

Ranthambore National Park: Tigers at Ranthambore

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Ranthambore National Park is located in Sawai Madhopur district, Rajasthan, India. The featured animal here is the Bengal tiger *Panthera tigris tigris*. The capacity of the Park was 45 by 1991; 32 by 1997; 60 by 2012

The Ranthambore Tiger Reserve is a natural habitat with free ranging tigers. The tigers can move freely, but are practically restricted to the reserve which is surrounded by human settlements. The tiger population living in the reserve is managed in a meta-population. The tiger habitat is in a fragile balance that needs to be managed. Tourists can book tours to the reserve and see tigers with a high probability. The Ranthambore Tiger Reserve is included in the ZooLex Gallery because it shares main characteristics with zoo animal exhibits. We believe that the differences between captive and wild animal populations will blur in the future and that we will see more holding systems in between zoo enclosures and free range reserves.

Ranthambore National Park encompasses nearly 392.5 square kilometers of dry deciduous forest in south western Rajasthan. In the 19th century the forests of Ranthambore were the private and exclusive hunting reserves of the Jaipur and Karauli royal family. Ranthambore National Park was founded by the Government of India as Sawai Madhopur Game Sanctuary in the year 1955. Later in 1973, it was declared as one of the Project Tiger reserves. In the year 1980, it became a national park.

The Ranthambore Tiger Reserve spans across the districts of Karauli and Sawai Madhopur with the National Park restricted to the tehsils (administrative units) of Khandar and Sawai Madhopur.



Resting Tiger ©Monika Fiby, 2012



Tiger with Prey ©Naresh Sharma, 2011

It is located at the junction of the Aravallis and the Vindhyas, bounded to the north by River Banas and River Chambal in the east. At the time of declaration of the Ranthambore National Park, 17 villages were located within this zone, of which all except Padra, Katholi and Mordoongri were relocated. The Keladevi Wildlife Sanctuary is separated from the Ranthambore National Park by the

Sawanta-Hadoti road and several villages in this zone. These villages along with the road and the sand mining from River Banas in this region are a constant threat to the only

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Instructions for Visitors ©Monika Fiby, 2012



Access road to the National Park ©Monika Fiby, 2012

existing corridor between Keladevi and Ranthambore National Park. Quarrying is another important threat to Ranthambore National Park and some parts of Keladevi Wildlife Sanctuary. Similarly, the presence of 19 villages in the buffer zone of the Tiger Reserve in addition to 332 within a radius of five kilometres from the Reserve boundary exert high livestock grazing and poaching pressures on the park. The presence of religious sites within the National Park and close to Qualji Closed Area attracts large number of pilgrims, which further aggravate disturbance levels in the area.

The Ranthambore Tiger Reserve derives its name from the fort of

Ranthambore which sits on a rocky outcrop in the forest. Ranthambore Fort was established by the Chauhan Rajputs in 944 AD. Around the fort are old ruins of palaces, temples, cenotaphs, step-wells and houses. Together they are a heritage site within the park. The Ranthambore Fort is bounded by huge stone walls which are reinforced by towers and bastions. The walls of Ranthambore Fort are about seven kilometres in length and include an area of nearly four square kilometres.

Ranthambore National Park is considered one of the important tourist destinations in the country with about 240,000 visitors as per 2010. The

annual increase of visitor numbers has been about 20% during the past few years, about half of the visitors are Indian. Visits are regulated by the reserve management. Private vehicles are not permitted.

The wildlife population of Ranthambore National Park includes tiger, leopard, striped hyena, Sambar deer, Chital, nilgai, macaque, jackal, jungle and desert cat, caracal, sloth bear, black buck, wild boar, chinkara, common yellow bat, Indian flying fox, Indian fox, mole rat, porcupine, mongoose, small Indian civet, snub nosed marsh crocodile, desert monitor lizard, tortoises, banded krait, Indian cobra, common krait, Ganga soft shelled turtle, Indian python, North Indian flap shelled turtle, rat snake, saw-scaled viper, diverse populations of 272 bird species, resident and migrant, among them graylag goose, woodpeckers, Indian gray hornbill, common kingfisher, bee eaters, cuckoos, parakeets, Asian palm swift, owls, nightjars, pigeons, doves, crakes, snipes, sandpipers, gulls, terns, great crested grebe, eagles, falcons, darters, cormorants, egrets, herons, bitterns, flamingos, ibis, pelicans, storks, pittas, shrikes, treepies, crows, orioles, cuckoo-shrikes, minivets, drongos, flycatchers, ioras, wood shrikes, pipits, bayas, sparrows, finches, wagtails, munias, bulbul and mynas.

