wildlife laws and court craft	a) Introductory b) Advanced	I	Third party (e.g. ELDF, Delhi)	Six monthly (in batches of 10 participants)	INR 3 lakhs for a one week course
	Protection and intelligence gathering	Focussed training capsule for select staff members	II	a) Local police training institute b) Third party	Once a year (in small batch not exceeding 5)	INR 3 lakhs for a one week course
	Man management, conflict resolution, social skills	Focussed training course	I	a) State forestry training institute b) Third party	In form of a compulsory refresher course, as per the capacity of the training agency	-
	Physical training	On the lines of army / police lines	I	a) Under the supervision of a retired police or army physical instructor b) Ex serviceman reemployed with the park	Each Sunday and at least a week before the national events like Independence day and Republic day	-
	Adult literacy and foreign language skills	Utility educational course preferably within park premises	II	Third party (local NGO / training facility)	As per the course schedule and the employee convenience	INR 5 lakhs per year
	First aid	Introductory including hands on experience	I	Third party (Red Cross/ Saint John's Ambulance)	As per the trainer's convenience	-

Attribute	Requirement	Activity	Priority	Agency / Facilitator	Time frame	Costs
	Computer and short hand	Short term (ministerial staff) course	I	Third party (local institute)	Necessity based	INR 50,000
Infrastruct ure	Electric power	Regular supply	I	Park management / State Electricity Board	-	-
	Office space and material	Enabling office space and material	I	Park management	-	-
	Canals and dykes	Annual maintenance	I	Park management / Irrigation department	-	-
	Cattle pond	Effective and maintained structure	II	Park management	-	-
	Visitor education	Development of educational material, signages etc	I	Park management / Third party (NGO or a professional consultant)	6 months	-
Staff motivation	Uniform and related kit	KNP to have its distinctive uniform	I	Park management	-	-
	Staff quarters	KNP staff colony	I	Park management	-	INR 100 lakhs
	Canteen facility	KNP staff canteen	II	Park management	-	-
	Vehicle for staff children and medical emergencies	KNP staff vehicle (Bus)	I	Park management	-	INR 50 lakhs
	Special leave provision for field staff	Rules to be framed and approved	I	Park management / State government	-	-
	Improvement of field chowkis	Up gradation work	I	Park management	-	Already budgeted

Attribute	Requirement	Activity	Priority	Agency / Facilitator	Time frame	Costs
	Staff Welfare Society	Improved management	I	Park management and staff representatives	-	-
	Staff claims disposal	Speedy disposal	I	Park management	-	-
	First Aid boxes	Provision in all chowkis / offices / vehicles	I	Park management	-	INR 35,000
	Promotional avenues for subordinate staff	Timely promotions	I	Park management / state government	-	-
	Staff grievance redressal mechanism	Cell to be established	I	Park management	-	-
	Acknowledge merit and hard work	Incentives to recognize exceptional and meritorious work	I	Park management / state government	-	-
Administrative, financial and legal authority	Enhanced decision making ability	Delegation of powers (an independent assessment to be made)	I	State government / Third party (Institutional audit expert)	6 months	INR 3 lakhs

Appendix – 1

List of Places visited during the field visit

Day One – 8.2.2005

Chowki (Naka)

Mallah Chowki
Sadar Chowki
Jhatoli Village
Chorkulu Chowki
Gasola Chowki
Behnera Chowki
Koladhar Fire Watch Tower
Chiksana Canal
Dharapur Chowki
Naswaria Chowki
Aghapur Chowki
Ramnagar Chowki

Day Two – 9.2.2005

Tourism Range
Park Interpretation centre
Wireless Control station
Park Director's office

Day Three – 10.2.2005

SWOT analysis workshop was organised at the new Interpretation Centre,
Keoladeo National Park

