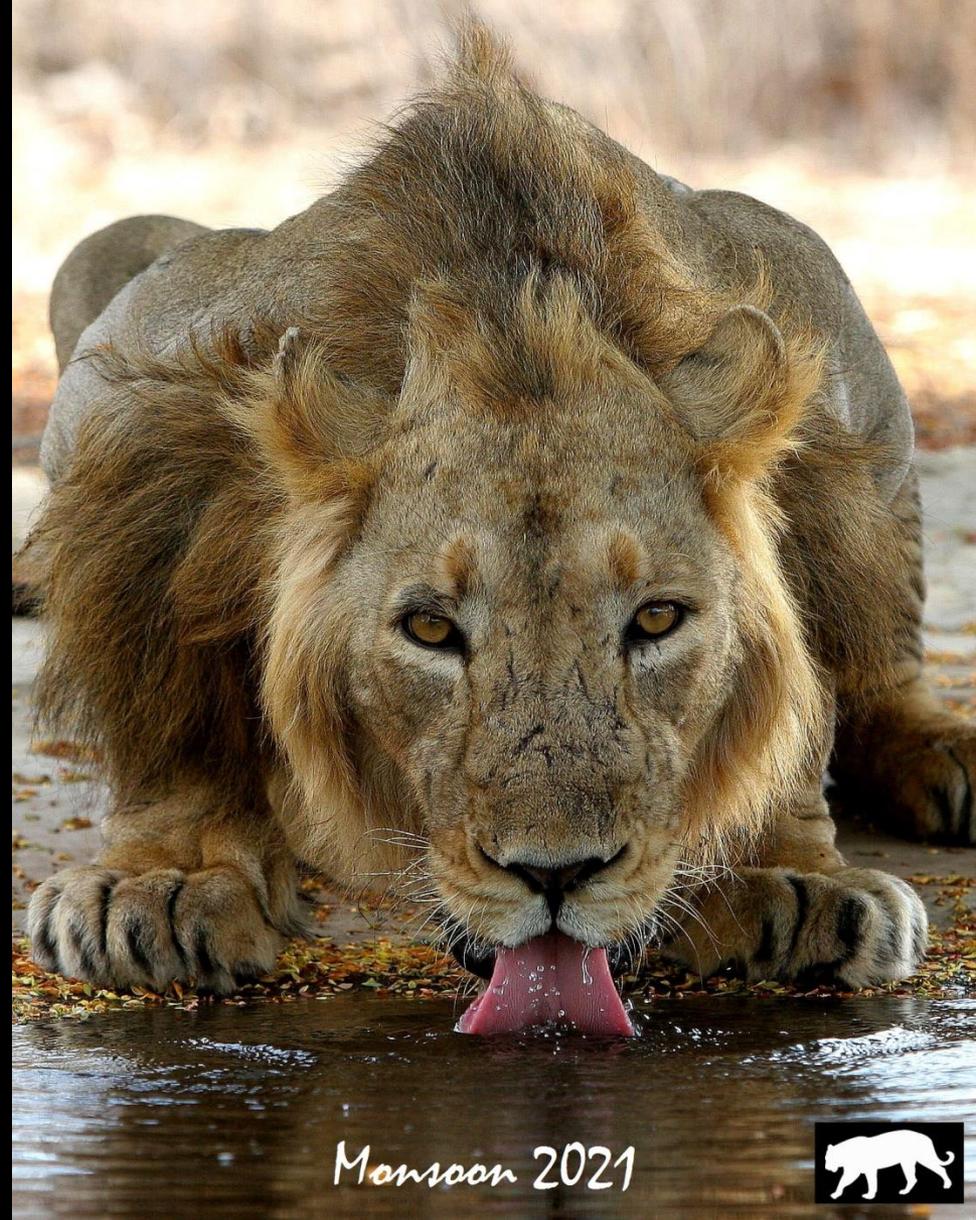


# JUNGLE RHYTHMS



Monsoon 2021



Indian sub-continent is an unique land of rich biodiversity and culturally beautiful people. We have diverse ecosystems and life forms, vivid colours, songs and languages in the natural world. We have been living in harmony with our wild neighbours since ages and continue to have a deep cultural influence from wild life and nature. Respect for nature's processes is a way of life.

