IUCN Conservation Outlook Assessment 2017 **(archived)**
Finalised on 08 November 2017

Please note: this is an archived Conservation Outlook Assessment for Chitwan National Park. To access the most up-to-date Conservation Outlook Assessment for this site, please visit https://www.worldheritageoutlook.iucn.org.

Chitwan National Park

SITE INFORMATION

Country:
Nepal
Inscribed in: 1984
Criteria:
(vii) (ix) (x)

Site description:
At the foot of the Himalayas, Chitwan is one of the few remaining undisturbed vestiges of the 'Terai' region, which formerly extended over the foothills of India and Nepal. It has a particularly rich flora and fauna. One of the last populations of single-horned Asiatic rhinoceros lives in the park, which is also one of the last refuges of the Bengal tiger. © UNESCO

SUMMARY

2017 Conservation Outlook

Significant concern

The management at Chitwan National Park has been successful in ensuring effective conservation over the last few years; as shown in the rapid increase in tiger and rhino numbers. Nevertheless, the site remains vulnerable to current threats such as pollution, invasive species and negative impacts of mass tourism, and to potential threats such as proposed road developments (including the Tarai Hulaki Highway), increasing human-wildlife conflicts, the impacts of climate change or earthquake or sudden and unexpected increases in poaching or the resurgence of political instability. As such Chitwan should remain on the radar of conservationists worldwide as an area of high concern – as well as an exemplar of effective management. However, under the new Constitution of Nepal of 2015, Rural Municipalities will be given more power in managing their resources, which may lead to increased challenges in the management of Chitwan National Park, which overlaps with four provinces.

Current state and trend of VALUES

High Concern
Trend: Stable

Terrestrial habitats in Chitwan support many endangered mammals which act as indicators of overall ecosystem health as well as species specific values.Overall numbers of rhino and tiger are rising as a result of effective management and protection regimes being in place suggesting that these WH values are being maintained.
Freshwater habitats in the park are less well studied; but evidence suggests that overall this ecosystem is under stress from pollution and impacts related to invasive species (for which at present no suitable management response has been found).
Thus despite the many excellent management actions undertaken by Chitwan National Park staff and partners the overall assessment of the status and trend of

WH values remains of concern and management efforts and resources should remain at a high level of input to ensure the parks continued conservation success.

Overall THREATS

High Threat

The site's location in terms of potential threats (in particular in relation to flood risk exacerbated by climate change and earthquakes) and the rapid spread of invasive species means that despite the focus of management on minimising threats Chitwan remains a protected area under threat. If any of the proposed roads through the property were to proceed they would be likely to cause significant negative impacts on its Outstanding Universal Value. Until all these potential road projects are permanently abandoned, they will continue to pose significant potential threats to the conservation of Chitwan National Park and its wildlife.

Overall PROTECTION and MANAGEMENT

Mostly Effective

Chitwan faces many challenges from potential and pervasive threats, high demands from tourism and the constant threat from poachers. However, since the ending of the Maoist insurgency in 2006 the site has seen an increasingly effective management and protection regime supported by cutting-edge technologies, and new institutional set-ups put in place are in general effectively focused on the most important management and conservation issues. However, protection and management efforts appears to be focused on mega fauna such as tiger and rhino, with less attention being paid to small mammals such as the otter, the fishing cat and others which are considered to be an indicator of the health of aquatic habitats.

FULL ASSESSMENT

Description of values

Values

World Heritage values

- **Areas of exceptional natural beauty and aesthetic importance**
  Criterion:(vii)

  The spectacular landscape, covered with lush vegetation and the Himalayas as the backdrop makes the park an area of exceptional natural beauty. The forested hills and changing river landscapes serve to make Chitwan one of the most stunning and attractive parts of Nepal’s lowlands. Situated in a river valley basin and characterized by steep cliffs on the south-facing slopes and a mosaic of riverine forest and grasslands along the river banks of the natural landscape makes the property amongst the most visited tourist destination of its kind in the region. The property includes the Narayani (Sapta Gandaki) river, the third-largest river in Nepal which originates in the high Himalayas and drains into the Bay of Bengal providing dramatic river views and scenery as well as the river terraces composed of layers of boulders and gravels (SoOUV, 2013).

