Keoladeo National Park

SITE INFORMATION

Country:
India
Inscribed in: 1985
Criteria:
(x)

Site description:

This former duck-hunting reserve of the Maharajas is one of the major wintering areas for large numbers of aquatic birds from Afghanistan, Turkmenistan, China and Siberia. Some 364 species of birds, including the rare Siberian crane, have been recorded in the park. © UNESCO
SUMMARY

2014 Conservation Outlook

Good with some concerns

Keoladeo is an artificially created and maintained wetland site and it is recognized that the existence of Keoladeo is due to human modification. The area floods in the rainy season (July-September), from October to January the water level gradually lowers and from February the land begins to dry out. By June only some water depressions remain. The site relies on the addition of water to support the numbers of waterfowl present. The State Party reports that it has taken significant steps to replenish the water regime in the property’s wetland systems by the decision to release water and by completing all water related projects, with a commitment from The Government of Rajasthan to provide water to the park to maintain the OUV of the property. These commitments are now being implemented and the park’s water requirements are being met from several different sources of water (IUCN Consultation, 2014). Nevertheless there is a need for further comprehensive data to demonstrate the sustained supply of the minimum required 550 mcft p.a. of water to the property. Similarly, ecological monitoring programmes, despite indicating some growth, remain inconclusive on the overall trends for bird populations following dramatic crashes in population sizes in 2008/09, and hence there is a need to standardize ecological monitoring methodologies. Related is the uncertainty of guaranteeing ongoing environmental water flows in the face of other human pressures (eg. the demand for water for irrigation), flows which are essential for the health of the wetland system.

Current state and trend of VALUES

High Concern
Trend: Data Deficient

Progress has been made by the State Party to replenish the water regime within the property’s wetland systems by releasing water from reservoirs and completed water-related projects. Ecological monitoring programmes are in place
which are designed to assess long-term ecosystem changes and in particular, the recovery of bird populations. However, questions remain on the sustainability of adequate water flows and hence the long-term viability of bird populations. Although bird monitoring data appear to indicate an increase in bird populations, the data is confusing and at times conflicting, making it challenging to forecast the long term recovery of bird populations. The overall numbers of birds in 2013 (27,498; State Party report, 2014) remain low compared to estimates for the period up until the 1990s (>100,000; SOC report, 2011). Other threatening processes related to external development and tourism will need careful monitoring.

**Overall THREATS**

**Low Threat**

There has been progress made by the State Party to replenish the water supplies within the property’s wetland systems through the decisions to release environmental water flows from reservoirs and completed water related projects. This needs to be ongoing and demonstrably sustainable through the provision of long-term comprehensive data on annual water replenishment. More accurate and long-term ecological monitoring programmes are needed to understand the status of bird populations and the impact of ecosystem changes and so guide the recovery of bird populations. An increase in the involvement of local communities in the management of the property should play a key role in contributing to the ongoing success in the control of invasive species.

**Overall PROTECTION and MANAGEMENT**

**Mostly Effective**

There is a Management Plan in place for Keoladeo National Park 2010 – 2014, which identifies the ongoing need to restore the water supply to the property’s wetland systems. Commendable efforts on the part of the State Party have been made to restore the water regime of the wetland. Other management interventions have emphasized working closely with local communities to address significant invasive species concerns and manage external pressures. Nevertheless inconsistencies and deficiencies in water flow monitoring and ecological census contribute to an unclear picture on the outlook for the sites’
wetland ecosystems and associated bird populations.
FULL ASSESSMENT

Description of values

Values

World Heritage values

- An area which provides unique and globally significant natural habitats for abundant populations of both resident and migratory waterbirds
  Criterion:(x)

The Keoladeo National Park is a 2,873 ha wetland of international importance for migratory waterfowl. The site is one of the major wintering areas for large numbers of aquatic birds from Afghanistan, Turkmenistan, China and Siberia. Some 375 species of birds, including the rare Siberian crane, have been recorded in the park. At the time of inscription it was the wintering ground for the Critically Endangered Siberian Crane and continues to be a habitat for large numbers of resident nesting birds, including five Critically Endangered, two Endangered, and six Vulnerable species as well as being a breeding ground for approximately 115 species. The habitat mosaic of the property supports a large number of species in a small area, with 42 species of raptors recorded (IUCN Evaluation, 1985; SoOUV, 2012).