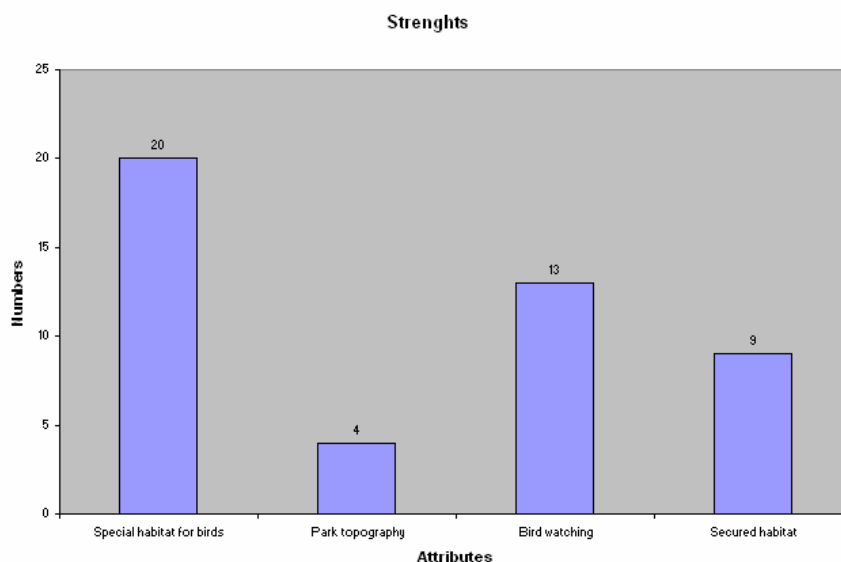
Appendix – 2

Report of the SWOT Workshop

Results

Strengths (maximum of 2 options per person)

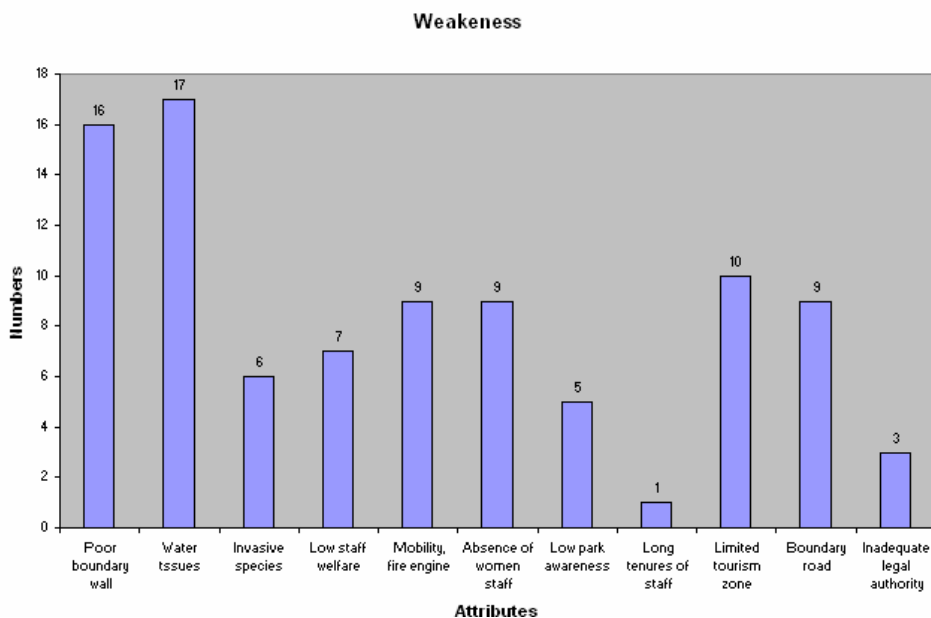
1. Special habitat attracting the birds (20)
2. Topography of the park (4)
3. Best site for bird watching (13)
4. Secured habitat for birds as well as tourists (9)



It is on expected lines that the park staff has found issues relating to birds as the key strength of the park.