This fine line of tolerance is being tested every time our increasing population have brought modern day hardships and challenges. The aspirations of becoming a global economic power have also pushed countless infrastructure projects, some of which lead to ecological imbalance and climate impact in future. With shrinking forests and eroding legal protections, the space for wildlife is now squeezing by an ever-tightening ring of human habitation, roads, mines, agricultural farm lands and industries. Due to less space, animals have started dispersing out from their congested 'little forests' in search of new habitats. Many jungle corridors and forests patches through which they travel have been overgrazed, over-utilized or fragmented by roads, dams, rails or human homes. Elephant habitats and their migratory routes are now fragmented and lost. The incidents of road kills of tigers and other wildlife have increased. Territorial fights among wildlife have also intensified. There is now a rise in tension and conflicts leading to crop depredation, livestock predation, damage to property and loss of life.

There is a need for strong commitment, collaboration and action. Let us plan to balance commerce, environment and biodiversity conservation in a sustainable way. It will ensure our better quality of life, ecological balance and our rich wildlife will continue to thrive in our forests.



**Nirmalya Chakraborty**  
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*Jungle Rhythms*  
Monsoon 2021

## *Jungle Rhythms Special*

5

### **The Last Abode of the Asiatic Lion**

- Text and Photographs by: Bhushan Pandya

## *Jungle Rhythms Spotlights*

### **25 'Tiger in a Pipe'**

- Text and Photographs by: Sanjay Thakre

### **28 The Kingdom of Swamp Tigers**

- Text and Photographs by: Mainak Ray

### **35 Sundarban Tigers – Maneaters or Myth?**

- Text by: Shakti Ranjan Banerjee

### **40 'Mangroves'** - Text by: Dr Debduot Ghoshthakur

### **42 Sundarbans: Plight and Preservation**

- Text and Photographs by: Indrajit Sengupta and Anupa Roy

### **52 Leopard Village**

- Text and Photographs by: Dr. Oishimaya Sen Nag

Cover Photo: Asiatic Lion by Bhushan Pandya



*Jungle Rhythms*  
Monsoon 2021

**58** 'The Green Carpet'

- Text and Photographs by: Sunnapu Lekhana

**65** 'Biodiversity'

- Text and Photographs by: Kamal Kishore Srivastava

**69** Tuskers of Sri Lanka – The Deciding Decade

- Text and Photographs by: Rajiv Waikala

**74** Wild Art – Winged Magic

- Text and Art by: Esha Munshi

*Jungle Rhythms Watcher*

**78** Covid19 - PA Update – II - Text by: Diptarka Ghosh

*Jungle Rhythms Reviews*

**84** The Path Least Travelled: a Forester's Diary

- by: Dr. Atanu Kumar Raha

*Jungle Rhythms News*

**86**

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# The Last Abode of the Asiatic Lion

Text and Photographs by: **Bhushan Pandya** (Member, State Board for Wildlife)



Can humans and great carnivores co-exist? Can a top predator be adored like a member of the family? Did you know that sometimes the villagers host a *besna* (post-death prayer ceremony) for a wild carnivore? Can you believe that top predators are sometimes offered *rakhis* by 'sisters' on the eve of *Raksha Bandhan*? Can a top carnivore be worshipped as God? Do some communities adopt the title of *sinh* (lion) while naming their sons? **Is it true that Asiatic lion, formerly known as *Panthera leo persica* is the same as the African lion subspecies *Panthera leo leo*?**

All these seemingly absurd questions have one answer – YES! One has to visit Gir, India and see to believe it.

## The Story of the Last Lions of Asia

Man has a dubious history with great cats like lions, tigers, cheetahs and leopards. Killing in the name of sport has resulted into a situation where some of the subspecies have been wiped out and yet others are in the brink of extinction. After hunting for sport was banned in many countries, the demand for wild animal body parts grew for their non-scientific medicinal use in countries like China. This gave rise to an organized cross-border poaching network, posing a severe threat to the very survival of large mammals.

The mad race for development has been another major cause of shrinking animal habitats. Large mammals need large natural homes, but they have always been at the losing end in the fight for space, water and food. Conservationists and scientists have undertaken the difficult task of protecting the surviving population of these majestic mammals by strategic steps and global cooperation.

