

Dancing towards Extinction- The Sangai and its Marsh Habitat

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The Manipuri dancing deer *Cervus eldi eldi* makes its final stand in the world's only floating National Park, Keibul Lamjao ("the land where the tiger resides") located in the Bishnupur district of Manipur. This unique Park covers 40 sq. km. It is uniquely characterized by thick floating beds of decomposing plant matter known as *phumdis* (Ranjitsinh, 1978). Keibul Lamjao was notified as a Sanctuary in 1966, and then further uplisted as a National Park in 1977, making it a refuge for the dancing deer, commonly known as "Sangai"

(meaning "the one who looks back at you").

World's rarest wild deer species

The Sangai goes by many names, but its two commonest appellations are the Dancing Deer and the Manipuri Brow-antlered Deer (one of three known distinct subspecies of Eld's deer). It derives the former name from its unique mincing gait that comes from walking on the rear surface of its pasterns with a slight hop as it navigates on the floating *phumdis*. The pasterns are hairless and hard, so they enable it to walk on this

marshy ground (Gee, 1961). Early sportsmen noted that the deer seemed to walk on its hind legs in a near-vertical stance, possibly to lighten its weight while walking on the delicate *phumdi*. This deer has distinctive antlers that protrude from its forehead, almost out of its eyebrow, thus leading to its other name, viz. Brow-antlered Deer. Males shed their antlers annually. Females give birth to young year-round, and this species takes on a dark reddish-brown winter colouration that lightens in the summer months (Ranjitsinh, 1978).

It is important to note that while the Sangai is well-adapted to life on the *phumdis*, it is not exclusively a marsh animal (Ranjitsinh, 1978). Keibul Lamjao National Park has three hills named Toya, Pabot, and Chingjao that create an important eco-region within the Park and provide the only hard ground in the Protected Area. Sangai frequents these hills year-round and primarily reside here during the flooded season (Ranjitsinh, 1978). This deer displays a bimodal feeding pattern - it grazes between 4:00 and 8:00 in the morning and between 3:00 and 7:00 in the evening, resting during the midday (Gee, 1961). It preferentially feeds on aquatic plants

including *Saccharum latifolium*, *Phragmites karka*, *Saccharum munja*, *Zizania latifolia*, and *Erianthus procerus*, among others.

The rulers of the State of Manipur conscientiously protected the Sangai during their reign, but the deer was widely hunted by locals and the army when Manipur was under British rule. By 1950, surveyors believed the subspecies of brow-antlered deer found in Manipur to be extinct; however, a small population was spotted in a small region known as Keibul Lamjao at the edge of Loktak Lake. To protect the species from imminent extinction, local authorities created a Sanctuary over 50 sq. km. in 1953, subsequently reducing the Protected Area to 40 sq. km. in 1959. In 1975, an aerial survey of Loktak Lake picked up 14 individuals of Sangai; a repeat survey two years later recorded 18 individuals. After formal notification of the National Park in 1977, all hunting and fishing rights were suspended in the effort to maintain this unique habitat for the Sangai (Ranjitsinh, 1978). Population censuses of the sangai are carried out annually. From only 18 individuals in 1977, the deer's population has risen to 260 individuals in 2016 (Table 1).