- **An outstanding example of biological evolution with a unique assemblage of native flora and fauna**
  Criterion:(ix)

  Constituting the largest and least disturbed example of sal forest and associated communities, Chitwan National Park is an outstanding example of biological evolution with a unique assemblage of native flora and fauna from the Siwalik and inner Terai ecosystems. The property includes the fragile Siwalik-hill ecosystem, covering some of the youngest examples of this as

well as alluvial flood plains, representing examples of ongoing geological processes. The property is the last major surviving example of the natural ecosystems of the Terai and has witnessed minimal human impacts from the traditional resource dependency of people, particularly the aboriginal Tharu community living in the buffer zone of the park (SoOUV, 2013).

▶ **High species diversity, including endangered species**
Criterion:(x)

The combination of alluvial flood plains and riverine forest provides an excellent habitat for the Greater One-horned Rhinoceros and the property is home to the second largest population of this species in the world. It is also prime habitat for the Bengal Tiger and supports a viable source population of this endangered species. Exceptionally high in species diversity, the park harbours 31% of mammals, 61% of birds, 34% of amphibians and reptiles, and 65% of fishes recorded in Nepal. Additionally, the park is famous for having one of the highest concentrations of birds in the world (over 350 species) and is recognized as one of the worlds' biodiversity hotspots as designated by Conservation International and falls amongst WWFs' 200 Global Eco-regions (SoOUV, 2013).

Assessment information

Threats

Current Threats
High Threat

In general, Chitwan National Park has put a high emphasis on the management of the many threats facing the protected area, which have proven successful. However the rapidly increasing spread of invasive species is proving to be a hard threat to manage. Despite the manual removal of the species like Mikania micrantha, Lantana camara, Chromolaena odorata, Eupatorium adenophorum, Echhornia crassipes in wetland habitats and increasing Human-Wildlife Conflict (as mentioned in the IUCN Mission Report 2016) and increasing scientific

research on these species the Periodic Reporting assessment of 2011 notes that at present “there is no effective solution for Mikania micrantha eradication”. The IUCN reactive monitoring mission that visited the property in 2016 confirmed that there appears to be little effective management of invasive species.

▶ Poaching

Low Threat
Inside site, localised(<5%)

Subsistence wild plant collection within the park is a threat, however it is restricted to a few locations, is not increasing, is managed and has low impacts on the site’s values (PR section 2, 2011)

▶ Housing/ Urban Areas

High Threat
Outside site

Extensive (and increasing) housing development in the buffer zone of the park is having a significant impact on the site’s values (PR section 2, 2011). Of particular concern are illegal settlements encroaching on and causing severe damage to valuable wildlife habitat in the buffer zone (for example at Ichhanagar, Sikaribas, and Bandarjhula), with no apparent coordination between Chitwan National Park Office and organisations providing development aid (IUCN, 2016).

▶ Commercial/ Industrial Areas

Low Threat
Outside site

Some localised development – although not increasing – is having a significant impact on the attributes (PR section 2, 2011)

▶ Dams/ Water Management or Use

High Threat
Outside site

The Gandak barrage in Narayani at Bhainsalotan has disrupted the migration and movements of aquatic animals such as dolphin, crocodile and fishes. The dam seriously threatens the survival of dolphins in CNP. DNPWC/MFSC is

coordinating with the Indian counterparts to minimize the obstacles created by the barrage (IUCN/UNESCO, 2007).
Water management is a potential threat outside the park (PR section 2, 2011)

► Erosion and Siltation/ Deposition

Very Low Threat
Inside site, localised(<5%)

Although frequent, landslides are very localised and there is some management capacity to deal with impacts (PR section 2, 2011)

► Erosion and Siltation/ Deposition

High Threat
Inside site, widespread(15-50%)

Erosion and siltation impacts (e.g. eutrophication) are extensive, on-going and increasing and have a significant impact on the site's values. There is low management capacity to deal with impacts (PR section 2, 2011).

► Identity/ Social Cohesion/ Changes in local population and community

High Threat
Inside site, localised(<5%)

Social change impacts are naturally localised but seen as having an increasing and significant impact (the desire of buffer zone communities to be on the national electricity grid outlined below is an example of changing desires and attitudes) (PR section 2, 2011). The traditions, cultures and production systems of some indigenous and ethnic groups are rapidly changing due to the influx of foreign tourists and resettlement of some villages from their original place to elsewhere. The management has already established 'Tharu Cultural Museum' at Sauraha and provided training on cultural practices and traditional healing systems (IUCN/UNESCO, 2007)
A study to investigate the influence of changing social contexts on families in the whole Chitwan Valley (the Chitwan Valley Family Study) notes that: In the late 1970s, the valley was linked to two major highways of national importance which facilitated a rapid proliferation of government services, businesses, markets, and diversified employment opportunities. For most of the older individuals, the rapid and vast social and economic changes have

occurred within their own lifetime (Pradhan, 2011).

