

Jungle Rhythms



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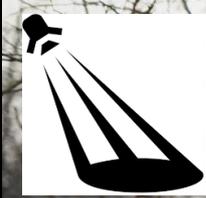


Conservation comes through love for Nature. Our conviction to let nature will remain pure and we not interfere with her laws and processes. We will live with that purpose and hand over our blue-green planet for our next generations to breath clean and live happily.

Nirmalya Chakraborty
Editor- Jungle Rhythms.

Jungle Rhythms

Monsoon 2018



Jungle Spotlights

23 Asiatic Lions Dead in Gujarat

23 Asiatic lions have died at Gujarat's Gir National Park, which is the home to all the world's remaining 525 Asiatic lions. When the first 11 deaths were reported between September 10 and 19, forest officials reported the incident as "infighting" (competition for territorial supremacy) between the prides. Since then, from 20th September to 2nd October another 12 have perished. Now, there is speculation that there is evidence of a "viral infection" in some blood and tissue samples. Some reports have even said canine distemper virus (CDV) and Bebesita proto has been found in four samples.

All lions dead are from the Dalkhaniya range which is located at the eastern part of Gir and this is a non-tourism zone. Tourism zone is in Sasan which is around 70 KM far from Dalkhaniya, so these lions are safe. Forest Department has also re-transferred old DCFs for further action and have isolated around 33 lions from the same area and they are under observation at the Jasadhar & Jamvada rescue center at Gir. Around 16 lions died during treatment. Forest Department had collected blood samples and saliva samples and sent to "National Institute of Virology" and "Indian Veterinary Research Centre". Forest Department has also started screening of other lions along with 150 teams who have 600 members.

Experts like Anish Andheria, president of the Wildlife Conservation Trust say that lions' increasing dependence on domestic cattle and congestion are some reasons for the spread of CDV. The Gujarat government has confirmed that four of the lions died of CDV, whose carriers are normally feral dogs.

A lion does not eat the entire prey at one go. In between, the feral dogs consume the kill and infect it with the CDV. Once the lion returns to finish it off, it gets the deadly disease. And it spreads among the pride. The CDV is more dangerous for lions than tigers. This is because lions move together in large numbers, making them more vulnerable to the virus as compared to tigers that are more isolated and territorial animals.

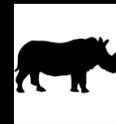
According to the Gujarat forest department's 2015 census, one-third of the 523 lions in the region were living outside the core, making them more susceptible to viruses. This is because the lion count has almost doubled since 1990, when it was 284. The latest initial estimates put the count at over 600 lions. While experts are unanimous that lions from Gir should be translocated, there are differing views on Kuno Palpur being the alternative habitat, as recommended by the Supreme Court in April 2013.

Delhi-based biologist Fayaz Khudsar, who filed a petition in the Supreme Court seeking translocation of the lions to Kuno Palpur in Madhya Pradesh, said 184 lions died in Gir in the last two years, most in and around the 100 villages on Gir's boundary. "The data clearly also shows that lions were coming out of Gir looking for domestic cattle as prey as they are easy to hunt," he said.

H S Singh, member of the National Board for Wildlife, said Kuno Palpur was not suitable for lions because of high temperatures and the presence of tigers. Also, Kuno may be ready with its prey base but the lions of Gir are now more used to large, easily available animals such as cattle than other fast-moving wild animals, and that unlike Maldharis, who are economically stronger (and so can absorb losses), the poor population around Kuno may not take to cattle killing very kindly.

Meanwhile, following reports of deaths of lions in Gir Sanctuary, local people staged a protest at Sheopur (Kuno) in Madhya Pradesh, demanding that some lions be shifted to Palpur-Kuno sanctuary and saved from extinction. Gujarat government announced that two safari parks would be set up – one near Ahmedabad and another in Narmada district, close to the Statue of Unity – to accommodate the growing number of Gir lions in the state.

It is now imperative that before any final decision is taken, it is very important to make public the exact reasons behind the Gir lion deaths. Only when there is enough scientific knowledge, the problems dogging Gir can be rectified.



Sumatran Rhino is now **extinct** in the wild.



A Leucistic Collared Kingfisher was recently sighted by tourists in Sundarbans Tiger Reserve

The Pandharkawada Tigress Case

Yavatmal district lies on the eastern fringes of Maharashtra, where a fragmented forest - Pandharkawada lies. For the last two years, the residents of the forest villages - Ralegaon, Kelapur, Sarati and Pandarkawada have been haunted by a now five-year-old tigress named T1 who moved from the nearby Tipeshwar Wildlife sanctuary, around 70 km from what's now being called a **conflict zone**. Not much is known about her. It is speculated that her mother pushed her out and, in search for a territory of her own, she moved into Pandharkawada where she now roams with two 10-month-old cubs. 1st June 2016 marked the beginning of human-animal conflict when Sonabai Vaman Bhosale (60) from Borati village, Dhule was killed by a tiger. Since then **13 people** have been between June 1, 2016, and August 28, 2018.

There are actually two adult tigers; a male and female that roam across 7,500 hectares of land surrounding Tipeshwar Wildlife Sanctuary and the conflict zone. DNA samples from each victim was sent to Centre for Cellular and Molecular Biology, Hyderabad and National Centre for Biological Sciences, Bangalore. The results have determined that it is the tigress - T1. Additionally, footage from over 70 trap cameras also produced the same result.

'A tiger does not attack a human unless he comes in the way of its prey. If she had attacked someone in the presence of a herbivore, then she can be called a man-eater. Early victims of the tigress were mauled to death but they were eaten as well. One standard procedure to capture tigers is to watch the spot where the kill has been stashed.



A tiger always returns for two to three days, to the spot to eat. But this tigress has not come back in any of the cases.

She's a very clever and elusive tigress who is not just avoiding trap cages, but our teams as well. The terrain is replete with ravines and gorges and so it becomes difficult to reach every nook and cranny.' – forest department officials explained.

The bizarre point is that there exists an eight month gap between her fourth and fifth kills on 30th October 2016 and 22th July 2017, respectively. Forest department officials are unable to put a direct cap on this behaviour. Why was the tigress living on wild kills during this period during easy human kills were ready to be taken?

Officials now fear that she might be teaching her cubs too to hunt and this might make them less fearful of humans too.

In totality, over 150 people along with six elephants have been employed to catch the tigress which includes experienced veterinarians from Tadoba Andhari Tiger Reserve. Also, a compensation of Rs. 800,000 is given to the families who have lost a member due to a human-animal conflict. Rs. 25,000 is provided for every cattle that is killed.

Nawab Shafath Ali Khan, a controversial hunter was called in to hunt down the tigress. Tiger lovers and activists around the country through the influence of Meneka Gandhi intervened the move and send him back. Current reports are that he is presumably invited back to tranquillize the cat.