The British officers and kings from princely states of pre-independent India used to hunt lions (and tigers) for trophies regularly, exhibiting their act of bravery. This resulted in wiping out nearly all the lions which roamed in Asia Minor.

*The Kathiawar Gazette had reported that there were “probably not more than ten or a dozen lions left in Gir forest” in 1884. In 1893, Junagadh state reported a count of 31 lions.*

However, both the estimates were “exaggerated, misleading and incorrect” according to many experts.

These figures were arrived at probably due to the limitations of the census method. Also, the area covered in the census was only that which was under the rule of the Nawab of Junagadh.

*There were lions living in adjoining areas as well, which fell under other princely states. Quite some experts believe that the lion population never fell below 60 to 100 (although this too was an alarmingly low number) at any time.*

In 1905, the Junagadh state estimated “at least a hundred lions”. This figure seems more accurate, considering the number of man-lion conflicts at that time and the figures of the next census. The increase in lion population from 31 in 1893 to 100 in 1905, does not seem to be biologically possible in such a short duration!

## The Historical Conservation Efforts

A decisive improvement in lion protection came when H. E. Lord George Curzon, the British Viceroy, was invited by Nawab Rasulkhanji III for *shikar* in the 1900s. There was a letter published in a news report of a Bombay daily titled “Viceroy or Vandal?”, criticizing the proposed hunting expedition by the Viceroy.

The news report reached Lord Curzon, who had already arrived at Junagadh. Moved by the report, he cancelled the hunting excursion wisely and did not go to Gir. He urged the Nawab to enforce strict protection while returning from Junagadh.

*The Nawab, a fine shooter, who had killed many leopards at a young age, had never hunted a lion nor had he wished to hunt one. In spite of this, the Nawab, feeling deprived of the honour of taking the Viceroy for hunting, persisted the matter further. He wrote him a letter explaining that the lions were not facing extinction, as was assumed by incorrect information, and again requested the Viceroy to visit him “before he would leave India”.*

Fortunately, the Nawab responded well to the Viceroy's invaluable suggestions. The consistent and collective efforts thereafter, by his successors, British rulers, subsequent state and centre governments (post-independence), media, scientists, NGOs and local people, have written this rare success story of Asiatic lion conservation.

### **The Gir Sanctuary and National Park**

Gir Sanctuary, one of the earliest sanctuaries of the country, was declared on 18<sup>th</sup> September 1965. The core area of 258.7 sq. km. was given the highest protection by declaring it Gir National Park in 1975. In the 1970s, the wild ungulate population was poor, so Project Lion was initiated. At that time, there were many *maldhari* (tribal herdsman) and *siddi* (tribe) families living inside Gir since decades. The state government offered an incentive package, to relocate them from the Gir Protected Area (Gir PA). Many families were shifted but out of 129 *nesses* (wooden huts where the *maldharis* live), 54 still remained in the sanctuary.

*Note: A ness may be small or large, depending upon the number of families members live.*

As a result of the effective protection system, helped by the Wildlife Protection Act 1972, the population of spotted deer, chinkara, sambar (the largest deer in Asia), blue bull, wild boar, etc. started increasing at a quicker rate. For example the spotted deer population has increased from just a few thousand in 1970s to over seventy five thousand today. Other prey species' populations have similarly grown multi-fold. As a result, **the prey preference of lions residing inside the Gir PA has reversed. Lions' diet used to consist of 70% cattle (of *maldharis*) and 30% wild ungulates. The recent scat analysis shows 75% and 25% wild ungulates and domestic livestock, respectively.** The population wild prey species has increased from 139031 in 2015 to 155659 in 2019 in Gir National Park & Sanctuary.

### **THE ECOLOGY AND GEORGRAPHY**

Gir has seven perennial rivers. They are the lifelines for many, in this drought-prone region. There are four dams in Gir, storing and providing water to villagers as well as wildlife, round the year.

The Gir forest has an undulating terrain of volcanic hills. Girnar is a mountain. Pania, Mitiyala and Barda also have a hilly terrain. Nature has protected these forests and their biodiversity through this rugged and hilly topography. So far, the hills haven't seen much intrusion by human activities like industrialization, cultivation, mining, etc. In fact, the hilly corridors of wild animals are protected by nature, allowing lions and other wildlife to disperse.