► Solid Waste

Low Threat
Outside site

Solid waste is a localised but increasing threat in the buffer zone of the park. It is having some impact on the values but there is little management capacity to deal with the issue (PR section 2, 2011).

► Livestock Farming / Grazing

Low Threat
Inside site, localised(<5%)

There is some localised grazing inside the park, but the impact on values is minor, activities are managed and the threat is not increasing (PR section 2, 2011)

► Tourism/ Recreation Areas

Low Threat
Outside site

Localised and increasing development in some areas of the buffer zone of the park, could have some impact on Outstanding Universal Value (PR section 2, 2011). All concessionaires that previously operated inside the park have been moved out following the expiry of their contract in July 2012 (Stakeholder consultation, 2017). The tourist accommodation in the Tiger Tops area, a critical habitat for many endangered species, has been decommissioned and is no longer operational (Kandel, pers. comm. 2016).

► Mining/ Quarrying

High Threat
Outside site

Quarrying is localised in some areas of the buffer zone, and was previously noted to be increasing, with major impacts on nature conservation values despite management action (PR section 2, 2011). The 2012-2016 management plan has quantified the extraction of building materials such as sands, gravels and boulders and guides development in the buffer zone, but it is unclear to what extend management action is effective in managing this

threat.

► Roads/ Railroads

High Threat
Inside site, scattered(5-15%)

Impacts from existing roads are localised and not increasing in threat, but do have a significant impact on the site's values despite management actions (PR section 2, 2011). The UNDP Tiger-Rhino Conservation Project, for example, noted the lack of enforcement of the 40 mph speed limit along the Highway through the National Forest near the Park (Tiwari et al, 2007).
The proposed Hulaki highway and other roads (and until recently a proposed railway) through CNP pose a very high threat which can affect the ecological integrity of the park (SOC report 2014). This issue is discussed further below under "potential threats".

► Storms/Flooding

High Threat
Inside site, widespread(15-50%)
Outside site

The Chitwan area is one of the most flood prone districts in Nepal. In 1993, for example, devastating floods affected many thousands of people in the Terai landscape, damaged the tourism infrastructure of Sauraha, a gateway into the park, and killed some endangered species of animals and destroyed their habitats (Nyaupane and Chhetr, 2009 and Government of Nepal, 2011). In 2010 floods inundated hundreds of houses of Madi area in western Chitwan district. Although flooding impacts are localised they are increasing. Floods have a significant impact on the attributes of the property and there is low management capacity to deal with impacts (PR section 2, 2011). The long embankments of the Rapti and Narayani Rivers have adverse impact on natural functioning of the ecosystem (IUCN Consultation, 2014). A community based early warning system for floods and other natural disasters has however been implemented by Practical Action (Government of Nepal, 2011). There was high flood in Rapti River (northern boundary of CNP) in 2017.Two rhinoceros were found dead and eight were rescued from India to the park. Loss/ damage of other species from the flood is not yet known.

► Fishing / Harvesting Aquatic Resources

High Threat
Inside site, localised(<5%)

Localised and increasing fishing activity inside and outside the park, is having a significant impact (PR section 2, 2011). The Chitwan National Park provides fishing licenses to the traditional fishermen to support their livelihood. Besides these wetland dependent communities, others are also intensively fishing in the river on both banks resulting to scarcity of fish prey base, disturbances to the gharials and dolphins and their habitat loss. The fishermen were known to use illegal large fishing net (gill net) which largely threatens the gharial population due to risk of being entrapped, although this is reported to now be largely under control (Stakeholder consultation, 2017). In addition, small sized mesh nets are often used which removes both adult breeding stock and fingerlings from the populations reducing the possibilities of future breeding and recruitment from the areas (Stakeholder consultation, 2014).

► Invasive Non-Native/ Alien Species

Very High Threat
Inside site, widespread(15-50%)

Invasive species (including freshwater species) are an increasing problem in the whole area (i.e. inside and outside of the park). They have a significant impact on attributes and management capacity to deal with this threat is low (PR section 2, 2011). The main problem is an invasive creeper, Mikania micrantha, which thrives in moist areas and riversides and can smother and kill native flora such as grasses and sapling trees, several of which are important fodder plants. To date eradication measures have proved unsuccessful and the plant is spreading stimulated by the movement of people and animals within the park. Impacts on wetlands include some reduction in bird species (including the vulnerable swamp francolin (Francolinus gularis) and the plant is impacting mammals in terms of reducing food and cover for hunting (BBC, 2010 and Pokharel, 2012). Other species invasive species include Lantana camara, Chromolaena odorata and Eupatorium adenophorum.
A recent survey found Mikania across 44% of habitats sampled and almost 15% of these have a high infestation (> 50% coverage). Highest densities

were recorded from riverine forest, tall grass and wetland habitats. Local community dependence on natural resources in the core area of the Park is high. The range and volume of resources (e.g. fodder) collected and the distances travelled all pose a high risk of the spread of Mikania (Murphy et al, 2013).