Nilgiris– The Land of ‘Neelakurinji’
Arpita Dutta

Western Ghats, a biodiversity hotspot in India from where many new species have been described over last few decades. This wet forest habitat is the home for many endemic frogs which inspired me to embark upon a Monsoon trip into the deepest wilderness of Western Ghats.



Our expedition started from Ooty in the company of Pranad, Arpit, Jignesh, David & Daniel. We were accompanied by our friend Nitesh from Ooty. His deep knowledge of the landscape was key to our success. We first went to Kotagiri where the famous – ‘Neelkurinji’ had bloomed covering few square kilometres of the Nilgiris. We trek was a moderate one; crossing tea estates and climbing up to reach the spot.

As we trekked, we suddenly heard a growl! O yes! A growl breaking out from the tranquility of the place. A leopard proclaiming his presence loud to us as we climbed. A sudden rush of adrenalin was undoubtedly exciting.

We moved on and at last reached the place. We all were awestruck by the breath taking view of the pink-purple flowers that adorned the mountain and clouds over the full valley. We then spent some lovely moments photographing and documenting.



Kurinji or Neelakurinji (Strobilanthes kunthianus) is a shrub that is found in the shola forests of the Western Ghats in South India. Nilgiri Hills, which literally means the blue mountains, got their name from the purplish blue flowers of Neelakurinji that blossoms only once in 12 years. Of all long interval bloomers (or plietesials) Strobilanthes kunthianus is the most rigorously demonstrated, with documented bloomings in 1838, 1850, 1862, 1874, 1886, 1898, 1910, 1922, 1934, 1946, 1958, 1970, 1982, 1994, 2006 and 2018. Some Kurinji flowers bloom once every seven years, and then die. Their seeds subsequently sprout and continue the cycle of life and death. The Paliyan tribal people living in Tamil nadu used it as a reference to calculate their age. Kurinjimala Sanctuary protects the kurinji in approximately 32 km² core habitat in Kottakamboor and Vattavada villages in Idukki district of Kerala.



Leaving behind the fabulous tinge of purple flowers behind, we left for Valparai. The journey was exciting as we rolled up and down through the thirty eight hairpin bends that kept on revealing the beauty of green lush forests of the Western Ghats. Beyond the 11th bend, the view had become spectacular bringing us a hope to see the Nilgiri Thar in it's wild habitat.

It was raining almost all the time, but that has triggered the breeding behaviour of the frogs and we managed to see few more species.

The Nilgiri Langurs & Lion-tailed Macaques had made our stay at Valparai even more special in the rain.



Lion-tailed macaque also called as Wanderoo is a species of primate confined to Western Ghats Mountains of South India. The total wild population of Lion-tailed macaque is estimated to be less than 4,000 individuals made up of 47 isolated sub-populations in seven different locations. The estimated number of mature individuals is less than 2,500.

Lion-tailed macaques have soft, glossy black fur and gray manes similar to those of male lions. Although the genders are physically similar, male lion-tailed macaques are usually a little bit bigger.

Being a rainforest dweller Lion-tailed macaque is a good climber and spends a majority of its life in the upper canopy of the forests. Lion-tailed macaques travel in a family group consisting of 10 to 20 members, but there can be as many as 34 members. It is territorial animal, defending its area first with loud cries towards the invading troops. Lion-tailed macaques are diurnal therefore their activities are confined to light hours between dawn and dusk.

Free-roaming members of this species are mostly folivorous and frugivorous creatures, meaning that they eat a lot of foliage and fruits. Some prominent components of the lion-tailed macaque diet, apart from leaves and fruits, include tree bark, nuts, buds, roots, sprouts, nestlings of birds, lizards, frogs, eggs and bugs. They also occasionally dine on smaller mammal species

Like most other species of Old World monkeys, lion-tailed macaques have handy cheek pouches for quick and easy sustenance storage. They routinely employ these convenient and roomy pouches to keep their valuable findings away and safe from the prying eyes and grasps of others.



Nilgiri langur - This species has various common names like; 'Black leaf monkey', 'Indian hooded leaf monkey' 'Hooded leaf monkey', 'John's langur', Nilgiri leaf monkey' and 'Nilgiri black langur'. Unlike Common langurs the Nilgiri langurs are shy, retiring and occupy a dense forest habitat.

They are found in the Nilgiri Hills of the Western Ghats in South India. Its range also includes Kodagu in Karnataka, Kodayar Hills in Tamil Nadu, and many other hilly areas in Kerala and Tamil Nadu. It inhabits in tropical wet evergreen, semi-evergreen and riparian forests as well as teak plantations, at altitudes of between 300 – 2,000 m above sea level. Nilgiri langurs are arboreal and diurnal species, sleeping in the middle or lower canopy in trees of medium height. They are rarely seen on the grounds.

Nilgiri langurs are primarily foliovorous with young leaves comprising as high as 44.06 % of their diet, but they also feed upon fruits, nuts, buds, flowers, seeds, bark, stem, insects and earth. They play important role in seed dispersion in their ecosystem. Preferring new leaves, they feeds on a variety of plants depending on the season.

Poaching is a key threat to the survival of Nilgiri langurs, where their pelt organs, blood and flesh are used to produce crude medicines and aphrodisiacs. Prior to the Wildlife Protection Act, 1972, these crude medicines were widely available and even advertised. Karinkorangu Rasayanam was one of the leading products at that time. Besides this, they are also poached for their skins which are used as drum heads. Habitat destruction, primarily due developmental projects like dams and hydroelectric projects have also led to decline in their population size.



Heavy rains had obstructed the road and we went to Chinnar Wildlife Sanctuary instead of our plan to Munnar. No wonder it was a sudden change in the habitat from wet to dry deciduous forest & shrub forest. We crossed the Annamalai Tiger Reserve by bus and entered – Chinnar Wildlife Sanctuary.

Chinnar welcomed us by the Grizzled Giant Squirrel. It was running around, hopping from one branch to another of an Arjun tree beside the river. We could quickly take couple of shots when it settled down for a while. We also went for a nature walk in the afternoon along the side of the Pampar river and came across a beautiful bent-toed gecko, few skinks, scorpions, calotes, Tufted Grey Langurs and many more small creatures.



A threatened species, the grizzled giant squirrel or *Ratufa macroura* is native to highland riparian forests of Sri Lanka and the Kerala and Tamil Nadu states of southern India. There are three distinct subspecies. All three of the subspecies are found in Sri Lanka, while only one is found in India. Depending on the region and subspecies, this squirrel may be gray, brown, red or black. The underside is always lighter in color than the back. An agile climber like other giant squirrels, the grizzled giant squirrel uses its extremely long tail to maintain balance while moving through trees.

The grizzled giant squirrel is very territorial, greeting intruders with loud vocalizations. If frightened, it is capable of leaping up to 18 feet between trees. The grizzled tree squirrel is an omnivore. Its diet includes nuts, insects, birds' eggs, and tree bark.