The Gir forest has the sea on three sides, with the nearest distance of about 40 km. The forest cover keeps salinity ingress in check.



Gir (formerly known as Kathiawar or Saurashtra), has Asia's largest compact, dry deciduous forest - a perfect home for the lions.

As per old classification, there were eleven subspecies including Asiatic lion - *Panthera leo persica*. In 2017, a research paper by the team of more than twenty scientists of International Union for Conservation of Nature (IUCN), was published in Cat News. The knowledgeable scientists have performed in-depth genome sequencing and other studies to revise the old taxonomy. It is mentioned that the classification of species cannot be done on morphological characters e.g. belly fold, size body, color of skin, size of mane, etc. As per the new classification, there are only two subspecies of lions. 1. *Panthera leo leo* and 2. *Panthera leo melanochaita*. Both these subspecies are found in African countries. *Our Asiatic or Gir or Indian lion is now classified as Panthera leo leo, the same found in Western and Central African countries.* The latter subspecies is found in East and South Africa.

For the people of Saurashtra, the lion is not just an animal. They love lions. People are thrilled and proud to know that there are lions near their village.

The lion is embedded in their culture. “He” (we do not treat lion as an animal and hence do not address “it”) is a symbol of bravery, strength and power just like a king. Often, the lion is worshipped as *Lord Narasimha* – half lion and half man – an incarnation of *Lord Vishnu*. Boys of some communities, particularly those of the princely state families, have the title *sinh* (lion), suffixed to their names. Rajput and Sardar communities, known for their bravery, add *Sinh* (in Gujarat) or *Singh* (in other states) to their names. The throne of erstwhile kings is called a *sinhasan*. Lion, the state animal of Gujarat, is in the symbol of India, Gujarat state, Gujarat tourism and also in the “Make in India” campaign.

The lion’s facial muscles, eyes, whiskers and mane resemble the face of a holy saint. The way lions organize their ‘families’, known as prides, is quite similar to human joint families.





“Do not Disturb” when dining

## The *Maldharis*

Since decades, the *maldharis* (pastoral communities) of Gir have co-existed with lions and leopards without much direct conflict. However, the area of Gir is limited. Wildlife and *maldharis*, both depend on common natural resources like land, water and grass. On record, there are still 54 *maldhari nesses* within the sanctuary area. Their families have been expanding. Quite some (relocated) *maldharis* have illegally returned, thus nullifying the benefits of making more room for lions within the Protected Areas (PAs).

Scientists opine that these families ought to be shifted but at the same time, they feel that since 25% of the lions' diet consists of cattle, the shifting should be systematic and gradual.

The shifting of *maldhari* families has become more difficult because of the Forest Rights Act and the Tribal Act. Some of the *maldharis* now demand facilities like tar roads, electricity, buildings, schools, hospitals, etc. inside the sanctuary! This growing threat needs to be handled practically, sensibly and amicably, at the earliest. In 1982, the government of Gujarat had shown intention to declare the whole Gir PA as national park. The time has come to implement the intention. By offering an acceptable package and sensible counselling, the *maldhari* families can be shifted. It will greatly benefit the future of them as well as lions.