► Water Pollution

High Threat
Inside site, scattered(5-15%)

Extensive (and increasing) ground water pollution outside the park, is having a significant impact; surface water pollution is a more localised problem but is also increasing and management capacity to deal with this threats is very limited (PR section 2, 2011).
In total, there are 9 major mills and distilleries, (Bhrikuti Paper & Pulp Mill (now closed (Stakeholder consultation, 2017), San Miguel Beer etc) discharging effluent into the Narayani river (PR summary, 2003). Water pollution is cited as a cause of Gharial population decline (see discussion below). Increasing industrialization is leading to increase in pollution loads from factories. Discharges from the Gorkha Brewery and Pharmaceutical and Gill Mary are the major sources of pollution in Narayani River (Rajbhandari and Acharya, 2013).

► Other Biological Resource Use

Low Threat
Inside site, localised(<5%)
Outside site

A strict protection regime is resulting in increasing numbers of endangered species (see below) however poaching remains a constant threat for protected areas such as Chitwan National Park which protect species with a high market value (IUCN/UNESCO, 2007). There was no rhino poaching in the years 2011, 2013, 2014 and 2015 in CNP (DNPWC Annual Reports). In light of successes achieved in preventing poaching of rhino and tiger in the last five years, poaching is currently considered to be a low threat, but it has the potential of becoming a high or even a very high threat if current management action to control it is not maintained (IUCN, 2016).

► Tourism/ visitors/ recreation

High Threat
Inside site, scattered(5-15%)
Outside site

Impact of tourism/ visitors in some areas of the buffer zone, although localised and managed, is increasing and having a significant impact on the values (PR section 2, 2011). Chitwan National Park (CNP) is a major tourist attraction in Nepal (over 20% of the tourist visiting the country in 2006/07). A maximum number of tourists recorded was 178257 in Fiscal Year 2014/2015 (DNPWC Annual Report 2016). Therefore careful management of impacts is vital (IUCN/UNESCO, 2007).
Pilgrimage is a specific type of tourism that is leading to certain developments, which are noted to be of concern in terms of their (potential) impacts on the property. These include the construction and expansion of a temple complex at Gajendra Dam, mostly within the buffer zone of the property but partly located within the property's boundaries, and the proposed development of a suspension bridge at Trivenidham-Bhalmikiashram (IUCN, 2016).

Potential Threats

Very High Threat

Climate change (in particular in relation to flood risk) and earthquakes are a constant threat to Chitwan. Although hard to assess it should also be noted that political instability in the past has had severe impacts on conservation efforts throughout Nepal (between 2000/01 to 2006/07 113 greater one-horned rhinoceros were killed by poachers in Chitwan when military protection for the park was diverted (IUCN/UNESCO, 2007)). The proposed construction of the Tarai Hulaki Highway, as well as up to 6 other proposed roads that would cross the property, would fragment important wildlife habitat, including for rhino, tiger, elephant and gaur. All of these roads are therefore considered to be very high threats, with the Tarai Hulaki road being the proposal in the most advanced stage of project design at the time of the 2016 IUCN reactive monitoring mission.

► Temperature extremes

Data Deficient
Inside site

Observed changes in climate / climate-related impacts include: increasing number of flood days in some rivers as well as trends towards a reduction in dependable flows in the dry season. Projections also suggest an increase in the intensities of monsoons (Nyaupane and Chhetr, 2009).

► Roads/ Railroads

Very High Threat
Inside site, scattered(5-15%)
Outside site

There are plans for the construction of the East-West Electric Railway and the Tarai Hulaki Highway, the latter of which would cross the property. Initially the railway was proposed to cross through the property as well, but alternative alignments that avoid the property have been considered and are now being pursued (SOC report, 2017). The State Party acknowledges that the proposed road and railroad would fragment important wildlife habitat, including for rhino, tiger, elephant and gaur (State Party Report, 2014). The 2016 IUCN reactive monitoring mission to the property found that there are a total of 7 proposed road developments crossing the property that would likely have significant negative impacts on its Outstanding Universal Value. In addition, the proposed road from Thori to Birgunj, although fully located outside the property, could have negative impacts on its OUV if it leads to an increased demand for the transportation of commercial goods through the Madi Valley, and through the property (IUCN, 2016).