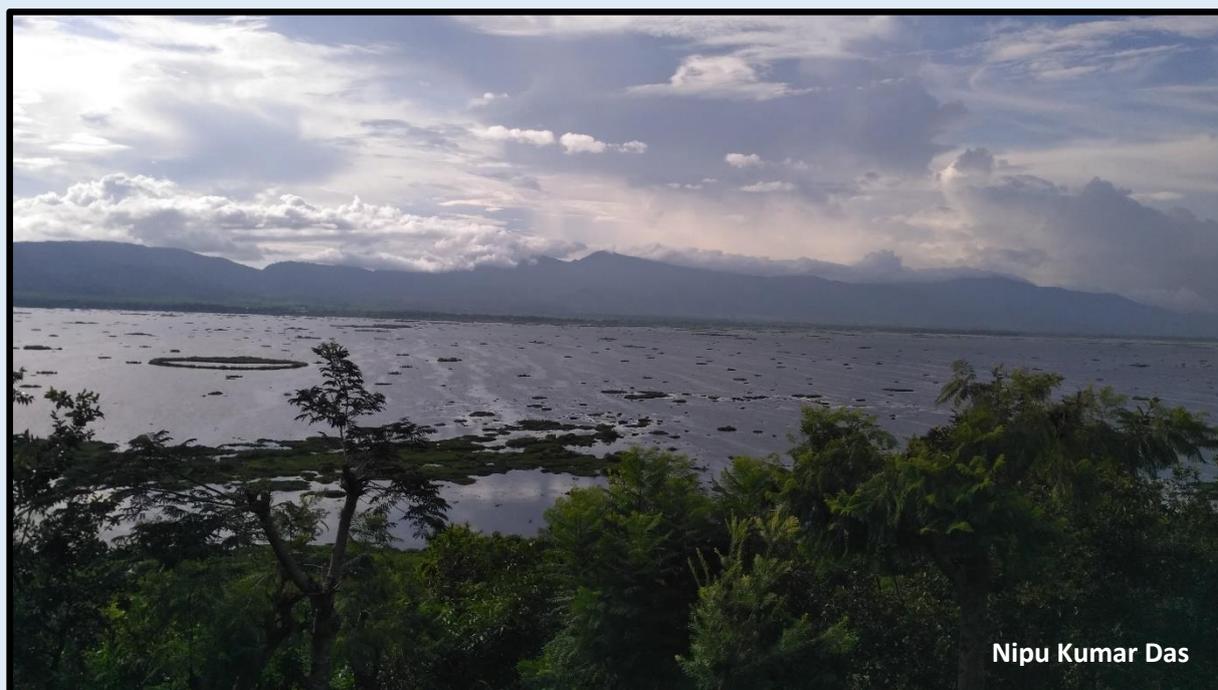
The Manipur Zoological Garden in Imphal is actively maintaining a private breeding centre to sustain a population of Sangai that may be released into Keibul Lamjao (Singh and Khare, 2018).

Table 1. Sangai population census-types and results from 1975 to 2016

Year	Census Type	Population Count
1975	Aerial	14
1977	Aerial	18
1978	Aerial	23
1979	Aerial	30
1984	Ground	57
1986	Ground	95
1991	Ground	104
1995	Ground	152
1996	Ground	143
1999	Ground	149
2000	Ground	162
2003	Ground	180
2013	Ground	204
2016	Ground	260

A unique wetland habitat:

Located in Moirang in the northeastern state of Manipur, Loktak Lake is the largest freshwater lake in the region. Due to its immense ecological and socioeconomical value, the lake was decreed a Ramsar Site (i.e. a Wetland of International Importance) on 23 March 1990. The lake is fed by the Manipur (also known as the Imphal) River, which rises in the hills to the north, and its southern edge is barred by the Ithai Barrage. Loktak Lake is loosely divided into three zones, of which the Southern Zone encompasses Keibul Lamjao National Park (Ranjitsinh, 1978; Rai and Singh, 2014).



Nipu Kumar Das

Loktak Lake is the largest freshwater lake in Northeast India.



The lake surface is covered in floating organic masses known as *phumdi*.

The National Park is defined by its *phumdis*, which consist of organic matter, vegetation, and soil. They range from a few centimetres to two metres in thickness. Much like an iceberg, only 20 per cent of a *phumdi* is visible above the water's surface, while the rest of the mass rests underwater (Ranjitsinh, 1978). One third of the Park is open water, while the remaining two-thirds of the area is covered with *phumdis*, making them a major ecosystem within the Park. These floating beds have their own seasonal variations; during the monsoon, when the water level rises in the Park, the *phumdis* float on the

surface, while in the dry season, when the water level drops, they touch the lakebed and absorb nutrients (Angom and Hussain, 2013). This nutrient absorption allows the biomass to survive during the monsoon period when they are untethered. *Phumdis* are made up of a variety of aquatic plants including *Phragmites karka*, *Saccharum munja*, *Saccharum latifolium*, *Alpina allughas* and *Erianthus procerum* (Gee, 1960).