Other important biodiversity values

- Wetland / waterbird values

  Established as a duck hunting preserve, the site’s wetland and water bird values date back 250 years. It was designated as an Indian national bird sanctuary on 13 March 1976 (Discovered India, 2014). The area was
designated as an internationally significant Ramsar wetland in 1981 covering a total area of 2,873 ha (Ramsar, 2014). In 1981 Ramsar noted the site as being “the richest bird area in the world” and quotes renowned bird expert, Sir Peter Scott as saying “Keoladeo is the world’s best bird area” (Ramsar 1981).

Assessment information

Threats

Current Threats
Low Threat

Previous SOC reports have noted the dramatic decline in bird populations attributed to fluctuations in natural and artificial water flows. Good quality water allocations estimated at 550 mcft p.a. are deemed necessary to ensure the recovery of the bird populations which are central to the OUV of the property. (IUCN SOC, 2012; IUCN SOC 2014). The State Party reports that it has taken significant steps to replenish the water supply in the property by releasing water from several sources (SP Report, 2014), hence the threat from recently insufficient water levels in the park is likely to have been much reduced; however, further data demonstrating the sustained supply of the minimum required 550 mcft p.a. of water to the park are needed to confirm this assessment. (IUCN SOC, 2014)

Accurate time series data on migratory and resident water bird populations is also urgently needed to confirm the conservation status and outlook for these populations (IUCN SOC, 2014).

Ecodevelopment Committees (EDCs), which have been formed with villagers from 16 villages adjacent to the park, will be critical to establishing good relations, mitigating the impacts of neighbouring communities and to controlling invasive species.

▶ Dams/ Water Management or Use
Low Threat
Inside site

The key determinant in sustaining the property’s OUV is the maintenance of adequate environmental water flows. Time series data on bird populations has been previously provided by the State Party however, data deficiencies and the use of different methodologies makes interpreting this data, and thus interpreting the conservation status of key species, challenging. Bird populations fluctuate significantly and declined dramatically between 2008 and 2009. This steep decline followed a period up until the 1990s when reported numbers of birds flocking to the site may have exceeded 100,000 (IUCN SOC, 2011).

The State Party reports that it has “taken significant steps to replenish the water regime in the property’s wetland systems through decisions to release the required environmental water flows and has completed all water related projects to meet the water requirements on a sustainable basis” This includes the completion of the Govardhan Drain Project on the 29th September 2013 (SP Report, 2014). Additional data on water flows from other projects such as the Dholpur – Bharatpur Drinking Water Project and other water sources is not available making it difficult to assess the long-term sustainability of water flows to the property (IUCN SOC, 2014). The significant effort undertaken by the State Party to ensure adequate water flow to the property will have much reduced the threat emanating from recently insufficient water levels in the park. However, more complete data demonstrating the sustained supply of the minimum required 550 mcft p.a. of water to the park are needed to confirm this assessment.

Invasive Non-Native/ Alien Species

High Threat

Inside site

The State Party reports that during 2007, local communities have been involved in the removal of the invasive species, Prosopis juliflora. (SP Report, 2012)

However, Prosopis juliflora remains a threat to the site. Some eradication was done in 2007-2008 but not enough to prevent further spread. It has been reported by the State Party that by 2014, 1030 ha of forest had been completely cleared of the invasive plant. (SP Report, 2014).

Water Hyacinth (Eichhornia sp.) also poses a threat to the aquatic ecosystem of Keoladeo National Park as dense mats of the hyacinth increases siltation in
the wetland. The removal of water hyacinth has been carried out successfully using labour from the Ecodevelopment Committees (EDCs), which have been formed with villagers from 16 villages adjacent to the park. (SP report, 2014) Whilst Lantana camara is a slower moving threat to the local vegetation its eradication is also required. (IUCN SOC Consultation, 2011).