Weaknesses (maximum of 2 options per person)

1. Low height and poor state of maintenance of the boundary wall (16)
2. Water related management issues (17)
3. Water hyacinth and *Prosopis juliflora* (6)
4. Low staff welfare facilities (7)
5. Poor infrastructure (mobility, fire engine) (9)
6. Absence of lady staff to prevent the village women folk from entering the park (9)
7. Lack of awareness about the park amongst the local villagers (5)
8. Long tenures of staff (1)
9. Limited tourism zone (10)
10. Poor road along the boundary wall (9)
11. Lack of legal powers to use firearms (3)



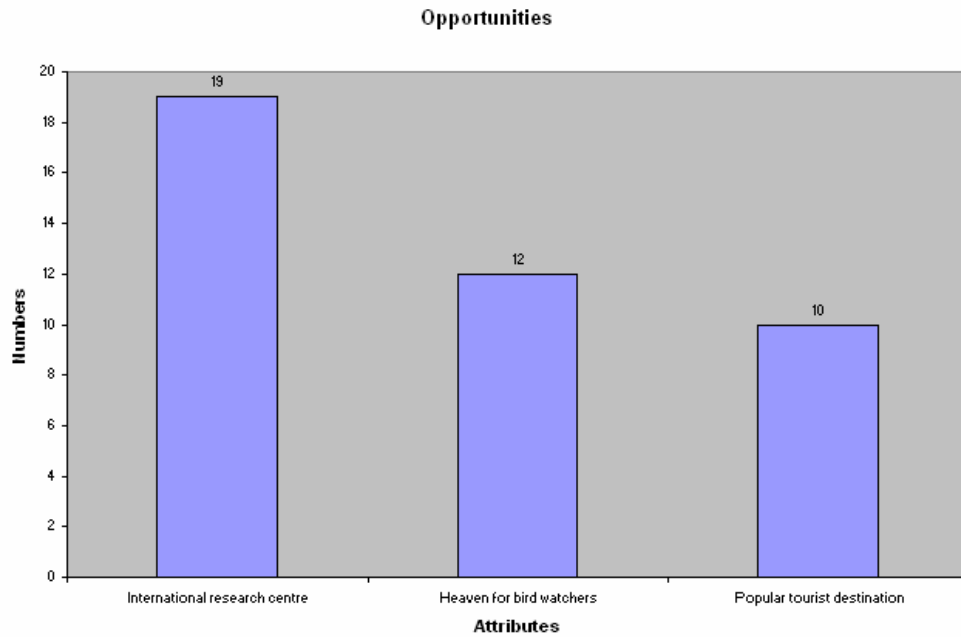
While infrastructure inadequacies relating to water, boundary wall, mobility, fires, roads and staff welfare measures are on expected lines, following additional observations made by the participants are interesting and call for urgent ameliorative action by the park authorities:

- a) Water hyacinth and Prosopis in the park
- b) Absence of lady staff at the park to prevent women offenders
- c) Low appreciation of the park by the local villagers
- d) Long tenure of staff

The observation about long tenure of park staff as being a weakness, deserves special mention as while experienced staff is an asset to any organisation, it is equally true that some staff members especially if they happen to be locals tend to develop vested interests which might go against the interests of the park.

Opportunities (maximum of 2 options per person)