## Expanding the Home - The natural dispersal outside Gir PA

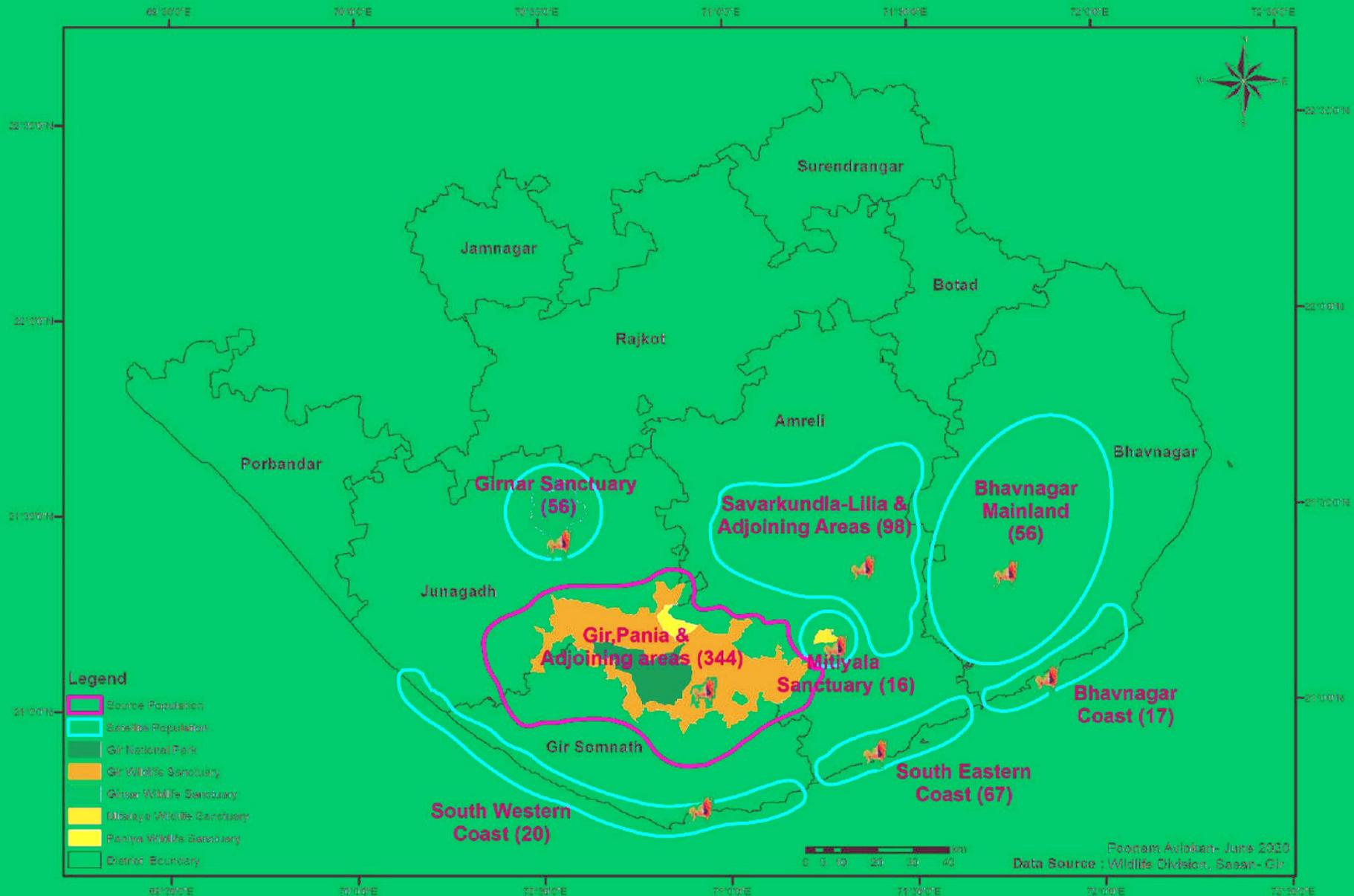
The increased wild ungulate population, particularly blue bulls and wild boars started spreading out of the PA. Unlike the sambar, the blue bull prefers a flat, lowland habitat. Both wild boar and blue bull also like cultivation. They were thus first to disperse, followed by lions as well as leopards.

The natural dispersion of great cats began in early 1980s and is still going on. The lions have not only reclaimed their old territories but also carving new areas. Later, the state authorities declared Girnar, Pania and Mitiyala as wildlife sanctuaries. At present, Asiatic Lion Landscape (ALL\*) or the lions' home range has expanded in about 30,000 sq. km. in and around nearly 2000 villages.

\*In addition to the source population of Asiatic lion at Gir, Pania and adjoining areas, there have been seven satellite populations.

- Mitiyala Wildlife Sanctuary
- Savarkundla-Liliya and adjoining areas
- South Western Coast (Sutrapada-Kodinar-Una-Veraval)
- South Eastern Coast (Rajula-Jafarabad-Nageshree)
- Bhavnagar Mainland
- Bhavnagar Coast

*The lions' home range outside PAs is known as Greater Gir.*



Lion Population Distribution



**Poonam Avlokan (Full moon observations)** - Since 2014, Poonam Avlokan of lions is performed every month. It is a 24 hour lion population estimation and monitoring exercise on the **full moon day (night)**. It is for the management purpose and the results are not usually declared.