► Crops

Low Threat
Outside site

Agricultural production is a potential threat outside of the park (PR section 2, 2011)

► Fire/ Fire Suppression

High Threat

Outside site

Fire was considered a potential threat inside the park (PR section 2, 2011). However the role of fire was noted by Murphy et al (2013) as a contributory factor in the spread of the invasive species Mikania with the authors suggesting actions to control burning, reduce spread and raise awareness about best practice for local resource management by local communities.

► Utility / Service Lines

Low Threat
Inside site, localised(<5%)

There has previously been considerable concern over long term plans to connect the village of Madi (which is in the buffer zone of the park between the park boundaries and the Indian border) to the electricity grid through the laying of cables through the park. The project has now been completed through the laying of an underground fibre optic cable following the alignment of the existing Bharatpur-Madi road (Stakeholder consultation, 2017). More information is needed to assess any impacts that may have arisen from this project.

► Earthquakes/ Tsunamis

Data Deficient
Inside site, extent of threat not known
Outside site

The entire Himalayan belt is seismically active and earthquakes are a common threat in Nepal (see for example: http://www.earthquake-nepal.com/) (PR section 2, 2011)

Protection and management

Assessing Protection and Management

► Relationships with local people

Mostly Effective

Several indicators drawn from responses to the periodic report of 2011

indicate the effectiveness of relations with local people.

(PR section 2, 2011)
The issue of equitable benefits sharing however tends to elicit varying opinions. For example one research survey notes: “Questionnaire interview data indicate the livelihoods of buffer zone residents remain strained by conservation activities. While benefits under incentive-based programmes are recognized by the residents, villages distant from the main tourist entry points to the park, where costs associated with conservation are highest, recognize few benefits. An individual's level of participation in tourism also affects the benefits received, with those directly employed in tourism receiving the most benefit. Despite the discrepancy in benefit distribution between villages and between levels of involvement in tourism, CNP is making progress in distributing benefits beyond villages where tourism is concentrated.” (Spiteri and Nepal, 2008).
Several projects in and around the park have worked on developing the links between communities, development and conservation. For example, the UNDP Tiger-Rhino Conservation Project, was deemed successful in terms of conservation (regeneration of the Barandabhar Forest ecological corridor, based on survey results, and resulting increases of species diversity/ breeding populations of endangered species) and livelihoods (improved livelihoods among at least 51% of the 3,500 households targeted for the introduction of a wide range of income-generating activities). Although the project evaluation notes that improvements in livelihoods have not been quantified and compared with the available baseline socio-economic data (Tiwari et al., 2007); which highlights the need for better monitoring and research on socio-economic data to help accurately assess the links between the Park and local communities.

Other projects such as Terai Arc Landscape Program and Hariyo Ban Program of WWF and Conservation projects of National Trust for Nature Conservation (NTNC) as well as ZSL have been working in the area to support the government for its conservation and community development works in CNP and its buffer zone.

► Legal framework

Highly Effective

The legal framework for the maintenance of the Outstanding Universal Value provides an adequate or better basis for effective management and protection. The impacts of World Heritage status of the property in relation to the legal/policy framework by which the property is managed is very positive (PR section 2, 2011)

► Enforcement

Highly Effective

Effective enforcement has been in place in the CNP. More than 1000 army personnel are deployed for the park protection and are backed by cutting edge technologies. Real Time SMART (Spatial Monitoring and Reporting Tool), surveillance camera and sniffer dogs are some the technologies and approaches used in CNP and its Buffer Zone. A newly developed National Tiger Conservation Committee at highest political level (Chaired by Prime Minister), Wildlife Crime Control Coordination Committee Chaired by Minister of Forests and Soil Conservation at policy level to Wildlife Crime Control Bureau at central and district level have also been important tools for effective law enforcement in a coordinated and collective manner. Because of effective enforcement poaching of rhino and other species have decreased sharply in the last 5 years as there were 4 zero poaching years. Two cases of rhino poaching in 2017 underline the need to remain vigilant and continue to implement the successful approaches to curb poaching that have lead to recent successes.

► Integration into regional and national planning systems

Some Concern

There is coordination between the range of administrative bodies / levels involved in the management of the property is sufficient but it could be improved (PR, 2011). the 2016 IUCN reactive monitoring mission to the property noted a lack of coordination between different government institutions and ministries and an ensuing lack of awareness of the implications of World Heritage status and the legal requirements that need to be adhered to in case of development proposals that may impact on Outstanding Universal Value.