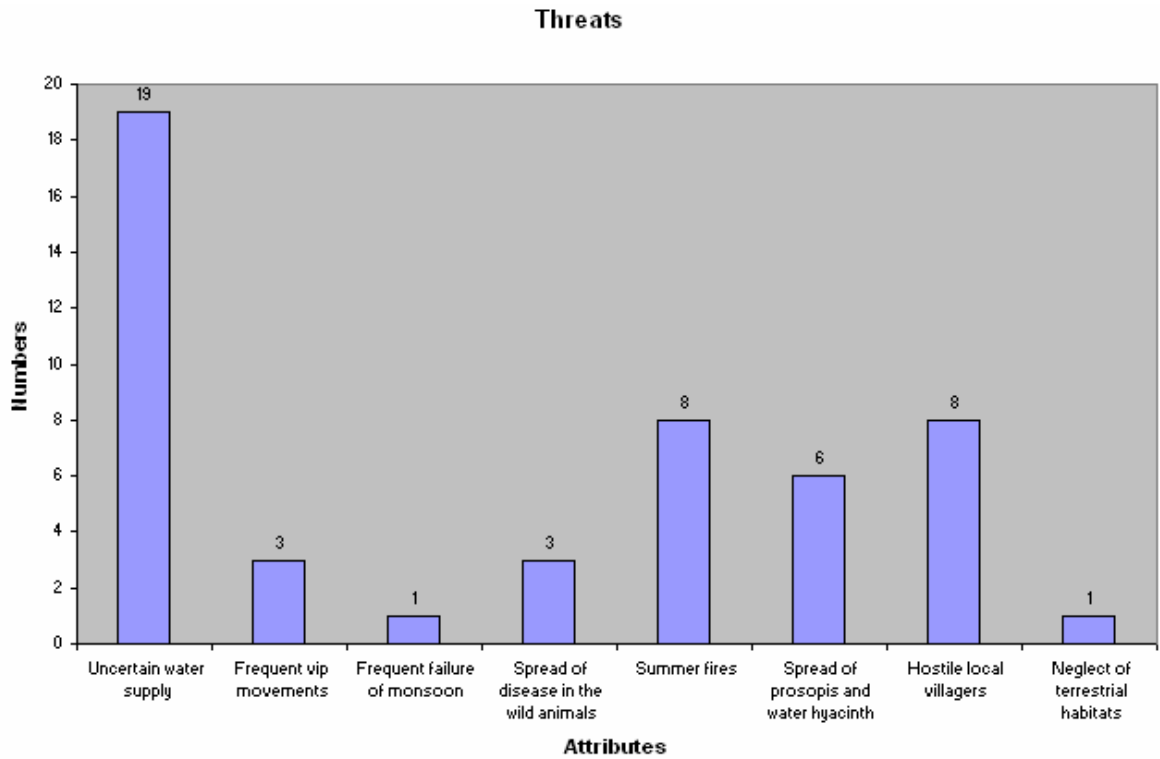
1. A research centre of international repute (19)
2. Heaven for bird watchers.(12)
3. Popular tourist destination (10)



It is good to note that the park staff sees the immense research potential at the park as an opportunity.

Threats (maximum of 2 options per person)

1. Insecure and irregular water supply (19)
2. Frequent VIP movements (3)
3. Frequent failure of monsoon (1)
4. Spread of disease amongst the herbivores from the cattle (3)
5. Summer fires (8)
6. Spread of Prosopis and water hyacinth (6)
7. Hostile local villagers (8)
8. Neglect of terrestrial habitats in the park (1)



While most threats enumerated by the participants are on expected lines, the mention of VIP movements and the neglect of terrestrial habitats in the park are interesting and deserve park management's attention and appropriate actions.

Appendix – 3

List of participants at the SWOT workshop

S. No.	NAME	DESIGNATION	PLACE OF POSTING
1.	Mohan Singh Saini	Cattle Guard	Flying Squad.
2.	Cheranji Lal	Watchman	Koladhar Naka
3.	Inder Jeet	Cattle Guard	Koladhar Naka
4.	Man Singh	Pump man	Keoladeo Naka
.	Ram Singh	Cattle Guard	Bhanakh Naka
6.	Veer Singh	Beldar (assistant)	Ram Nagar Naka
7.	Than Singh	Cattle Guard	Flying Squad
8.	Bishan	Watchman	Koladhar Naka
9.	Genda Ram	Beldar (assistant)	Ghasola Naka
10.	Shyam Sunder Mishra	Watchman	Aghapur Naka
11.	Har Mohan Mudqal	Forester	Shanti Kutir
12.	Hari Ram	Forester	Ghasola Naka
13.	Nawab Singh	Forester	Koladhar Naka
14.	Abrar Khan Bolu	Forester	Research Work
15.	Rajendar Gupta	Range Officer	Flying Squad
16.	Dharam Singh	Forester	Flying Squad
17.	Hari Singh	Forester	Jatoli Naka
18.	Mahender Singh	Forester	Darapur Naka
19.	Kishan	Cattle Guard	Sadar Naka
20.	Jaggo	Beldar	Mallah Naka
21.	Vijay Pal Singh	Range Officer	Territorial
22.	Vijen Singh	Forester	Mallah
23.	Rano	Driver	Keoladeo Farm
24.	Har Bhan Singh	Forester	Flying Squad
25.	Prenendru Singh	Forester	Naka Sadar & Mallah
26.	Dwarika Prasad	Driver	R J05 G 3435
27.	Kishan Dev	Driver	RJ 23R1246