After Chinnar, we came back to Coimbatore. Unexpectedly, this city also gave us a lot of lovely memories. Two of my friends joined me - Kopal & Gurunath. We did a trek to Sami Malai hills. By the time we finished the trek, I was exhausted but, was immensely happy to reached the top. Sightings were - most gorgeous day geckos, a tarantula, green keelback and some frogs.



Spiders are important predatory organisms in all ecosystems which they inhabit, with a high prey finding ability and capacity to consume greater number of prey than any other predator. They are the only class of arthropods that are entirely predaceous. Smaller tarantulas predominantly eat fellow bugs, such as cicadas, crickets, grasshoppers, bugs, caterpillars and beetles. Some larger tarantula prey include lizards, snakes, bats, toads, frogs, rodents and small birds. Thus, spiders help maintain the biotic balance of nature. This is especially true in the tropics where spiders are particularly abundant. The role of spiders are in the management of the pest populations too.

A day later we came back to the city. Next day, Pranad, Jignesh & Arpit left and Guru, Kopal and I headed for Kabini. We stayed at a friend's house in Kabini. Whenever I hear this name one animal comes to my mind - The black leopard. But unfortunately, we couldn't manage a jeep safari. We went for a boat cruise instead, and that was different and exciting too. We sighted lots of birds, got to notice some interesting behaviour of Great Cormorants. We stayed there for few more days and then I started for my next destination, Bhadravati (Shimoga District) with Guru.

We reached early morning at Bhadravati - Guru's hometown. It is a small town, quite populated without much greenery around. Guru could make out the restlessness on my face. He asked me to freshen up and said that we will go for a drive. That eased me a bit. And guess what; once we left the town I was overwhelmed by the view and the habitat. We were on the Theerthahalli Road. I was boosted up with energy, and asked him to stop at few places where I felt the possibilities of finding something. This place did not deprive me. We came across some pretty frogs, forest lizard, a hump-nosed pit viper, Bibron's coral snake, painted fruit bat & a day gecko on the Mudabagilu Road.

The next day we went to Jog falls and my target species was the *Jog night frog*.



The Kabini Backwaters

Jungle Rhythms - Monsoon 2018



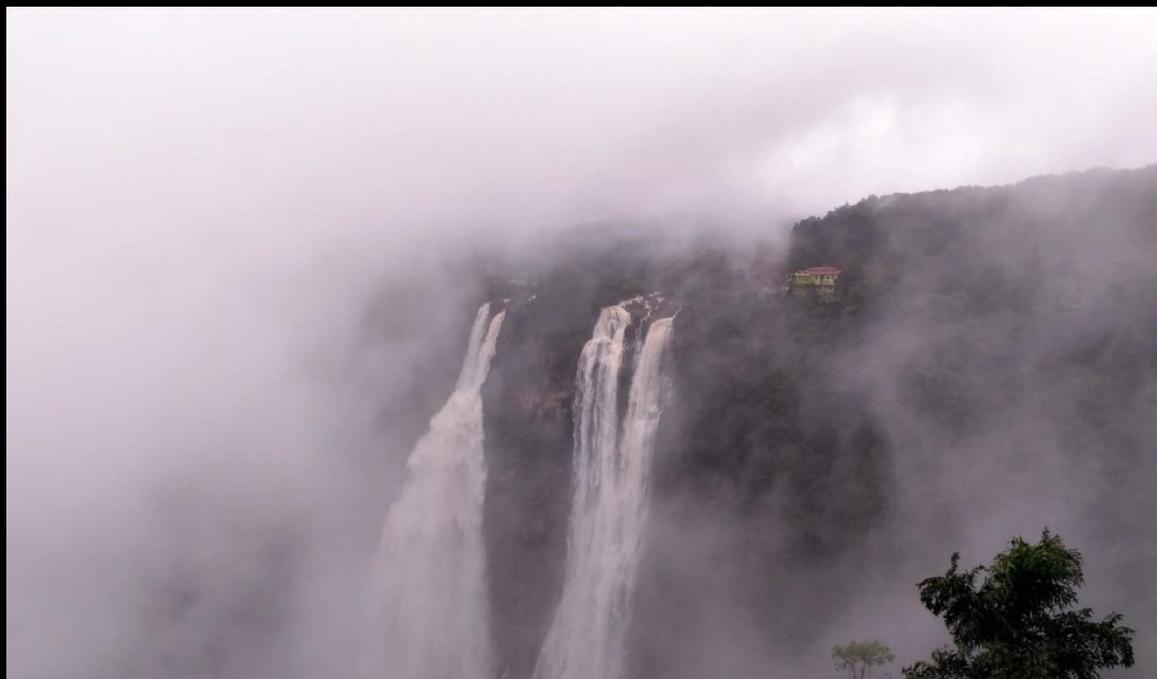
The Jog Falls

We arrived at Jog falls in the late afternoon. From a distance we could hear the sound of the falls. The falls took my breath away. Waterfalls are my weakness; whenever I seen one, I go weak in the knees. And Jog Falls did not disappoint. The milky white water falling in four divisions, dark green cover all around and the rolling clouds made for a picture perfect setup. There is a lodge beside the falls and we were lucky to get an opportunity to stay there.

Jog Falls is created by the Sharavathi River dropping 253m (830ft), making it the second-highest plunge waterfall in India after the Nohkalikai Falls with a drop of 335 m (1100ft) in Meghalaya. The Sharavathi river plunges into a deep gorge here in four different segments called as Raja, Roarer, Rocket and Rani. The volume of water that reaches Jog Falls is controlled upstream by the Linganamakki dam, and the falls are at their mightiest when water is released from the dam.

The Sharavathi river basin is rich in biodiversity. The endangered lion-tailed macaque is also found in the Sharavathi Valley wildlife sanctuary. In a survey conducted in the basin, 23 amphibians belonging to the families of Bufonidae, Ichthyophiidae, Microhylidae, Ranidae and Rhacophoridae were recorded. Of these, 15 species are endemic to the Western Ghats. The river lends its name to the following species of fish that have been discovered in its waters:

- 1. Batasio sharavatiensis: A bagrid catfish discovered near Jog Falls, Uttara Kannada district.*
- 2. Schistura sharavathiensis: A fish species discovered in Sharavathi river near Algod, Shimoga district.*



In the evening we went out to find the 'frog'. The call of the frog, which is hauntingly beautiful, was coming from everywhere. We followed the calls and went inside a bush, taking a little risk. It was pitch dark, covered with shoulder-height plants. We somehow managed to make a pathway for ourselves and saw the Malabar pit viper beside a stream. But still could not find the frog. We even noticed a cluster of eggs of the frog on the tree and saw a rare day gecko. My eyes were still searching for the frogs...and eventually the search ended few minutes later. I was jumping with joy after the first glance, simply because this frog is endemic to just this one small area (and found nowhere else), making it very, very special.