► **Logging/ Wood Harvesting**

**Low Threat**  
**Inside site**

At the time of the evaluation of the site in 1985 it was reported that illegal felling of trees and harvesting of grasses at the site had been phased out (IUCN Evaluation, 1985). However there remain concerns of the loss to its green cover and feed for wild species due to illegal felling and harvesting (IUCN Stakeholder Consultation, 2011). However the State Party notes that no illegal conversion of agricultural land to other uses has so far taken place. There has been local community involvement in grassland management and this participatory approach to management of the property should be continued and further intensified to ensure ongoing success. (IUCN SOC, 2012)

► **Tourism/ visitors/ recreation**

**Very Low Threat**  
**Inside site**

Whilst the property is known for bird photography, there do not appear to be guidelines and restrictions set down to ensure little or no disruption is made to bird populations by the huge numbers of photographers, both private and professional, who visit the site for this purpose (IUCN Stakeholder Consultation, 2011).

► **Utility / Service Lines**

**Low Threat**  
**Inside site**

An increase has been reported in numbers of mobile phone towers around the site which may be harmful to the breeding cycle of some species especially storks and passerines. (IUCN Stakeholder Consultation, 2011). The State Party notes that a 500 metre eco-sensitive area is defined around the
property; however this cannot be widened due to the proximity of Bharatpur town. (IUCN SOC, 2012)

Potential Threats

Low Threat

Different invasive species (such as the drought-tolerant Prosopis juliflora and the Water Hyacinth Eichhornia sp.) will react differently to an increase in water supply (IUCN SOC, 2014), which will require an adequate management response. Further development along the periphery of the site may bring an increase in road traffic which may compromise the OUV of the property if the disturbance impacts on the bird populations within the Park. (IUCN/UNESCO Mission Report, 2008).

Roads/ Railroads

Very Low Threat

Inside site

The National Highway (NH 11) passes in front of the Park with the probability of an increase in heavy traffic. (IUCN Stakeholder Consultation, 2011).

Invasive Non-Native/ Alien Species

High Threat

Inside site

Invasive water plant species such as Eichhornia and Paspalum may occur and spread if not controlled, with the restoration of water supplies. (IUCN/UNESCO Mission Report, 2008)

Protection and management

Assessing Protection and Management

Management effectiveness

Some Concern

The updated management plan (2010-14) has been developed identifying the need to engage local people in management. In order to increase the role
of local communities in the management of the property, eco-development programmes have been initiated in the surrounding villages. Habitat improvement operations are now being executed through the eco-development committees and an annual work/action plan exists and most or all activities are being implemented and monitored. As a result, local communities have some input into discussions relating to management but no direct role in management; indigenous peoples directly contribute to some decisions relating to management but their involvement could be improved and there is contact but little or no cooperation with industry regarding the management of the property and/or area surrounding the property (UNESCO, Periodic Report, 2011).

► **Relationships with local people**  
**Mostly Effective**

Local communities have been involved in the removal of the invasive species, Prosopis juliflora; in some prevention of offences; education; and grassland management. Ecodevelopment committees have been constituted in 16 villages adjacent to the park boundary. This initiative is a result of establishing committees based on the proximity of the villages to the park and also on their apparent dependence on the park. The objective of these committees is to promote sustainable use of land and other resources, as well as on-farm and off-farm income generating activities which are not deleterious to the property (IUCN SOC, 2012; SP Report, 2014). Local communities and indigenous peoples resident, or close, to the property have had some input into discussions relating to management but no direct role in management (UNESCO, Periodic Report, 2011).

► **Legal framework and enforcement**  
**Mostly Effective**

The legal status of the property has remained the same since its inscription on the World Heritage list. The property is managed by the Forest Department of the State of Rajasthan. According to the State Party, (SP Report, 2012) “there is excellent capacity and resources to enforce and regulate legislation at the site”. The property is protected under The Wildlife Protection Act, 1972. The avifauna of satellite wetlands are also protected by the same legislation but this Act does not offer protection to the habitat of

▶ **Integration into regional and national planning systems**
  **Data Deficient**

The property is a protected wetland located in the central Asian migratory flyway. 27 satellite wetlands have been identified around the property that support a large number of avifauna and act as buffer wetlands. (UNESCO, Periodic Report, 2011)