While the Sangai is uniquely adapted to life upon a marsh, the park is also home to other fauna. Hog Deer (*Cervus porcinus*), Sambar (*Rusa*

unicolor), Wild Boar (*Sus scrofa*), Large Indian Civet (*Viverra zibetha*), Jungle Cat (*Felis chaus*), Common Otter (*Lutra lutra*), Asian Golden Cat (*Catopuma temminckii*) and Flying Fox (*Pteropus medius*) are found within the ecosystem. India's only ape, the Hoolock Gibbon (*Hoolock hoolock*), has a severely restricted habitat due to deforestation. The Indian Rock Python (*Python molurus*) is a rare species residing in the Park as well. Waterbirds include the Sarus Crane (*Antigone*

Antigone), Eurasian Teal (*Anas crecca*), Ruddy Shelduck (*Tadorna ferruginea*), Hooded Crane (*Grus monacha*), Indian White-breasted Waterhen (*Amaurornis phoenicurus*), and Spotbill Duck (*Anas poecilorhyncha*). Kingfishers brighten the landscape with their colourful plumage. Total 64 species of fish have been recorded in the lake, two of which are restricted to Manipur, Myanmar, and the Yunan state of China.



Sarus Cranes frequent the marshy landscape of Keibul Lamjao National Park

Threatened habitat, threatened species

The livelihood of local people has always been closely intertwined with Loktak Lake. In 1886, the Manipur Gazetteer noted the presence of dwellings on the *phumdis*, possibly belonging to fisher-folk. Prior to the construction of the Ithai Barrage in 1986, 207 huts were recorded on the *phumdis*. After completion of the dam in 1999, nearly 800 such huts were reported by the Loktak Development Authority, with over 4,000 permanent dwellers residing in these floating huts and living off the lake ecosystem. Aquaculture is common here (Wetlands International, 2012).

Domestic buffaloes freely roam through Keibul Lamjao, treading upon rooted *phumdis* and competing directly with the Sangai for food. The dry lands in the Park are mostly denuded by overgrazing and competition with land-dwelling mammals such as Wild Boar and Hog Deer. Small swaths of the Sanctuary have been encroached and cultivated by local farmers. Fishing is common throughout the Sanctuary, disturbing the wildlife. Prior to the establishment of the National Park, grass cutting was

a common practice during the dry season, as was annual controlled burning of grass. Both practices halted upon notification of the Park, given the high level of disturbance to the ecosystem. However, a lack of forest staff in the Park is partially responsible for the continued disturbances to this haven, including the occasional case of poaching.

Perhaps the most imminent threat to the Sangai and its wetland habitat is the development of the Ithai Barrage and the activities of the National Hydroelectric Power Corporation Loktak, which is responsible for maintaining the lake as a reservoir with high water level year-round to sustain hydropower for surrounding villages and other states in northeast India. The reservoir is also expected to aid in lift irrigation for nearly 23,000 ha of land in the Manipur Valley. The lake's water level is maintained at 168.5 metres consistently to feed the hydel reservoir (Wetlands International, 2012). However, high water levels prevent the *phumdi* from docking on the lakebed to glean nutrients during the dry season, leading to thinning of these *phumdis* and a direct loss of habitat for the Sangai. This alone is

responsible for a decline of 84 per cent of viable Sangai habitat (Rai and Singh, 2014). Currently, over 1,00,000 people live in 25 villages around the lake and directly utilize this ecosystem for living. Poor land use practices around the lake have also led to silt deposition in the lake, affecting the pH and hydrology further. Inflow from smaller rivers such as the Nambul, Nambol, Moirang, Potsangbam, and Naransenia is highly polluted due to agricultural runoff and poor management, compromising water quality in Loktak

Lake. Changes in the lake hydrology directly impact the aquatic vegetation that comprise the Sangai's diet (Singh and Khare, 2018). Construction of the Ithai Barrage has also reduced fish stocks in the lake and blocked the migration paths of several species of migratory fish that once bred in Loktak Lake and accounted for 40 per cent of fishery stocks (Wetlands International, 2012). As the lake ecosystem continues to deteriorate, so does the health of the *phumdis* and the dancing deer must cope with a shrinking habitat.