The five yearly census was due in 2020, but it could not be undertaken due to Covid-19 pandemic. So it was decided to perform the Poonam Avlokan on 5<sup>th</sup> & 6<sup>th</sup> June 2020 in presence of some expert observers. Accordingly, members of the State Board for Wildlife and a scientist from Wildlife Institute of India were invited. However, no invitees except me attended the interesting event.

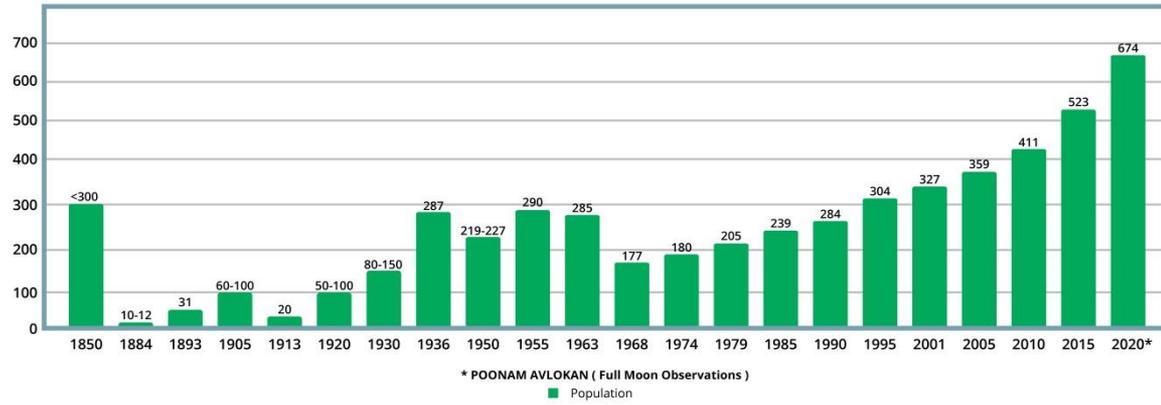


The Gir forest has a rare success story of not only saving the last remaining Asiatic lions, (formerly classified as *Panthera leo persica*) from the brink of extinction, but also improving their conservation IUCN status from 'Critically Endangered' to 'Endangered' in 2008.

The 2020 results revealed a 28.9% increase in lion population (from 523 to 674) and 36% increase in the home range (from 22,000 sq. km. to 30,000 sq. km.). Out of nine districts surveyed, lions were found at 294 locations of four districts. 161 Adult males, 260 Adult females, 116 Sub adults and 137 Cubs were observed in the total 674 lions sighted. Interestingly, in the maiden observation of a kind, 60 out of 260 were found to be lactating females.



## CENSUS DATA OF ASIATIC LION : 1850-2020



In Greater Gir, the lion population has been increasing chiefly because of their acceptance by the villagers, particularly the farmers. This vast area of Greater Gir, where the lions use grass *vidis* (grasslands), degraded land, coastal area, areas along Shetrunji river banks, farm fields, etc. to roam and reside. Most of the farmers are happy with the situation since their precious crops are protected from the wild ungulates such as blue bull, wild boar, etc. when lions are around.

### Risks to Lions at Greater Gir

“Protecting the protected species in protected areas is rather easy. However, protecting the protected species outside the protected areas is a challenge,” as is rightly put by Shree B. J. Pathak, IFS (Retd.).

The speeding vehicles on state and national highways, high-speed trains on railway tracks, open wells in farms, illegal electrification of farm fences (to protect the crops from wild ungulates), etc. pose a serious threat to lions in revenue areas. Lions, leopards and other wild animals get seriously injured or even meet with an accidental death due to these factors, causing higher mortality.

Precautionary measures like, protecting the railway tracks with fences (where a higher density of lions is found), keeping guards around railway lines, covering the open wells with parapet walls with the financial aid of Rs. 16,000 per well, building speed breakers, training and forming more rescue teams, creating rescue centres, operating ambulances, etc. have been taken. However, accidents do happen. Still, the good news is that in spite of all this, the lions’ home range is expanding and the population is steadily increasing.

### Canine Distemper Virus – CDV

In September 2018, 23 lions died in four weeks at the Dalkhaniya range of eastern Gir. Later, the National Institute of Virology (NIV), Pune revealed that 17 lions died due to a deadly combination of Canine Distemper Virus (CDV) and Babesiosis - a Protozoa infection, and 3, due to in-fighting. The autopsy was inconclusive for the remaining 3 deaths.