▶ **Management system**
  **Some Concern**

The Management Plan of 2002-2006 has been updated (2012-2014) placing special emphasis on solving the water crisis, eco-development, protecting and improving the habitat for waterfowl and enhancing interpretation facilities to improve visitor satisfaction. Research and monitoring has been given adequate importance as in previous plans. There has also been more emphasis placed on ecologically sound tourism management. Whilst there is some coordination between the range of administrative bodies / levels involved in the management of the property it could be improved. Whilst the management system is being fully implemented and monitored, the management plan is only partially adequate to maintain the property's OUV (UNESCO, Periodic Report, 2011).

▶ **Implementation of Committee decisions and recommendations**
  **Mostly Effective**

The recommendation to ensure adequate supply of water to the site is being addressed by the State Party via a range of existing water sources and new sources linked to water supply projects. The State Party has committed to meeting the environmental water flow requirements of the wetland (SP Report, 2014). However, it is not clear what the overall strategy is for sustaining the necessary 550 mcf p.a. to sustain wetland values (IUCN SOC, 2014). Clearer time series data is needed on the annual water flow into the property to assess the long-term adequacy of the water regime. The State Party is also working to address the recommendation regarding control of invasive alien species and involvement of local communities in management. Whilst a monitoring programme has been operational for the
period 2010-14 (UNESCO, Periodic Report, 2011) data deficiencies result in uncertainty regarding the conservation status of bird populations (IUCN SOC, 2014).

No information has been provided on development in the immediate vicinity of the property, as requested by the Committee in Decision 36 COM 7B.11 (IUCN SOC, 2014).

► **Boundaries**

**Mostly Effective**

The property had no buffer zone at the time of its inscription on the World Heritage List. This is partly due to the property being enclosed within a 2.6m high boundary wall which provides significant protection from surrounding activities (IUCN/UNESCO Mission, 2008). The State Party also notes that a 500m eco-sensitive area is defined around the property, which cannot be widened due to the proximity of Bharatpur town (SP Report, 2012).

► **Sustainable finance**

**Mostly Effective**

75% of the property’s overall funding is provided by the National/Federal Government and 20% by the Regional/Provincial Government. The State Party reports that the available budget is sufficient but further funding would enable more effective management to international best practice standard. The existing sources of funding are secure in the medium-term and planning is underway to secure funding in the long-term (UNESCO, Periodic Report, 2011).

The property has received an estimated total of USD 80,000 in international funding (Enhancing Our Heritage project on management effectiveness assessment). The property has also benefited from the UNF funded World Heritage India programme from 2008 (enhance management effectiveness and build staff capacity; increase the involvement of local communities in the management of the property and promote their sustainable development; and raise awareness through communications and advocacy). (IUCN SOC, 2012).

► **Staff training and development**

**Data Deficient**
At the time of inscription the property was managed by a Deputy Chief Wildlife Warden with a staff comprising a research officer, forester, three rangers, 20 wildlife guards, clerks and an accountant with all staff being employed on a permanent, full-time basis. (IUCN Evaluation, 1985) A capacity development programme is in place at the property and is partially implemented; some technical skills are being transferred to those managing the property locally but most of the technical work is carried out by external staff. The property has a good human resource base however lacks ongoing staff training and development. (UNESCO, Periodic Report, 2011) A clear picture on up to date staffing is however, not available.

**Sustainable use**

- **Data Deficient**

  data deficient

**Education and interpretation programs**

- **Some Concern**

  Whilst the tourism industry and local authorities have a good understanding of the importance of the property as a World Heritage Site there is a lack of understanding amongst the local farming and indigenous communities. There is a planned education and awareness programme however the State Party reports that it only partly meets their needs and could be improved (UNESCO, Periodic Report, 2011).