SIZE

The Ranthambore Tiger Reserve encompasses an area of 1,334.64 km² constituted by the Keladevi Wildlife Sanctuary (674 km²), Ranthambore National Park (392.5 km²), Sawai Mansingh Wildlife Sanctuary (127.6 km²), the Qualji Closed Area (7.58 km²) and other forest area (132.96 km²). Project Tiger Ranthambore is responsible for the management of 627.13 sq.km.

Rhantambore National Park is a public institution, owned and managed by the Government of Rajasthan, Department of Forests, India.

PLANTS

The vegetation at the Rhantambore National Park is mainly of the tropical dry deciduous and dry mixed deciduous type, which - in patches - has been changed to dry deciduous scrub and grasslands by human activity. The landscape is dotted with ancient banyan trees, dhok & pipal

trees, clusters of mango trees and crisscrossed with evergreen belts.

FEATURES DEDICATED TO ANIMALS

The terrain is made up of massive rock formations, steep scarps, perennial lakes and streams and forest suddenly opening up into large areas of savannah. The varied terrain and the abundance of water bodies and dense vegetation form an excellent habitat for tigers and their prey species, the sambar deer (*Cervus unicolor*), nilgai (*Boselaphus tragocamelus*), spotted deer (*Axis axis*) and on occasion wild boar (*Sus scrofa*).

Tiger densities in this landscape ranged between 1 to 16 tigers per 100 km². The Ranthambore-Kailadevi-Kuno-Sheopur landscape has the potential to harbour tiger metapopulations. However, their corridor connectivity has become fragile, requiring intervention of policy and restoration for functioning as effective wildlife corridors. (JHALA, 2011)

FEATURES DEDICATED TO KEEPERS

12 rangers are employed by the Forest Department of Rajasthan. Their duty is to closely monitor the tigers. They are equipped with fire arms, binoculars, uniforms, mobile phones and four wheel drive vehicles.

FEATURES DEDICATED TO VISITORS

The visitor zone of the national park is open from October to July. Visitors can book excursions on canters with 20 seats or on jeeps with 6 seats. These vehicles have to stay on designated paths and are only allowed during excursion times, which are 3.5 hours in the morning and in the afternoon. Visitors have to stay in the vehicle for their security. No incidents have ever happened between tigers and tourists. Drivers do not carry weapons. Most animals in the park have become accustomed to the vehicles and simply ignore them.

With strict tiger preservation measures, tigers have become more active during the day and can be encountered by visitors in broad daylight. Sighting a tiger can never be a sure shot, but here one comes as close to it as is possible.

INTERPRETATION

About 70 local guides are registered with and trained by the forest

department. They inform tourists about wildlife during safaris.

Material related to nature interpretation is displayed in local language and in English too at a hall near the entrance.

MANAGEMENT

The rangers of the Forest Department of Rajasthan assist the Deputy Conservator of Forests with grazing and poaching control, forest fire control, boundary demarcation, tree planting programmes in villages around the park, pasture development for reducing grazing pressure, relocation of villages from the National Park, and man-animal conflicts. There is a cattle and crop compensation scheme. The rangers are equipped with fire arms,

binoculars, uniforms, mobile phones and four wheel drive vehicles. The rangers closely monitor the tigers. They know the individuals and their territories. Tigers can leave the national park when they choose to. They are then caught by non-invasive methods like bait traps etc. In case the tigers gets involved in fatalities or attacking persons, the Forest Department will first try to transfer these animals to the off-exhibit facility or rescue centre at zoos in the area. If the tiger cannot be trapped and causes problems, it is being shot on receipt of appropriate orders from the Chief Wildlife Warden of the Rajasthan State under the provisions laid under the Wildlife (Protection) Act, 1972. A high level of human-tiger conflicts around



Interpretation Centre ©Narenda Kumar, 2012



Tiger Crossing Road ©Monika Fiby, 2012

sites like Ranthambore jeopardises tigers.