Appendix - 4

Picture – 1: Wall weakened over time



Picture – 2: Wall in a state of breach



Picture – 3: Wall over the canal



Picture – 4: Wall under repair / reconstruction



Picture - 5: Mallah chowki / naka



Picture - 6: Repaired wall near Mallah naka



Picture – 7: Main gate of the park



Picture – 8: Aghapur Chowki



Picture – 9: Peripheral road near the boundary wall



Picture – 10: Water being pumped from within the park



Picture –11: Fire line cum road



Picture – 12: People’s need of grass from the park



Picture – 13: Degraded park area close to Jatoli village



Picture 14 - SWOT Workshop



CONTENTS

Keoladeo National Park

S. No.	Item	Page No.
1.	Report of Keoladeo National Park	1 – 33
2.	Appendices	34 – 39
3.	Pictures	40 – 46

Appendices

S. No.	Item	Page No.
1.	Places visited during the field visit	34
2.	Report of the SWOT Workshop	35 – 38
3.	List of Participants (SWOT workshop)	39
4.	Pictures	40 – 46

Kaziranga National Park

S. No.	Item	Page No.
1.	Report of Kaziranga National Park	47 – 84
2.	Appendices	85 – 92
3.	Pictures	93 – 100

Appendices

S. No.	Item	Page No.
1.	List of locations visited during the visit	85
2.	Report of the SWOT Workshop	86 - 91
3.	List of participants (SWOT workshop)	92
4.	Pictures	93 - 100

Chitwan National Park

S. No.	Item	Page No.
1.	Report of the Royal Chitwan National Park	101 – 132
2.	Appendices	133 – 139
3.	Pictures	140 – 146

Appendices

S. No.	Item	Page No.
1.	List of locations visited during the visit	133
2.	Report of SWOT Workshop	134 – 138
3.	List of participants at the SWOT workshop	139
4.	Pictures	140 – 146

Abbreviations

ACF	Assistant Conservator of Forests
APU	Anti Poaching Unit
BNHS	Bombay Natural History Society
BZ	Buffer Zone
CF	Conservator of Forests
DCF	Deputy Conservator of Forests
DFO	Divisional Forest Officer
DNPWC	Department of National Parks and Wildlife Conservation
ELDF	Enviro Legal Defence Firm
ER	Eastern Range
FVO	Forest Veterinary Officer
GIS	Geographical Information System
GPS	Global Positioning System
IB	Inspection Bungalow
ITNC	International Trust for Nature Conservation
KMTNC	King Mahendra Trust for Nature Conservation
KNP	Kaziranga National Park
KNP	Keoladeo National Park
KR	Kaziranga Range
NGO	Non-Government Organisation
NH	National Highway
PA	Protected Area
PF	Protected Forest
RCNP	Royal Chitwan National Park
RF	Range Forest Officer
RH	Rest House
RNA	Royal Nepal Army
SACON	Salim Ali Centre for Ornithology and Natural History
SWOT	Strength, Weakness, Opportunity, Threat
U/S	Under Section
VDC	Village Development Committee
WII	Wildlife Institute of India
WLRO	Wild Life Range Officer
WR	Western Range
WTI	Wildlife Trust of India
WWF	World Wide Fund for Nature - India
WWF	World Wildlife Fund - Nepal

Acknowledgement

I would like to express my sincere thanks to PR Sinha, Director Wildlife Institute of India (WII) and Dr. VB Mathur, Professor at WII, Dehradun for their confidence in my ability to do justice to the challenging task. For me it has been an extremely enriching, educating and enjoyable experience.