After Bhadravati, we headed to Bangalore and there we planned to visit Thattekad & Munnar with David and Daniel. These places were badly affected by the Monsoon flood. The relief work was still going on in full force. Locals had put up tents in many places till the time thier homes were ready. Thattekad gave me more than what I expected after this flood. A night walk in the forest patch gave us a glimpse of the souls of the night. We walked in the dark with only one flash light on because we didn't want to disturb the wild habitants there. Suddenly I could hear whistle from behind. That was a signal of any sighting. We ran towards the person...in the dark. He was holding a flashlight upward & followed the beam of light there was the slender loris. It moved slowly while looking at us and soon vanished in the dark side of the huge canopy. We also saw the Large-eared nightjar. We stayed there in their make-shift tents which was an equally interesting experience. In the morning we went out to look for Sri Lankan frogmouth and we spotted two pairs of this super-camouflaged bird. It didn't end there, a black morph of spectacle cobra, common woodpecker, red-tailed hawklet dragonfly & many pairs of Malabar grey hornbill were also sighted.





Distinctive in both its appearance and its loud laughing song, the Sri Lankan frogmouth is a tropical bird related to the nightjars. So called because of its large, gaping mouth, the Sri Lankan frogmouth's head is as wide as its body, and has a broad, flattened, hooked bill. The female is rusty red with sparse white freckling, whereas the male is grey and more heavily spotted with white. The tail feathers are long and narrow.

It is nocturnal and is found in deep forest habitats. Thus a frogmouth is rarely seen during the day except at roost sites or when flushed. The plumage coloration resembles that of dried leaves and the bird roosts quietly on branches, making it difficult to see. Each has a favourite roost that it uses regularly unless disturbed. When alarmed at its perch, it slowly moves its head, pointing its bill upward, and it can easily be mistaken for a jagged, broken branch. It relies on this crypsis and will often sit still a long time before making an escape. It may open its mouth wide in a threat display. Like its congeners, it feeds on insects, catching them in flight or gleaning them from the ground or tree branches. It is sometimes mobbed at its day roost by small songbirds. It is vocal at dusk, the call of the female being a loud, screechy "shkeerauw" which drops in volume and ends in a series of hiccups. Another call is a series of rapid "skwar-skwar-skwar" which is produced by both male and female.

They only lay one egg at a time – a white coloured one.

The Sri Lankan frogmouth can inhabit shade-grown coffee plantations, which require the presence of the taller trees of native forest, and are therefore relatively ecologically sound. However, a recent trend has seen tea plantations becoming more profitable than coffee plantations, leading to the destruction of native forests. Habitat is also being lost to fires, forestry operations, water resource development, cultivation and grazing.



Ceylon Frogmouth

Munnar - I wanted to visit earlier for Large-scaled pit viper & some more species of frogs. I had then met Hadlee who is a local naturalist and he gave me some best moments to remember the rest of my life. First day, I met the stunning snake, the large-scaled pit viper. Next day went to Eravikulam national park and saw Nilgiri Thar up close. We even saw a very small patch of Neelkurinji which had just started to bloom. While coming back saw a small herd of three wild elephants too...just couldn't ask for more.

The same night we found *Rhacophorus pseudomalabaricus* froglet, an unbeatable beauty and loads of more spectacular species of frogs within an hour.



Next day early morning we started for Pampadum Shola National Park. The blue tailed skink and large-scaled lizard stole the show there. This is a good place to see Nilgiri martin too, but I guess I have to be back again for that. Munnar was outstanding.



Raorchestes bedomi (Munnar)



Raorchestes munnarensis (Munnar)



Nyctibatrachus poocha(Munnar)



Rhacophorus pseudomalabaricus (Anaimalai flying frog or false Malabar gliding frog) is a species of frog in the family Rhacophoridae endemic to the Anaimalai Hills of Tamil Nadu and Kerala states, India. It is a type of "flying frog" which can descend aerially, at angles sharper than 45°. Its natural habitats are tropical moist montane forests and intermittent freshwater marshes. It is found in the lower canopy and understory of tropical moist evergreen forest, all within about 100 km² in the Indira Gandhi National Park region of the Western Ghats. It mates on vegetation hanging over temporary pools, where the tadpoles develop. It is severely threatened by habitat loss.



Yalagiri Hills

Late afternoon we left for Bangalore. I thought that Bangalore was my last destination, but there was something more kept in store for me. Got a chance to explore Yalagiri Hills with another friend Amrita and Guru also came along. We again climbed up to a hill top. There I got to see the Golden gecko, Deccan rock agama and one special day gecko called *Cnemaspis ota*. Came back to Bangalore keeping all the moments and incidents in my memories which I will always cherish whenever and wherever I go.

One thing I can say that a trip like this became more meaningful because of the companions I had with me. Friends, Locals and all wild companions.



The Recap of the Panna Chapter
Supratim Dutta



Panna is the twenty second Tiger Reserve of India & fifth in Madhya Pradesh state. The Reserve is situated in the Vindhya ranges & spreads over Panna & Chattarpur districts, north-eastern part of the state of Madhya Pradesh.

The National Park consists of areas from the former Gangau Wildlife Sanctuary created in 1975. Panna National Park (PTR) was created in 1981. Later it was declared a Tiger Reserve by Government of India in 1994 Under Project Tiger. It covers an area of about 543 KM². The altitude ranges between 330 to 540 m with an average annual precipitation of 1100 mm.

The Ken River flows from south to north along the reserve, which is one of the sixteen perennial rivers of Madhya Pradesh and covers 55 km stretch of distance inside the park. This river is said to be the life line of the reserve for providing water source throughout the year.

The reserve has dry & short grass habitat with extensive open woodlands. Along the major seasonal streams & in the Ken river valley, lush vegetation can be seen. Steep slopes of the plateaus, gorges & rocky caves. These habitats make for a heterogeneous landscape.

THE EXTINCTION CASE

Tiger population was reportedly 22 in the year 1982 and remained largely between 25-30, until it crashed in 2009 when scientists of Wildlife Institute of India (WII) deployed camera trap based monitoring. The population decline of large felid like tiger can naturally caused by disease, natural catastrophe or loss of prey. No evidence of epidemic disease or natural catastrophe has been recorded to cause large scale mortality in tigers of Panna.



The tiger populations has shown decline with no ecological reasons supporting the notion that poaching was a major cause of local tiger extinction in Panna TR. The maximum decline took place from 2003 to 2005 which continued till 2007-08. The park borders are highly porous. Foot patrolling & surveillance particularly at night is not satisfactory which gave opportunity to the criminals to poach animals. The protection mechanism was not strong enough to protect against the nexus of the poachers, middle-men & the traders. There was no intelligence gathering of organized poachers & 'Pardhis' in & around Panna TR. The Forest Department had tried to assimilate the Pardhis in the mainstream of the civilized society by various social welfare measures. They failed to understand that Pardhis were still very active in the Park in spite of various direct & indirect proofs of their nefarious activities.