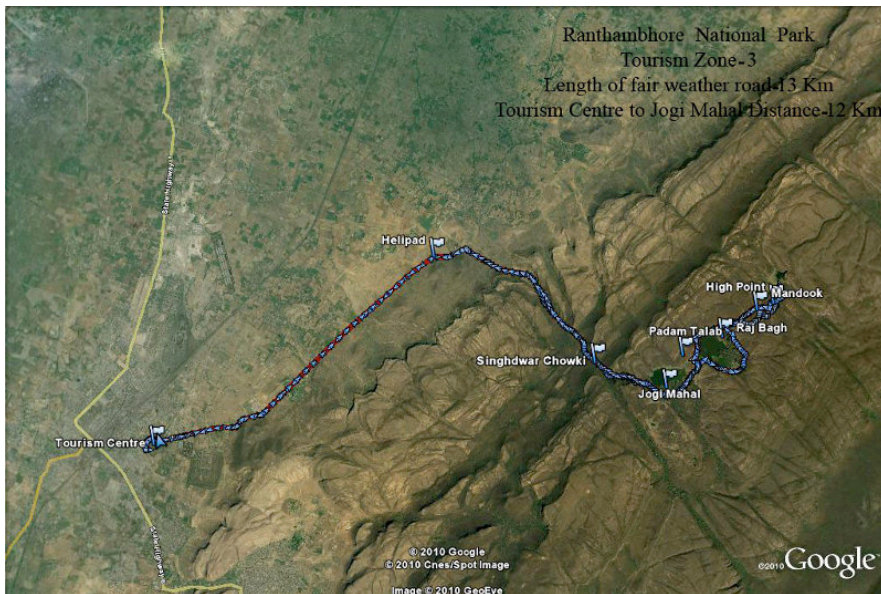
An India Eco-development Project (GEF-World Bank 1991- 2002) covered animal husbandry, biogas development, development of fodder plantations on private lands, community mobilization, conservation awareness generation and training. Village Forest Protection Committees are being formed to support forest protection.

On recommendations of an expert committee, three tigers (two females and one male) were transferred from Ranthambore Tiger Reserve to Sariska between July 2008 and June 2009, with the aim of re-establishing a population of wild tigers in the Reserve. A proposed supplementation of three tigers in every two years for a period of six years has been

recommended by scientists to enable a self-sustaining viable population of tigers in the Reserve (Sankar et al. 2010).

Ranthambore Tiger Reserve may be consolidated with restoration of Kailadevi through incentive driven relocation, reduction of livestock pressures, and recovery of wild prey populations. Revival of Kailadevi as good tiger habitat would have the added advantage of providing connectivity to the landscape of Kuno-Sheopur which together with Ranthambore Tiger Reserve could be managed as a metapopulation to ensure long term survival of tigers in this semiarid ecosystem. Sheopur-Shivpuri-Ranthambore corridor connects the forests of Kuno-Sheopur with those of Ranthambore Tiger Reserve (Rajasthan). The optimal

connectivity is parallel to the River Kuno and crosses the Chambal near the confluence of River Kuno with the Chambal. The habitat matrix of this corridor consists of dry thorn forests, scrub, rain-fed agriculture and low density settlements. On the banks of the Chambal, due to fertile soils and water availability, agriculture flourishes. Yet, due to the fissured nature of the landscape, wildlife manages to cross between Ranthambore Tiger Reserve and the Sheopur forests. Kuno is further connected through forest fragments and rugged landscape features with Shivpuri forests and Madhav National Park. Occasional records of tiger sightings from this region confirm that tigers are able to move between Ranthambore and Madhav National Park.



Tourist Tours ©Ranthambore National Park, 2010



Documenting Tiger Tracks ©Monika Fiby, 2012

30 criteria (headline indicators) were developed by an Independent Expert Committee, to evaluate the management of tiger reserves in India. The outcomes of the process were discussed with the Field Directors of Tiger Reserves and with Chief Wildlife Wardens. The report is online: Management Effectiveness Evaluation (MEE) of Tiger Reserves in India: Process and Outcomes. National Tiger Conservation Authority, Government of India by Mathur, V.B., Gopal, R., Yadav, S.P. and P.R. Sinha 2011. http://www.projecttiger.nic.in/whtsnew/mee_tiger_2011.pdf.

According to this evaluation, the Ranthambore Tiger Reserve has an extremely good protection strategy that involves multiple departments. This tiger reserve is one of the few in the country that has engaged the other line departments in a significant way in supporting the functioning and management of threats to the reserve. The response of the Revenue and Police Departments is very good and beneficial to the reserve. NGO support and involvement with the reserve is good. As this reserve largely represents an insular population it will have to be managed as meta-population in conjunction with other such areas. The lessons learned from experimental translocation of tigers from this reserve to Sariska reserve will form the basis of meta-population management in future for all such insular tiger reserves. It also has a very high profile and attracts a lot of tourists and this can be leveraged to

generate support for the tiger reserve and also generate significant revenue to the local communities. The tiger reserve needs to be optimized by shifting settlements out of the core and buffer and also significantly reducing anthropogenic pressures. The plans would be better served if they tie in with generating alternate income for local communities. Local people are already benefiting and supportive of the tiger reserve. But there is a need to move towards community based ecotourism and ensure that private enterprise does not siphon off the bulk of the tourism revenues. Wildlife populations are doing well. Staff have significant training in wildlife management. Tourism is almost entirely managed by private and community based facilities and this leaves the reserve staff free for protection and management duties. Human-wildlife conflict is an issue and needs to be addressed in a more comprehensive manner to generate local support for conservation among the affected communities.

RESEARCH

DAYAL VIKRAM (2007) Social diversity and ecological complexity: how an

invasive tree could affect diverse agents in the land of the tiger. Environment and Development Economics 12: 553-571.