**Tourism and interpretation**

- **Mostly Effective**

  There is an excellent visitor centre, information booths, guided tours and a very good system of walking trails. The education, information and awareness building activities are very good with a variety of information brochures and signage available to visitors along the trails (UNESCO, Periodic Report, 2011). This view is countered by the 2008 Mission which found some features in need of restoration and noted that more resources were required for the infrastructure in the park (IUCN/UNESCO Mission, 2008).
**Monitoring**

**Mostly Effective**

The State Party reports that a comprehensive, integrated programme of monitoring, which has been identified as necessary for improving understanding of the OUV of the property, is in place. This programme is noted as monitoring the status of bird populations with particular reference to the amount of water available. The monitoring programme is linked to the Management Plan and much of the monitoring activity is carried out by the managers and staff with involvement of the local communities. The park authorities carry out a regular annual waterfowl count in the property. (SP Report, 2012), (SP report, 2014)

There has been aquatic habitat monitoring also carried out recently. Water samples collected from different blocks of the property have been analyzed for heavy metals, pesticides, toxic metals and salt content. Monitoring avifaunal diversity in the 27 satellite wetlands around Keoladeo National Park which falls within 100 km radius of KNP has also taken place. (SP Report, 2014)

Monitoring in Keoladeo is mostly effective; however, different datasets present contradictory information on bird numbers and different methodologies contribute to an unclear overall picture on bird population trends (IUCN SOC, 2014).

**Research**

**Some Concern**

Whilst there are scientific studies being carried out there is little that is directly related towards management needs at the site (UNESCO, Periodic Report, 2011).

**Overall assessment of protection and management**

**Mostly Effective**

There is a Management Plan in place for Keoladeo National Park 2010 – 2014, which identifies the ongoing need to restore the water supply to the property’s wetland systems. Commendable efforts on the part of the State Party have been made to restore the water regime of the wetland. Other management
interventions have emphasized working closely with local communities to address significant invasive species concerns and manage external pressures. Nevertheless inconsistencies and deficiencies in water flow monitoring and ecological census contribute to an unclear picture on the outlook for the sites’ wetland ecosystems and associated bird populations.

Assessment of the effectiveness of protection and management in addressing threats outside the site

Some Concern

At the time of the evaluation mission it was noted that there is a lack of a buffer zone to the site due to physical constraints. Keoladeo National Park sits within a populated human-dominated landscape. It is surrounded by 17 villages and the industrial city of Bharatpur. The high stone wall that surrounds the park prevents, to an extent, human and domestic stock trespass. The wetlands of the park are dependent on a regulated water supply from outside the park boundary. (IUCN Evaluation, 1985). Nearly 30 years later the situation remains much the same with management of external factors, most especially water allocations, a key concern. Commendable efforts have worked to address a range of other issues such as engagement with local communities, control of illegal grazing, management of invasive plants and tourism.

State and trend of values

Assessing the current state and trend of values

World Heritage values

An area which provides unique and globally significant natural habitats for abundant populations of both resident and migratory waterbirds

High Concern

Trend: Data Deficient

There are a number of threats to the OUV of the property, however the overriding threat relates to fluctuations and/or interruptions to the water flow regime which is necessary to sustain ecological processes and Keoladeo’s
globally significant resident and migratory bird populations. The efforts of the State Party to restore environmental flows are commendable especially the construction of new supply infrastructure such as the Govardhan Drain. However, the lack of time series data on the total water flow into the property leads to uncertainty about the future of the site’s OUV. Linked to this is the confusing and, at times, conflicting data on bird population trends which makes it challenging to forecast long term recovery of key bird species within the property (IUCN SOC 2014), and the overall numbers of birds in 2013 (27,498; State Party report, 2014) remain low compared to estimates for the period up until the 1990s (>100,000; SOC report, 2011).

The Siberian Crane, previously the flagship species of the park, has not been observed at the property since 2002 (UNESCO/IUCN Mission Report, 2008). Other programmes such as the collaborative control of invasive plants in cooperation with local people and the creation of village based Ecodevelopment Committees appear to be having a positive impact on the park’s conservation.

Other important biodiversity values

- **Wetland / waterbird values**

  Established as a duck hunting preserve, the site's wetland and water bird values date back 250 years. It was designated as an Indian national bird sanctuary on 13 March 1976 (Discovered India, 2014). The area was designated as an internationally significant Ramsar wetland in 1981 covering a total area of 2,873 ha (Ramsar, 2014). In 1981 Ramsar noted the site as being “the richest bird area in the world” and quotes renowned bird expert, Sir Peter Scott as saying “Keoladeo is the world’s best bird area” (Ramsar 1981).