Panna in central India experienced a rapid decline of tiger population, which eventually became totally extinct in 2009. So there were no other way out apart from reintroduction. Three animals were translocated from source sites within Madhya Pradesh; in 2009 (a male & two females - wild caught). Two females - T1 & T2 were from Bandhavgarh & Kanha Tiger Reserve respectively. The male (T3) was from Panch TR.

Tigresses T4 and T5 were born at Kanha National Park (KNP) in May 2006 and were orphaned after birth. These two tigresses were semi-wild ones and had spent time in KNP inside an enclosure. They were shifted to Panna in 2011 respectively. There were apprehensions about its survival in the wild, but they picked up soon, going for kills in the deep forest, where T4 met a lone translocated tiger T3, and mated. In November 2011, T4 had become the world's first hand-bred feline shifted to the wild, to spawn two cubs.

These animals soon established their new habitat. With true dedication from WII team & forest department, reintroduction project was showing remarkable recovery of the tiger population in Panna. Panna soon became the land of successful reintroduction of large carnivores.

Eight years after the reintroduction programme, the reserve currently has about 35 tigers, some of which are also radio-collared.



There is also a sizeable population of leopards in Panna Tiger Reserve

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TIGER DISPERSALS

Wildlife rangers of Bandhavgarh National Park suddenly one day found an appearance of a massive male tiger in the reserve. Former field director of Panna Tiger Reserve, R Srinivas Murthy, IFS, conducted a research based on photographs available from camera traps at both reserves and concluded on the basis of unique markings that the new male tiger assigned the call sign T 71 in Bandhavgarh is none other than the tiger P213-21 from Panna National Park. P 213-21 is claimed to have migrated to Bandhavgarh from Panna through its corridors (some 150 km as the crow flies).

The tiger has been named – ‘Pannalal’ from its homeland – Panna.

PANNA'S WATERFALLS – A MONSOON DELIGHT

Panna isn't just confined with the beauty of tigers, nature gives it's full bounty through it's natural beauty. Full of greenery covers this dry-deciduous forest. Panna is like a stair case having it's several gorges. There are more than ten active waterfalls during monsoon within the core area. Although Tourist can access only four.

THE PANDAV FALLS - It is situated about 12 kms from Panna towards Khajuraho, inside the Panna National Park but very close to the national highway. Easily accessible even during monsoon. Lush green surrounding makes the fall spectacular. At the foot of fall there are some ancient caves overlooking a large pool of water. The height of the falls is about 30 meters. Though they are not very high, the depth of the lake reaches down to a 100 feet. They are created by a tributary of the river Ken. The falls take a great leap from above & join the river Ken below.

It is believed that the Pandavas, of the mythological epic fame Mahabharata, had resided in the Pandav caves, located near the falls. They have believed to have visited the region during their exile period or the Agyaatvaas. The remains of the caves visited by the Pandavas & the shrines can be spotted near the water pool formed at the end of the fall.

There are some limestone cave formations adjacent to the falls inside the rocks. These stalagmite & stalactite caves are also called Pandav caves as well. Interestingly, these caves are also five in number (which goes well for five Pandavas). Mythological, it is said that second of the five Pandavas, Bheem made this hole by his mace to get water & quench the thirst. Some other tales give the credit to Arjun & his arrows. It is also said that freedom fighter & revolutionary leader Chandra Shekhar Azad held a meeting of fellow revolutionaries at this place on 4 September 1929.



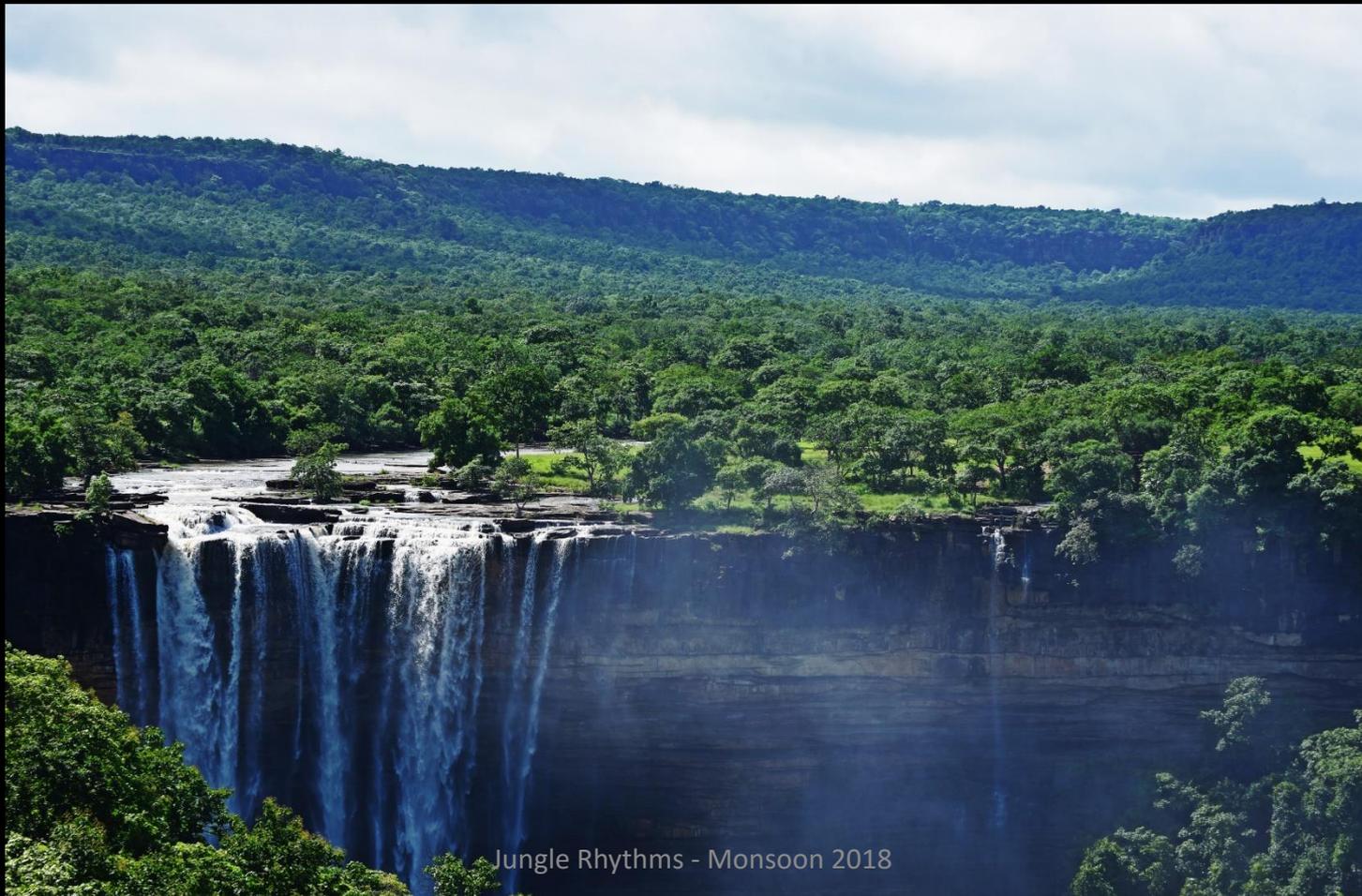
THE DUNDHWA & TITRI Falls - It is situated at the Hinauta Range. The height of the falls is around 50m. Green canopy, cloudy sky & mist make this area most magnificent for tourists. From this point one can observe three distinct plateaus of Panna - Panna range is at top, followed by Hinauta range & the water flows through Madla range downstream. Two flows of Dundhwa & Titri falls are there, these three flows are coming from three different direction & make a single stream downstream.