JHALA Y.V., Qureshi Q., Gopal R., and Sinha P.R. (Eds.) (2011). Status of the Tigers, Co-predators, and Prey in India, 2010. National Tiger Conservation Authority, Govt. of India, New Delhi, and Wildlife Institute of India, Dehradun. TR 2011/003 pp-302

GOSWAMY AMIT (2011) Habitat and food resources use in relation to sex, age and group size in Sambar deer (*Rusa unicorn*) during winter in dry tropical deciduous habitat of Ranthambore. Dissertation submitted to Saurashtra University, Rajkot, in partial fulfilment of a Masters Degree in Wildlife Science Centre for Wildlife Studies in collaboration with the Wildlife Conservation Society, as part of a larger study, estimated populations of tigers and their prey in Ranthambore, Pench (Madhya Pradesh), Panna, Melghat and Kanha between 1995 and 2002.

A long term study on radio-collared individuals was conducted in Panna

Tiger Reserve starting early 1996 to mid-1997. The study showed that due to a low prey base in the area, the radio-collared male tiger had a home range (243 km²) more than double that of males in Chitwan, while female tigers too had it twice the size of that exhibited by females in Chitwan (Chundawat et al. 1999). The study also showed that despite the high presence of livestock in Panna, 80% of the diet of the female with cubs comprised sambar and nilgai, with a kill once in six days on an average.

Tigers were radio-collared in Ranthambore and a long term study executed (Sharma et al. 2010, Jhala and Qureshi 2011). Several short term studies have been conducted within this landscape to determine the populations or occupancy of tigers (Karanth and Nichols 1998; Biswas and Sankar 2002; David et al. 2005; Sharma et al. 2009; Gopal et al. 2010), their prey (Karanth and Nichols 1998; Mathai 1999; Bagchi et al. 2004), identification of corridors (Ravan et al. 2005; Joshi 2010; Vattakaven 2010), dietary composition of the tiger (Biswas and Sankar 2002;

RANTHAMBORE TIGER RESERVE (23 TIGERS)



Tigers Trapped ©National Tiger Conservation Authority, 2011

Reddy et al. 2004) and on habitat preferences of prey (Mathai 1999). Research work by the Wildlife Institute of India, Dehradun: Ecology and management of wild pigs in and around Ranthambore National Park (2012). Estimating tiger population using camera traps in Ranthambore National Park (2010). Estimating herbivore abundance using line transect method in Ranthambore Tiger Reserve (2005). Grazing and cutting pressures on Ranthambore National Park in Rajasthan India (1988). Research Work is also initiated by the Rajasthan Forest Department.

CONSERVATION

No culling of deer or boar has been necessary so far as their numbers is limited by their predators and the carrying capacity of predators has not been reached by 2012.

Ranthambore Tiger Reserve has the potential to act as a source for tigers to other neighbouring forested areas such as Kuno-Palpur Wildlife Sanctuary to the east and to forests of Kota and Bundi districts to the south.

In 1984, the park management planted *Prosopis juliflora* to provide fuelwood to villagers because they were perceived to be harming the park by extracting fuelwood. *Prosopis juliflora* is spreading through the park, and by 2007 occupied about 5% of the area of the park, to the alarm of the park managers. It is good for goats and wood, but reduces feed for wild herbivores, and thereby affects tiger prey abundance. There is uncertainty about the severity of invasion by *Prosopis juliflora* (about its spread and about ecological succession). Also, the ease with which tigers can prey on livestock in comparison with wild herbivores is not known. In model simulations at the Institute of Economic Growth, Delhi, the number of tigers varied between 0 and 150 in four different scenarios over a 100 years period (DAYAL Vikram, 2007).



Peacocks and Boar ©Monika Fiby, 2012



Tiger Sight at the Waterhole ©Monika Fiby, 2012

LOCAL RESOURCES

Between 1976 and 1979 twelve villages that existed within Ranthambore National Park were resettled outside. As per 1991 census, there were 1210 people and 3177 cattle units in 4 villages in the core and 3055 people and around 25000 cattle units in 19 villages in the buffer zone. Wild herbivore browsers and goats compete for leaf biomass, wild herbivore grazers and cattle compete for grass.

There is an inherent trade-off between tiger numbers and village livestock grazing. While a substantial share of

the benefits of protected areas are to national and foreign outsiders, a substantial share of the costs may be borne by locals who face restrictions on the use of natural resources. Recently, a land use and forest map of Ranthambore National Park revealed wide ranging problems due to biotic pressures that exist on the buffer and fringe areas of the forest. In the last years, extra vigilance against poachers and a series of training programmes for the staff have been conducted. Several NGO's such as WWF try to develop collective strategies for the future.