No assignment of this nature can be completed successfully without an active and willing support from the staff and officers at the concerned sites. Accordingly, heartfelt thanks are due to the following:

Keoladeo National Park- Arun Sen, the then Chief Wildlife Warden, Rajasthan; KCA Arun, Director, Keoladeo NP; KC Verma, Range Officer; VP Singh, Range Officer and Rajendra Kumar Gupta, Range Officer.

Kaziranga National Park - M.A. Malakar, Chief Wildlife Warden, Assam; N.K. Vasu, Director; Utpal Bora, DFO; D Boro, FRO; M Tamuly, FRO; Y Salim, FRO.

Royal Chitwan National Park - Dr. TM Maskey, Director General, DNPWC; Dr. Chandra Gurung, Country representative, WWF Nepal; Shyam Bajimaya, Ecologist, DNPWC; Diwakar Chapagain, DNPWC; Shiv Raj Bhatta, Chief Warden; Kamal Jung Kunwar, Asst. Warden; M Kafle, Asst. Warden; Ramjee Shibakoti, Asst. Warden.

It was rather fortuitous that since we were working on two different assignments under the same project logistical considerations mandated that Seema Bhat and myself travel and work in tandem at the three sites. I would like to place on record my appreciation of the help extended by Seema ji in field as well as during the SWOT workshop at the three sites.

My visit to RCNP would not have materialized but for the ready help extended by the WWF Nepal office, in particular by Bandana Lepcha and Corona Ghimire. I thank them gratefully.

At PEACE Institute, I would like to thank Sudha Mohan, Tanweer Muntakhab and Manorama Goswami for their cheerful assistance. Special thanks are also due to the husband - wife team of Captain Alok Bahuguna and Shashi who were great company and help at Keoladeo National park.

Last but not the least I would like to thank all those remarkable field staff members working at the three national parks, who shared enthusiastically their knowledge, experience and wisdom with the undersigned. Allow me to also salute their sense of resoluteness and never say die spirit in face of overbearing and extremely difficult field conditions. If this report in any way helps make their working lives better, my labours would have been well rewarded.

Manoj Kumar Misra

At A Glance

KEOLADEO NATIONAL PARK

PARK	SPECIAL FEATURE	PRIORITY PROTECTION ACTION / IMPERATIVES	STAFF CAPACITY BUILDING 'FELT NEEDS'
Keoladeo NP	<ul style="list-style-type: none"> • Artificially created, world famous wetland • Small size (29 sq km) • Surrounded by villages • High tourist visitation • A management plan exists 	<ul style="list-style-type: none"> a) Water supply to the wetlands b) Boundary wall c) Boundary road d) Improved <i>chowkis</i> e) Improved fire fighting f) Improved relations with local villagers g) Eradication of invasive like Prosopis, lantana and water hyacinth h) Improved visitor management i) Improved staff welfare j) Incorporate a park protection action plan as part of the management plan that looks at protection imperatives (vulnerable areas, staff capacity and welfare issues, infrastructural issues) and ways to maximize the returns in terms of enhanced protection against the resources at hand. 	<ol style="list-style-type: none"> 1. Training on bird identification, netting and ringing 2. Wildlife and Forestry training 3. Forest fire fighting training 4. Training to restrain wild animals 5. Use of fire arms 6. Forests and wildlife laws and court craft 7. Intelligence gathering 8. Computer and shorthand 9. Man management 10. Conflict resolution (including social skills) 11. First Aid 12. Language (foreign) 13. Adult literacy opportunities for the illiterate staff 14. Physical training including smart turn out