The name Titri is a native accentuation, which comes from Titli, which means butterfly in Hindi. One also observe various mud-puddling of different butterflies in this area.

Dundhwa isn't a perineal waterfalls, but nature is always amaze you. During winter & summer season is gorge is the perfect place for vulture nesting. Rocky stair like clefts & overhangs are the perfect place for vulture. Vulture population is more than 100 at this area. Long-billed vulture is the most dominating species followed by white backed vulture. There is a small red headed vulture population surrounding this falls.

T1 gave birth of her 1st litter just at downstream of this waterfall. Now, often P414 tigress is sighted resting in the coolness of the base of the waterfalls.



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Vultures at Dundhwa

Vultures provide a crucial ecosystem service through the disposal of livestock carcasses and their loss has had huge socio-economic impacts across the Indian Subcontinent. Without vultures, hundreds of thousands of animal carcasses have gone uneaten left to rot in the sun, these pose a serious risk to human health. Livestock carcasses provide a potential breeding ground for numerous infectious diseases, including anthrax, and encourage the proliferation of pest species, such as rats.

The Panna Tiger Reserve is a part of the Vindhya range with a distinct topography that is divided into three distinct tablelands: the Talgaon plateau, the middle Hinauta plateau and the Ken valley. The park has many complex gorges and steep valleys. Most vultures are seen in the gorges formed in the plateau along the Ken river system. Panna is a mixed dry deciduous forest and abounds in Arjun, Peepal, Banyan, Mahua to name a few medium tall trees where the vultures love to rest or nest.

In the early 1990s, the vultures in India were abundant. However, within a decade, the populations of three species, White-rumped Vulture, Indian Vulture and Slender-billed Vulture, had declined so much that they were put as Critically Endangered in the IUCN Red data book. Surveys in India show that the country's Indian, white rumped and Slender-billed Vulture populations declined by almost 98% between 1992 and 2007.

Research has identified the cause of the decline of vultures to be a medicine called 'diclofenac' its an anti-inflammatory drug used to treat livestock. Vultures feeding on the carcasses of dead animals recently treated with this drug suffer from kidney failure and die.

So, when only a few thousands of vultures were left, rigorous efforts were made to save the critical population and an annual database was decided to be maintained so the idea of vulture count was derived.

In order to ensure each species' survival it is necessary to also bring them into captivity for breeding purposes. Removing diclofenac from the environment will allow the eventual recovery of vulture populations but this process, in practice, may take several years. Therefore it becomes imperative to protect vultures in an environment where they will not be exposed to the drug. Successful captive breeding will enable vulture numbers to increase, eventually allowing for the release of vultures back into the wild, once their food source in Asia is free of diclofenac.

RESIDENT VULTURES FACTS:

1.Red headed/King Vulture - Red head and feet, Less gregarious and black color feathers with white patch on the breast.

2.Indian/Long billed Vulture - Light sandy brown colour, Black neck and head and nests on rock cliffs.

3. White backed/rumped vulture - Brownish to cream coloured body, white back seen in flight, Dark neck and paler head with an all dark bill and it nests on large trees.

4. Egyptian/scavenger vulture - Most commonly found of all vultures, Yellow bill and face and Adult bird has white feathers, juveniles have grey brown feathers.

MIGRATORY VULTURES FACTS:

1. Cinereous Vulture - Very large size vulture with broad-winged vulture, adults are dark brown and juveniles are all black in color and it is the only vulture with all black under wings.

2.Himalayan Griffon vulture - Very large vulture, adults have soft white ruff and body is rufous in color.

3.Eurasian Griffon Vulture - Light brown color vulture and it's flight and tail feathers are black.



Gharighat Falls - This is also a natural falls of the Ken river. Interestingly this is the first point from where Ken is entering within Protected area of the reserve. Scenic beauty is indescribable, Height of this waterfalls is about 17m. Unfortunately this falls will be totally submerged under Ken-Betwa river linking project if it is implemented on ground.

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THE RENEH FALLS



THE RENEH FALLS - This one is situated outside the Core area at Ken-Ghrial Sanctuary. It is a natural waterfall of the Ken River. Very few people are aware of this falls, it is about 22km from Khajuraho & 44km from district headquarter of Panna. This is about 30m deep canyon formed with pure crystalline granite in different colours like pink, green, misty white, red & grey. The most fascinating thing about this place is that, there is dozens of small & big falls in regular stretches, some of them are seasonal having furious water flow during rainy season. This cascading waterfall is magnificently possessed a scenic surroundings of rocks & invariable mounds around. Green pristine forest gives you a glimpse of complete natural paradise. This is one of the best Basalt canyon in India. Although Basalt & Granite actually have quite a bit in common. Both are igneous rocks, which means that it cooled from a magma. Both are made up of minerals from the silicate group, so both have large amounts of silicon & oxygen. Landscape becomes so spectacular in rainy season as the black & pink basalt rock provide a wondrous look & flourish water force gives a mesmerizing look. This falls is named after King Rane Pratap, the erstwhile ruler of the region. It is not only the hotspot for Geologist but also for Zoologist as well. Ken is quite prominent river in central India in terms of crocodile conservation, alligator can be seen on the banks of this river.

Keimasan & Bador Falls - It falls is located outside the tourism area. It is around 30m deep canyon. Natural beauty is incomparable. Egyptian vulture can be seen very frequently here. Same like Keimasan, Bador falls is situated outside the Core Area. Both falls are originated from the edge of Hinauta plateau.



Keimasan Falls

Global biodiversity has declined by an average 40% between 1970 and 2000. Wildlife trade is the second-biggest direct threat to species survival, after habitat destruction. Perhaps the most obvious problem associated with wildlife trade is that it can cause overexploitation to the point where the survival of a species hangs in the balance. This has been well-publicized in the cases of tigers, rhinoceroses, elephants and other large-bodied charismatic animals. Additionally, trade has also been an important driver of the ongoing Asian turtle crisis, with over half of all Asian turtle and tortoise species currently threatened with extinction (van Dijk et al). In East and Southeast Asia exists a large and growing market of tortoises and freshwater turtles for pets, to be consumed for their meat and used in traditional medicines; which are believed to be disproportionately sourced from South Asian countries.