► Management system

Mostly Effective

The primary management document is the Management Plan for Chitwan National Park and its Bufferzone (2011-2016), which is under revision for 2018-2022.
The management plan is adequate to maintain the property's Outstanding Universal Value. An annual work/action plan exists and many activities are being implemented (PR section 2, 2011).

► Management effectiveness

Mostly Effective

Several ME assessments have been made: EoH (2003 and 2007), PR report (2007 and 2011) and CNP is the first Protected Area in the tiger range countries to be approved under a new scheme from WWF – Conservation Assured | Tiger Standards in 2014. Management is considered to be mostly effective, however, protection and management efforts appears to be focussed on mega fauna such as tiger and rhino, with less attention being paid to small mammals such as the otter, the fishing cat and others which are considered to be an indicator of the health of aquatic habitats (Stakeholder Consultation, 2014).

► Implementation of Committee decisions and recommendations

Mostly Effective

Past Committee decisions have all been effectively resolved. More recent decisions (2015, 2017) still require implementation, but progress is being made in some areas, as demonstrated by the State Party's recent decision to divert the East-West Electric Railway away from the property (State Party report, 2017).

► Boundaries

Some Concern

The boundaries of the World Heritage property are adequate to maintain the property's Outstanding Universal Value. (PR section 2, 2011).
Boundary protection is maintained with the aid of the government's

deployment of two protection units a Battalion and a Company having more than 1000 army personnel in Chitwan (PR section 2, 2011). The effectiveness of this strategy can be seen in the increasing populations of threatened species such as the tiger and rhino reported below.
Nevertheless, there is some confusion about the exact location of the property's boundaries, in particular on the West bank of the Narayani River. This has lead to a situation of conflict with the construction and expansion of a temple complex at Gajendra Dham,. The lack of distinction being made between the buffer zone and the core zone of Chitwan National Park (only the latter is inscribed on the World Heritage List) adds to the confusion, as the core and buffer zones are collectively being referred to as "Chitwan National Park" (IUCN, 2016).

► Sustainable finance

Mostly Effective

The available budget is acceptable but could be further improved to fully meet the management needs. The park is reliant on government funds (90% - average per cent of conservation budget over last 5 years) with the remaining small amount coming from NGOs (PR section 2, 2011).

► Staff training and development

Some Concern

The ranking of training opportunities for a range of disciplines in the Periodic Reporting shows that whilst training opportunities exist in the more ‘traditional’ protected area management activities (e.g. research and monitoring, education, conservation, administration, legal and enforcement), less training is available for promotion, community outreach, visitor management and tourism and no opportunities exist for training in interpretation and risk preparedness (the latter being a particularly important point given the results of the threat assessment above) (PR section 2, 2011).

► Sustainable use

Mostly Effective

Harvesting of timber both inside the park and its buffer zone is assessed as being sustainable (PR section 2, 2011). Other resource use such as fodder and medicinal plant use are all managed effectively by the Chitwan National

Park Office.

▶ Education and interpretation programs

Some Concern

CNP received funding and developed an interpretation programme in the early 1990s. The 2011 Periodic Report notes that while there is fair availability of professionals for education, interpretation availability is poor. There is a planned education and awareness programme but it only partly meets the needs and could be improved.

▶ Tourism and visitation management

Mostly Effective

A visitor centre, site museum, information booths, and information materials provide opportunities for interpretation; guided tours are considered to be adequate whilst trails/routes and transportation facilities could be improved (PR section 2, 2011). Progress is reported to be made in that regard, with designated routes and timings for jungle drives, upgrading of vehicles, and better maintenance of roads (Stakeholder consultation, 2017).

▶ Monitoring

Some Concern

There is considerable monitoring but it is not directed towards management needs and/or improving understanding of Outstanding Universal Value. Key indicators have been defined but monitoring the status of indicators could be improved (PR section 2, 2011).

▶ Research

Mostly Effective

Scientific studies related to species such as Rhino, Tiger and Mikania micrantha have been on-going. Research projects relating to B.Sc, M.Sc and PhD studies from national and international level have been permitted yearly. Although there is considerable research it is not directed towards management needs and/or improving understanding of Outstanding Universal Value (PR section 2, 2011).