Land use change and a lack of proper management has lowered the lake habitat quality

Planning for the future

Currently, the Forest Department and the Park authorities are taking several

measures to ensure the survival of the Sangai (Singh and Khare, 2018).

The Measures include:

- Engaging locals as animal watchers to involve them in conservation and employ those from surrounding villages;
- Establishing fire lines over 200 metres in length and 10 metres in width to prevent fires;
- Monitoring population trends of the Sangai annually or every few years;
- Vaccinating free-ranging livestock to prevent spread of zoonotic disease;
- Establishing a second, captive population of Sangai at a different site to increase gene pool;
- Monitoring livestock within and around the Park to regulate grazing pressure on natural foliage;
- Manual manipulation of *phumdis* to increase area of floating vegetation.

Ecologists strongly recommend the establishment of a second wild population of Sangai in a different region of the State to ensure genetic diversity and prevent a bottleneck effect, should any disease threaten

the population in Keibul Lamjao (Angom et al., 2017).

A cultural symbol of Manipur

Despite the threats to its delicate ecosystem, the Sangai remains an icon of Manipur and a symbol of the State. The dancing deer is viewed as a bridge between man and nature, and to kill a deer is considered a sin. Manipuri folklore is steeped with tales of the Sangai. One popular legend says that a prince of the Luwang tribe transformed into a Sangai and his crown became the unique antlers that the deer is known to sport. Another folktale states that the great hero Kadeng Thangjahanba once captured a Sangai as a gift for his lover. However, upon returning to his village, he found out that his lover had married the king. Broken-hearted, he released the sangai into the dense thicket of Keibul Lamjao, and the deer has remained there ever since (Gee, 1960).

Given that Keibul Lamjao is the last remaining wild refuge for this deer, the Sangai's fate remains wholly intertwined with that of the Park and Loktak Lake. Stringent protection of its habitat may be the only thing preventing the Sangai from dancing precariously close to extinction. The

Park, however, is on the verge of meeting its carrying capacity.

According to population ecology studies, the Protected Area cannot sustain a population of 500 or more Sangai, with 500 being the marker of a viable wild population (Angom and Hussain, 2013). Alternate habitats must be sought if the species is to take a step back from the doorstep of extinction.

References:

Angom, S. and S.A. Hussain (2013). A review on genetic status of Eld's deer *Rucervus eldii*: with notes on distribution, population status and future perspectives. *Octa Journal of Environmental Research*, 1(2).

Angom, S., A. Kumar, S.K. Gupta, and S.A. Hussain (2017). Analysis of mtDNA control region of an isolated population of Eld's deer (*Rucervus eldii*) reveals its vulnerability to inbreeding. *Mitochondrial DNA Part B*, 2(1): 277-280.

Gee, E.P. (1960). Report on the status of brow-antlered deer of Manipur (India). *Journal of Bombay Natural History Society*, 57(3): 597-617.

Gee, E.P. (1961). The Brow-antlered Deer of Manipur. *Oryx*, 6(2): 103. doi:10.1017/s0030605300001277

Government of India (2016). "[Inventory of wetlands, Keibul Lamjao National Park](#)" (PDF). pp. 314–318.

Rai, P.K. and M.M. Singh (2014). Wetland Resources of Loktak Lake in Bishenpur District of Manipur, India: A

Review. *Scientific Technology Journal*, 2(1): 98-103.

Ranjitsinh, M.K. (1978). The Manipur brow-antlered deer (*Cervus eldi eldi*) - a case history. *Threatened Deer*: 26-32.

Singh, M. and N. Khare (2018). Distribution, status and conservation of Sangai deer (*Rucervus eldii eldii*) in Manipur, India. *Journal of Entomological and Zoological Studies*, 6: 732-737.

Wetlands International - South Asia (2012). "Integrated Wetland and River Basin Management - A Case Study of Loktak Lake." New Delhi, India. Archived from the original on 22 March 2012.

About the Author



Priya Ranganathan is currently researching wetland ecosystem services and conservation in the Western Ghats. She holds a master's degree from Duke University in ecosystem conservation science and management. She is a geologist by training and an avid science communicator, with over 30 articles published in print and online sources.