Turtle Conservation in Uttar Pradesh

Dr Shailendra Singh & Arunima Singh



India contains a total of twenty-eight tortoises and freshwater turtles, out of which fifteen species are found in the state of Uttar Pradesh. Ten of these species are 'hard-shelled' (shells with a hard, bony structure) while the remaining four are 'soft-shelled' (where the turtle shields are more cartilaginous) and the one is land dwelling species called 'Tortoise'.

The fresh water turtles are found in various rivers and river systems such as the Yamuna, Chambal, Ganges, Gomti, Ghaghara and Gandak, as well as other water bodies such as lakes, ponds and wetlands.

Current trade status of TFT's is 15 out of 28 species that are illegally harvested (Uttara et al., 2017), out of which 10 are listed as IUCN Threatened species. In last four years we have observed fourteen species of turtle in trade. The status of illegal trade of TFTs as well as their body part more common in trade and its uses in the national and international market.

TYPES OF ILLEGAL TURTLE TRADE

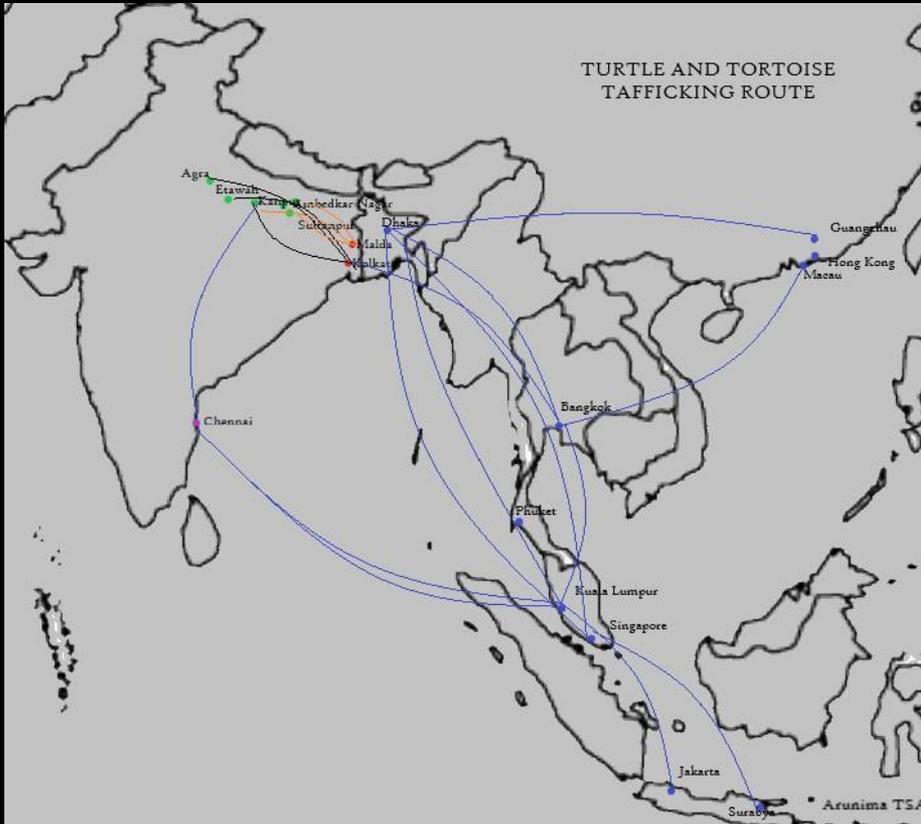
The Indian turtle and tortoises are traded can be split for Pet, food and its body parts for medicine and delicacy. Most species of hardshell turtles are traded for the pet trade, as they are less aggressive compared to softshell turtles, which are more often traded for meat and medicinal uses.

1. In past four years the most traded species for pet are *P. tentoria*, *P. tecta*, *G. Elegans*, *H. thurjii*, *G. Hamiltonii*, *M. Tricarinata*, *P. Smithii*, *Batagur kachuga* (Red Crowned Roofed Turtle). Like the avian fauna, male of TFT's appear more beautiful and their size also two to three times smaller than females. In most of the seizures we found males in larger no in compare to females because of their smaller size as they are easy to maintain in aquariums.

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Confiscated about 6000 Indian flapshell Turtle in Amethi



2. The other type of trade is 'Food Trade'. *L.punctata* is the most commonly turtle used as food species. The eggs of turtle used as food locally and shell of animal believed to be of medical value in India as well as China. In addition large amount of meat and fishy smell have increased the demand of the species. In the duration of three months 10,354 turtles of the species caught in three different seizures (485 from Ambedkar Nagar on 20-12-2016, 1969 from Varanasi on 29-12-2016, 6400 from Amethi on 10-01-02017, 1500 from Malda on 26-02-2017).

3. Use of body part of turtle: The calipee of soft shell turtles is the most sought body part. The top shield (carapace) and the bottom shield (plastron) both have a fleshy section towards the back known as the 'calipee'. Local poachers take out the shields of the body and boil them until the bone can be separated. The softer sections are then cooled and dried, after which they are packed and exported. Of the four softshell species, the *C. indica*, *N. gangetica* and the *N. hurum* are traded mainly for their 'calipee'. With softshells growing from 40cm to 100cm, these calipees are used as glutinous or gelatinous morsels in turtle soups. As recently as March 2018, the Special Task Force (STF), Uttar Pradesh, Police seized calipees from three separate consignments being illegally trafficked. Totalling up to 158kgs, it is estimated that nearly 1000 turtles would have had to be killed to produce that much product. The softshell calipees had been cut, dried and trafficked through Etawa, Etah, Mainpuri, Auraiyya and Farukkabad as well as other districts of Uttar Pradesh. At the time of the bust, they were going to be smuggled through Bangladesh and onto countries such as China, Malaysia and Hong Kong, where they would be sold at exorbitant prices.

To mitigate the problem The Operation 'Save Kurma' were launched from December 2016 to 30 January 2017, and resulted the seizure of 15,912 tortoises and freshwater turtles (TFTs) from India. 6,917 out of 15,912 turtles are rescued from Uttar Pradesh. WCCB (Wildlife Crime Control Board) worked in collaboration with regional law enforcement agencies, including the West Bengal Criminal Investigation Department, State police, and Forest Department, The Special Task Force of the Uttar Pradesh Police, and the Forest Department of Maharashtra, Rajasthan, and Karnataka.



Team hydrating rescued turtle at STF-PC.
Credits: Surendra Yadav TSA office

Turtle Survival Alliance (TSA) played important role in rehabilitation and release of these animals. Apart from that a number of seizures: although a complete picture is difficult to put together, according to information gathered by TSA about 11749 specimens from January 2014 to December 2017. However, these are figures, which has been taken care by TSA.