The lion is a nocturnal big cat, known to rest for up to 18 hours a day. This behaviour makes it extremely difficult to visually diagnose whether a particular lion is resting or affected with CDV. By the time more symptoms are seen, the virus infection is often spread to the last stage.

A massive emergency rescue operation was carried out in September 2018. As a precautionary measure, all 33 lions of the adjoining Jasadhar range were captured and kept at a distant location. Working 24x7, the field staff took highly admirable and relentless efforts to rescue so many lions and successfully restricted the deadly virus.

In April 2020, about 27 lions succumbed to Babesiosis and probably an undetected virus. Many were rescued, treated and released back to wild.

“What should be done to protect the great cats like the lion and tiger?” The answer is to maintain a clean and hygienic environment. Although there can be many carriers of CDV, feral dogs most likely spread the disease. The population of dogs also has been ever increasing. The forest department and Animal Husbandry department has undertaken programs to vaccinate all dogs in the adjoining villages.



### Developing Gene Pools Away from Gir

Barda Sanctuary near Porbandar and Rampara Sanctuary near Rajkot already have (captive but pure breed) gene pools of the Asiatic lion. These sanctuaries are being prepared to accommodate free ranging wild lions in the near future. The area of Barda hill is 192 sq. km.; slightly larger than that of Girnar Sanctuary. The surrounding area of more than 350 sq. km. is also suitable, so as to accommodate about 125 lions, I believe. However, the most difficult but essential task of shifting the *maldhari* families is yet to be performed. Unlike the *maldharis* of Gir, the Barda *maldharis* are not familiar with lions. A generous compensatory package and trustworthy counselling of these families will be needed before Barda opens up to wild lions.

In 2013, the Hon'ble Supreme Court formed an Expert Committee to oversee a proposal of shifting Gir lions to Kuno Palpur in Madhya Pradesh. It had been getting delayed as some essential work was presumably incomplete at the proposed site. Now the plan has been dropped.

## Tauktae - The devastating cyclone

As per the media reports, the cyclone with torrential rain and the intensity of 165 kmph, struck the Asiatic Lion Landscape on 17<sup>th</sup> May 2021.

The Gir forest cover absorbed the high intensity cyclone shielding many lives and property. The price paid was about 9461000 trees (16-18%) that were uprooted and several hundred nesting and roosting common birds like cattle egret, heron, sparrow, etc. died at Gir and the surrounding areas. The peepal and banyan trees that were uprooted shall remain as it is beautifying the habitat and slowly decompose over the next two monsoons.

There were luckily no mass casualties as wildlife already instinctively moved to safer places. Lions of Pipavav port and Jafrabad sea coast took refuge in hillocks. All the lions in Gir are found to be safe after the cyclone. RFO of the Gir range, Dushyant Vasavada, said the many lions had also been moved to safe locations in Junagadh and Amreli ranges as a precautionary measure. Rajiv Kumar Gupta, Additional Chief Secretary of Forest & Environment Department, Gujarat had also tweeted a rare video of a Pride in Akolvadi range Gir West crossing a water way safely after the cyclone.

Gir had experienced a similar cyclone in 1982 also.

Since more than three decades, there have been discussions of thinning some too dense areas in Gir. Herbivores as well as carnivores are unable to utilize these areas. While some experiments of habitat management are being undertaken since a few years, not much effective work could be done.



Teak is a dominant species at larger part of Gir. It is known to be a vigorous species, because its large leaves block the sunlight to the ground. The leaves fall during dry seasons every year, forming a layer on the land. As a result, palatable grass and other vegetation cannot grow or flourish.

It might be too early to say, but I agree with some experts that the cyclone could prove to be a blessing in disguise. While it is not possible to protect trees (from Tauktae), the nature has opened up quite some areas in its own way.

It is a misbelief that the lions need savannah. In fact they have been comfortably and conveniently utilizing various varied habitats, here as well as at Africa. The growth of palatable vegetation will certainly benefit the spotted deer, sambar, blue bull, wild boar, etc. prey species. Lions will also follow.