Overall assessment of protection and management

Mostly Effective

Chitwan faces many challenges from potential and pervasive threats, high demands from tourism and the constant threat from poachers. However, since the ending of the Maoist insurgency in 2006 the site has seen an increasingly effective management and protection regime supported by cutting-edge technologies, and new institutional set-ups put in place are in general effectively focused on the most important management and conservation issues. However, protection and management efforts appears to be focused on mega fauna such as tiger and rhino, with less attention being paid to small mammals such as the otter, the fishing cat and others which are considered to be an indicator of the health of aquatic habitats.

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

Some Concern

There are some illegal settlements in the buffer zone, including in areas of critical wildlife habitat. The Chitwan National Park Office does not appear to have the management capacity to address this issue, and there is an apparent lack of coordination with other government institutions and national and international organisations providing development aid to these communities. This has lead to some critical wildlife habitat in the buffer zone being severely damaged (eg. at Bandarjhula), and is reported to increase human-wildlife conflict.

► Best practice examples

Chitwan is well known as an exemplar of buffer zone management. The buffer zone communities are the principle stakeholders. CNP has institutionalized mechanisms in the buffer zone to minimize biotic pressures on the park and motivate communities in the participatory management of forest resources to fulfill their needs of forest products. The long-term objective is to motivate local people and to win their support to involve them in nature and wildlife conservation. The local community receives up to 50% of the park’s income generated from tourism and other incomes of the park,

alternative forest resources from Buffer Zone forest and employment opportunity from the site management and the site benefits from the community for resource management in the buffer zone (IUCN/UNESCO, 2007). However, as noted above, there remain some challenges in buffer zone management, in particular where it concerns encroachment of critical wildlife habitats, and the management of human-wildlife conflict.

State and trend of values

Assessing the current state and trend of values

World Heritage values

▶ **Areas of exceptional natural beauty and aesthetic importance**
Low Concern
Trend:Data Deficient

The scenic values of the sites have so far been well preserved.

▶ **An outstanding example of biological evolution with a unique assemblage of native flora and fauna**
High Concern
Trend:Stable

The main pressure on these values is the rapid expansion of invasive species (Murphy et al, 2013) and the lack of success, to date, of eradication efforts. Other changes in habitat include the ongoing increase of forest cover and subsequent reduction in the area of grassland, which may negatively affect mammal species (Bhattarai and Kindlmann, 2012). However, it should be noted that the increase in forest cover is due to livestock grazing restrictions – thus removing an unnatural impact on the ecosystem (Gurung et al., 2009). Freshwater threats include pollution and dam impacts as well as the impacts of invasive species which are at particularly high densities in the riverine forest, tall grass and wetland habitats. Pollution is considered a cause of Gharial population decline and impacts on wetlands of invasive species include some reduction in bird species. Management of upper catchments particularly of Rapti River is urgently needed to maintain the health status of

the wetlands of the CNP (IUCN/UNESCO, 2007).

▶ High species diversity, including endangered species

Low Concern
Trend:Improving

Key species management is being done based on national species action plans (Rhino, Tiger, Elephant). Tiger populations: Reports from the 2013 survey show an increase from 91 individuals in 2009 (Anon, 2013) to 120 (98-139) adult breeding tigers in Chitwan (Dhakal, et.al, 2014). Prey density (animals/km2) was 73.63 (Dhakal, et.al, 2014). The tiger however is endangered (IUCN Red Data List) across the species' (much reduced) range and thus needs to remain a species of concern and management focus. Greater one-horned rhinoceros: Results from the 2015 National Rhino Census reported the population of Rhino has increased by 503 from 2011; with a total of 605 rhinos recorded in the park (WWF, 2015). The success in Rhino conservation is due to increasing overall strict protection. The greater one-horned rhino is however vulnerable (IUCN Red List) but endangered in the Status of Nepal's Mammals: the National Red List Series (Jnawali, et.al) and thus needs to remain a species of concern and management focus. Gharial: Despite conservation programmes (India 1975, Nepal 1978) Gharial have declined over their entire distribution range and are assessed as Critically Endangered by IUCN. The Gharial Breeding Centre in Chitwan is successfully breeding Gharials for release and regular re-introduction of young Gharials has been taking place since 1981 – however populations in the park remain low. A survey in 2003/2004 found population size estimates fluctuate between 34 (2003) and 38 (2004) (Ballouard et al., 2010). Only six nests were counted in the Park in 2006 (16 nests were recorded there in 1977) despite 1056 Gharials having been released (Annual Report - FY 2014-15 of Chitwan National Park). A study carried out in Narayani River and Rapti River of Chitwan National Park in 2013 recorded a total of 108 Gharials (63 Gharials in Narayani and 45 in Rapti Rivers (DNPWC Annual Report 2016). Only one breeding male was observed reflecting the critical condition for the breeding population (Rajbhandari and Acharya, 2013). The reintroduction programme, although of limited success, has no doubt helped to maintain the Gharial population. It has been suggested that a large dam in Tribeni which is being built between Nepal and India, may be forcing aquatic species, including gharial to move downstream into India when the discharge of water

is high during the monsoon season. Once on the Indian side, it's impossible for them to return to their original habitat, decreasing the Nepalese population (IUCN Consultation, 2014).