ROYAL CHITWAN NATIONAL PARK

PARK	SPECIAL FEATURE	PRIORITY PROTECTION ACTION / IMPERATIVES	STAFF CAPACITY BUILDING 'FELT NEEDS'
Royal Chitwan NP	<ul style="list-style-type: none"> • Sal – grasslands <i>terai</i> habitat (1000 + sq km) • Country's first and premier NP • Largest rhinoceros population in Nepal • Regular RNA personnel charged with protection duties • Major tourist destination (Concessionaires) • Innovative buffer zone management practices • Madi enclave in south bordering India • Captive elephant breeding • Wide ranging quasi judicial authority of Chief Warden • A management plan exists 	<p>a) Uncertain security environment in the country and in Chitwan region</p> <p>b) Alarming levels of rhino mortality</p> <p>c) Large number of unmanned field posts</p> <p>d) Setting up of wireless communications system</p> <p>e) Infrastructure requirements like vehicles, boats and field camps</p> <p>f) Madi enclaved area, which has the potential of development into a 'model' buffer zone management region of the park, is unfortunately simmering with discontent against the park. Situation needs to be tackled with imagination and farsightedness.</p> <p>g) Eradication of invasive like <i>Meconia</i></p> <p>h) Improved staff welfare</p> <p>i) Incorporate a park protection action plan as part of the management plan that looks at protection imperatives (vulnerable areas, staff capacity and welfare issues, infrastructural issues) and ways to maximize the returns in terms of enhanced protection against the resources at hand.</p>	<ol style="list-style-type: none"> 1. Participatory management/community participation 2. Intelligence gathering 3. Wildlife monitoring 4. GIS training 5. Conservation education 6. Driving 7. Administration 8. EIA 9. Conflict management 10. Experience sharing with staff from other protected areas 11. Wildlife restraint 12. Camera trapping 13. Taxidermy 14. Boat handling 15. First Aid 16. Fire Arms 17. Wireless

KAZIRANGA NATIONAL PARK

PARK	SPECIAL FEATURE	PRIORITY PROTECTION ACTION / IMPERATIVES	STAFF CAPACITY BUILDING 'FELT NEEDS'
Kaziranga NP	<ul style="list-style-type: none"> • Grassland – woodland habitat (400+ sq km) • Largest repository of One horned rhinoceros in the world • Delicately poised on the banks of river Brahmaputra (annual floods) • Long conservation history • Recent additions to the park area • National Highway and limited corridors to highlands of Karbi Anglong • A management plan exists 	<ul style="list-style-type: none"> a) 16 km long border road cum highland along the river Moru Diphlu b) Conversion of temporary camps into permanent camps and floating camps c) Creation of a new forest range for extended area d) Secured corridors across NH 37 to Karbi Anglong hills e) Regulation of mushrooming tourist facilities on NH 37 f) Eradication of invasive like Mimosa g) Improved staff welfare 	<ul style="list-style-type: none"> 1. Handling fire arms 2. Social interaction skills 3. Driving 4. Swimming 5. Wireless system 6. Wildlife management 7. Language 8. First aid 9. Intelligence gathering

Summary

All the three parks are unique in their own special manner. They have characteristics, which define them individually like waterfowl values in Keoladeo, extensive grasslands in Kaziranga and Sal dominated habitat in Chitwan.

All the three parks are beset with at least one problem, which defies a simple management fix. Like mortifying uncertainty of water availability for the artificial wetlands in Keoladeo, devastating annual floods in Kaziranga and debilitating civil unrest in Chitwan.

All the three parks suffer from lack of adequate infrastructural support impacting adversely their respective protection status.

All the three parks have a recently prepared Management Plan in place. At RCNP the same has been prepared by an external agency.

The staff at all the three parks was found to be well aware of the strengths and weaknesses of their respective parks and was able to identify their training and capacity building requirements.

It was interesting to note that the eradication of invasive emerged as a key protection requirement at all the three parks and following training needs were identified by the staff at all the three sites:

- a) Intelligence gathering
- b) Handling fire arms
- c) First aid
- d) Social skills