Team releasing rescued turtles in wild. Credits: Surendra Yadav TSA



In-Focus



Butterflies of Kaiga
Photos: *Puttaraju, K*
(SCIENTIFIC OFFICER-D, KAIGA ATOMIC POWER PLANT, KAIGA)

Southern Birdwing *Triodes minos*



Photo : Puttaraju, K

Royal Tanager *Tajuria cippus*



Photo : Puttaraju, K



Malabar Banded Peacock *Papilio budha*

Photo : Puttaraju, K



Tailed Jay



Shot on OnePlus
By BHAAAANU

Of the many insects in Arthropoda, these lepidopterans are something so unique which not only captures one's eyes but heart as well. It's simply a joy to watch them flutter around! The way they flap their delicate wings so gracefully is just so magical and straight out of a fairy tale. These winged beauties never fail to amaze me! It is one of the best things to witness when you are completely drained out and look for something which would make you appreciate the simple things which nature has to offer.(Also, it was quite wonderful to notice the stupendous size difference of the male and the female Southern Birdwing. State Butterfly of Karnataka.

The Western Ghats during Monsoon transform itself into a magnificent beauty. I feel myself so much fortunate to stay in Kaiga for the last thirty year and the misty mountains never disappoint anyone who visits for exploring the rich insect world.

There is nothing more delicate to watch in the butterfly world than a courting pair of tailed jay! The male tries to entice the female to mate with a special dance.



Puttaraju has devoted his personal time in Environmental related activities in documenting rich Bio-diversity in and around Kaiga plant site as a passion, since last 29 years. He has been greatly involved in Bird/ Butterfly/Insect/Amphibian/Reptiles/ Flora study and spending weekend's full time in field study and recording flora & fauna around Kaiga. He is the founder member of Kaiga's Frogmouth Nature Club and Vice-president of Anashi Naturalist Society.



Putturaju K has studied the bird population and bird diversity around Kaiga for all seasons for about three years. Based on the study, he has documented the bird population of avian species at kaiga in 18 sampling sites. He calculated the birds' diversity at Kaiga surroundings through transect of 20m. He has prepared a detailed check list on the birds of Kaiga along with the research team of Dept of Bioscience Mangalore university. He has contributed significantly in recording the arrival and departure time of several species of birds. Important among them are Osprey and endangered birds like Frogmouth, White wagtail, Yellow headed wagtail, Lesser adjutant, Darter, Great pied hornbill, Yellow wagtail etc.

He has recorded an eye catching video (more than 160 Hrs) on bird species, nesting, feeding, preening activity of more than 72 bird and life cycle of butterfly, insects, different stages of plants, climbers, herbs, shrubs, small and big trees flowering, seedling and seed dispersion have been recorded.

He is spreading the message of nature awareness in surrounding schools by exhibiting photographs on weekends. He has been continuously involved in training the township children on need and importance of birds and butterfly and its conservation through colorful photographs at Science exhibition in AECS. He has also trained the teachers of Uttar Kannada District on life cycle of butterfly and birds on the invitation of Centre for Environment education (MOEF).

Shri. Puttaraju, K is a specialist in Information Science with Masters in Library and Information Science and works as a scientific officer- D in NUCLEAR TRAINING CENTRE and plays an important role in establishing Technical Information Centre at Kaiga site from its inception in 1989.



Tiger – A Living Heritage of India

Diptarka Ghosh

“nirvano vadhyate vyaghro nirvyagham, chidyate vanam; tasmadvyaghro vanam rakedvanam vyagham ca palayet.”

[The Tiger dies without the forest, and similarly the forest is cut down without the Tiger. There can be no forest without Tigers and no Tigers without a forest. The forest shelters the Tigers and Tigers guard the forest.] - The *Mahabharata*

From abundance and a position of reverence to a brush with extinction - this sums up the story of the Tiger in India. Tigers are not only a symbol of all that is splendid, mystical and powerful about Nature. They are also a beacon of biodiversity, linking together the forests they inhabit and the natural resources and ecosystem services that their habitats produce for the people.

Tigers have played integral roles in ancient and modern cultures and folklore, being used to represent various characteristics and symbolisms throughout the centuries. They are also considered one of the charismatic mega fauna and are used as the face of conservation campaigns worldwide.

Palaeontological Evidences: The oldest fossil remains of the Tiger in India were discovered at Karnool cave deposits in Andhra Pradesh, approximately 11,000 years ago. Some of the earliest images of the Tiger came from rock art. This was mainly because Tigers and early Man must have shared dwelling sites in the cave shelters and along the rocky outgrowths of hills and slopes. These rock drawings are depicted at many sites especially in Madhya Pradesh including Bhimbetka, the Mahadeo hills and Panna. The ancient people regarded Tigers as a kind of ‘totem’, and hoped they could derive strength from them so as to become immune to all kinds of disasters.

Indus Valley Civilization: The Tiger has been India’s national symbol since about 2500 BCE (Before the Christian Era). The people of the Indus Valley civilization (2900 BC-1900 BC) of Harappa and Mohenjo Daro were the first to use the Tiger as an important symbol in their cultures. It was displayed on the Pashupati seal, where the Tiger, being the largest, represents the Yogi Shiva’s people. Other images showed the naked figure of a woman, upside down with her legs apart and two tigers standing to one side. It implied the close connection of the Tiger with fertility and birth and that Man and Tiger evolved together from the same ‘Mother-Earth’. “The depictions of animal figures on the seals from the Indus valley civilization were a mark of our heritage, culture, lifestyle and religious beliefs and practices.”

Aryans and Hindu Mythology: In India, the Tiger had also found a place of prestige in Vedic literatures. When the Aryans (Vedic Indo people - who migrated into the Indian subcontinent around 1500 BCE), spread the Hindu religion, the Tiger was absorbed into Hindu consciousness from the time immemorial, as the divine vehicle of the supreme Goddess of power, Durga, bringing light and peace to the Earth, Devi Durga, whose name means 'beyond reach', is the feminine force or Shakti, created by the Gods to combat the evil male power that has percolated through the world. The Tiger represented Shakti, was a repository of feminine force being born of the Earth Mother, and together constituted the most powerful repository of power against evil. In many Shakti temples across India we see the Tiger God present in different manifestations among a variety of people in India, particularly among the Vindhyan and other hill tribes of India. When Buddhism evolved from Hinduism and spread through Asia, the Tiger came as spiritual and cultural images, which adorn splendid murals in temples in Bhutan, China, Thailand and Tibet.

The Tiger is deeply rooted in the history, culture, beliefs and myths of the Indian sub-continent.

[to be continued...]



Durga Puja celebrated in a forest village in Bandhavgarh
Credits: Nirmalya Chakraborty