Summary of the Values

▶ **Assessment of the current state and trend of World Heritage values**

High Concern

Trend: Stable

Terrestrial habitats in Chitwan support many endangered mammals which act as indicators of overall ecosystem health as well as species specific values.Overall numbers of rhino and tiger are rising as a result of effective management and protection regimes being in place suggesting that these WH values are being maintained.
Freshwater habitats in the park are less well studied; but evidence suggests that overall this ecosystem is under stress from pollution and impacts related to invasive species (for which at present no suitable management response has been found).
Thus despite the many excellent management actions undertaken by Chitwan National Park staff and partners the overall assessment of the status and trend of WH values remains of concern and management efforts and resources should remain at a high level of input to ensure the parks continued conservation success.

Additional information

Benefits

Understanding Benefits

▶ **History and tradition, Cultural identity and sense of belonging**

The sites with cultural, religious and archaeological importance include: Triveni Ghat, Valmiki Ashram, Gajra Gajaha, Brahma Chauri and Laxmi

Narayan Temple in Triveni; Panch Pandav, Shivalinga, Parsuram Kunda and Godak Nath Temple in Bankatta, Madi;, Bikram Baba in Kasara, and Someshvar Kalika monument in Madi (IUCN/UNESCO, 2007). The religious sites in the property and its buffer zone, particularly at Gajendra Dham in Triveni, attract pilgrims from around Nepal and India.

▶ **Fishing areas and conservation of fish stocks**

Traditional fishing to maintain the livelihood of the indigenous Bote people is permitted inside CNP (IUCN/UNESCO, 2007)

▶ **Sustainable extraction of materials (e.g. coral, shells, resin, rubber, grass, rattan, etc)**

Collection of thatch grass in the park by villagers is permitted and well controlled within CNP (IUCN/UNESCO, 2007)

▶ **Outdoor recreation and tourism**

CNP contributes nearly 60% of the tourism revenue of the protected areas in Nepal (IUCN/UNESCO, 2007).

▶ **Importance for research**

Ease of accessibility means CNP is one of the most important places to study various natural phenomena, ecology and behaviour of wildlife and socio-economy of the people in Nepal. The scientific information generated from the park research has high value (IUCN/UNESCO, 2007)

Summary of benefits

The fact that the Government of Nepal recognizes the role of people in biodiversity conservation including PA management, means that community engagement and agreements on legal resource use within CNP are well established and the range of benefits from the park are extensive.

Projects

Compilation of active conservation projects

№	Organization/ individuals	Project duration	Brief description of Active Projects
1	NTNC		The NTNC Biodiversity Conservation Centre in Chitwan has run many conservation projects in the park, one of the most recent reported above was a partner in the tiger census (NTNC, 2013)
2	WWF		WWF (international and primarily WWF Nepal) has been working with Chitwan for 22 years, main project focus areas including: Community development and conservation projects in the Chitwan buffer zone. Rhino monitoring Terai Arc Landscape (TAL) program is being jointly implemented by DNPWC, the Department of Forests and WWF
3	USAID		“Nepal Tiger Genome Project” is using innovative genetic technology to build a comprehensive national DNA database of the endangered Bengal tigers living in Nepal’s Terai Arc Landscape
4	The Rufford Foundation		Several projects – which are reported in this assessment (see reference list)
5	Global Tiger Initiative (GTI) partners		Training courses for wildlife conservation professionals to introduce SMART patrolling practices and technology (completed)
6	Outreach International		Training elephants to work in the park
7	Cleveland Metroparks Zoo/Cleveland Zoological Society Asia Seed Grants Program		Community-based gharial conservation initiative in the Narayani River of Chitwan National Park
8	Zoological Society of London		Conservation and development projects
9	Green Governance Nepal		Living with tigers: By changing natural resource use behaviors, building capacity, improving livelihoods, the Living with Tigers Project aims to secure the safety of people, livestock and tigers in the buffer zones of Chitwan National Park and Bardia National Park.

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