Summary of the Values

- **Assessment of the current state and trend of World Heritage values**
  - High Concern
  - Trend: Data Deficient

  Progress has been made by the State Party to replenish the water regime within the property’s wetland systems by releasing water from reservoirs and
completed water-related projects. Ecological monitoring programmes are in place which are designed to assess long-term ecosystem changes and in particular, the recovery of bird populations. However, questions remain on the sustainability of adequate water flows and hence the long-term viability of bird populations. Although bird monitoring data appear to indicate an increase in bird populations, the data is confusing and at times conflicting, making it challenging to forecast the long term recovery of bird populations. The overall numbers of birds in 2013 (27,498; State Party report, 2014) remain low compared to estimates for the period up until the 1990s (>100,000; SOC report, 2011).
Other threatening processes related to external development and tourism will need careful monitoring.

Assessment of the current state and trend of other important biodiversity values

High Concern
Trend: Data Deficient

The issues noted above also relate to the site’s national birdlife sanctuary values and those related to its designation as a Ramsar site.

Additional information

Key conservation issues

Need for regular and adequate water flow to the property
Local

Dependence on the monsoon rains and the release of water from outside the property which is necessary to maintain its wetland values

Need for more effective comprehensive and long term ecological monitoring
Local

Populations of key bird species have declined dramatically since 2008/09. Whilst some improvements to population numbers have been recorded, some
data is deficient and contradictory, resulting in an unclear picture on overall recovery.

▶ Invasive species

Local

Eradication programmes have begun for Water Hyacinth, Prosopis juliflora and other invasive species. These are having a positive impact and need to be expanded.

▶ Inappropriate residential and industrial development close to the park boundary

Local

Major roads, concrete constructions, mobile phone towers are being developed in the vicinity of this relatively small property. The extent and trends of this development is unclear.

▶ Management of tourism

Local

Growing numbers of tourists require careful management to avoid impacts (for example from wildlife photographers) and to ensure appropriate visitor infrastructure and services. Efforts should be maintained to ensure that tourism benefits support local livelihoods.

Benefits

Understanding Benefits

▶ Outdoor recreation and tourism

There is a steady influx of tourists to the park and in particular of bird-watchers. There is a visitor centre and lecture hall and interpretative material along the system of trails.

▶ Does management of the site provide jobs (e.g. for managers or rangers)?
Staff are employed on a full time, permanent basis to manage the site. Some locals are used to help in the maintenance of the park for invasive plant.

▶ Collection of timber, e.g. fuelwood

Members of the EDCs are allowed to remove and carry home the Prosopis juliflora trees for their bonafide livelihood use (SP Report, 2014). Opportunities exist for local people to utilize other invasives such as Water Hyacinth for fertilizer.

Summary of benefits

The involvement of local communities and stakeholders in the management of Keoladeo National Park has been facilitated through the establishment of Ecodevelopment Committees (EDC’s). These have been formed based on the proximity of villages to the park and also on their apparent dependence on the park. Their aim is to engage local participation in projects promoting sustainable use of land and other resources, as well as income generating activities which are not deleterious to the property. Thus local communities become involved in the protection and preservation of the OUV of the property. Another benefit from the site is the large number of tourists and bird watchers who visit. Opportunities exist for local people to be employed by the park and/or via tourism guiding activities (rickshaw bird watching). The visitor centre and interpretative signage along the trails within the park contribute to the education of those who visit.

Projects

Compilation of active conservation projects

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<td>1</td>
<td>National Rural Employment Guarantee Scheme</td>
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<td>2</td>
<td>Govardhan Drain Project</td>
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<td>3</td>
<td>A Study on the ecological monitoring of the satellite wetlands around KNP.</td>
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<td>4</td>
<td>Nature Based Tourism-Rajputana Society of Natural History (RSNH) (a registered non-profit NGO)</td>
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# REFERENCES

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<td>11</td>
<td>UNESCO (2011). Periodic Reporting Section II. Keoladeo National Park UNESCO Paris, France</td>
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