Gir's unique Landscape

### ***Some Interesting Incidents***

#### **Mohammad and the Leopard**

*Once, on a cold winter morning, two male lions were located by the young trackers. One lion was sitting under a tree and the other was resting a few metres from him. Suddenly, one of the trackers, Irfan, saw a leopard on the same tree under which the lion was sitting.*

He sensed that the leopard would have climbed the tree to save itself from the lions. Irfan conveyed the message through walkie-talkie to his father, Mohammad, who is one of the senior trackers. Incidentally, he was not far from the location and reached there at once. Mohammad decided to silently wait and watch the great cats from a safe distance. Some time passed, and the lion sitting under the tree also decided to relax like his partner. The scared spotted cat was waiting for such a moment to bolt. It jumped from the tree and tried to flee, but for its poor luck! The lions woke up in the fraction of a second and got a hold of the otherwise more agile leopard. The lions pulled at him from both ends of his body, while the leopard snarled and clawed in struggle.

Suddenly, Mohammad charged towards the fighting predators, banging his stick on the ground and shouting. Fortunately, the lions withdrew, releasing the leopard from the deathly grip of their jaws. The leopard escaped the lions, but attacked Mohammad. Mohammad fell down and the leopard tried to bite his shoulder. All this happened in a matter of seconds. Irfan and other daring youngsters rushed to scare the leopard away. Thankfully, the thickly padded winter jacket that Mohammad was wearing, served as a shield, leaving him with only minor injuries.

When I asked Mohammad what made him react so impulsively, he said, "I don't know what got into me. The only thought in my mind was that the lions will tear the poor leopard apart before my very eyes."

- Late Dr. Sanat Chavan, PCCF (Retd.), who did his PhD on the habitats of Gir, had shared with me a strange incident of man-lion conflict.

#### Villager and the Lioness

*Once, some villagers had gathered in the area where a lioness was on a cattle kill. Disturbed by some noise or sudden movement of onlookers, she charged on a man. He fell down with his back to the ground. The lioness sat on him with her mouth close to the man's head. The terrified villagers momentarily ran away, thinking that the man was dead. However, they heard a trembling cry of help coming from under the lioness. The man was alive!*

The people did not know what to do, as any action could provoke the lioness. About 30 minutes passed in this helpless state, after which, the lioness stood up and walked away calmly!

The man stood up without a scratch, shivering after this unfathomable experience. Later, his medical check-up showed a couple of fractured ribs, caused by the adult cat's weight.

When a fellow forest officer and friend of Dr Chavan's learned about this mysterious incident, he exclaimed, "I can't imagine how that poor man must have laid there for that half hour, right under the killer jaws!" "Please tell your lions not to scare the poor villagers like this!" he laughed

Raju and Suleman

I have also observed some amazing instances of a lion's bonding with a particular person, but this is the most unique one. A handsome lion, popularly known as Raju (2006-15), developed a strange affinity towards Suleman, a forest guard. Raju was born in Suleman's guard beat (area) and Suleman affectionately treated Raju like his son. Interestingly, Raju followed Suleman for years whenever Suleman was transferred to another beat.

Raju used to be quite active, frequently roaring and doing his routine activities even during hot summer days. No wonder, he was very popular among tourists and photographers. Whenever I meet Suleman, he remembers Raju like a lost son, who breathed his last on 1<sup>st</sup> June 2015.



## Acknowledgements

There is plenty of information available on Gir and Gir lions. I have tried to mention some of the lesser known interesting facts, from my field experience and interactions with knowledgeable trackers, field staff, officers and biologists for over three decades, for which I am extremely grateful to all of them.

I am very thankful to Wildlife Division, Sasan-Gir and Wildlife Circle, Junagadh for their continued support and sharing the authentic and factual information.

I am also very thankful to Shree B. J. Pathak, IFS (Retd.) for providing important inputs.

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## **Bhushan Gaganvihari Pandya**

Bhushan Gaganvihari Pandya was born and brought up in a family having one of the oldest studios in the region, so I have been exposed to photography since my childhood. I used to visit Gir since my school days. I started wildlife photography because of love towards Asiatic lions and interest in study of animal behaviour and nature education. I soon realized the importance of biodiversity conservation and started documentation of rare & endangered flora and fauna.

During this “Pilgrimage to Nature”, which commenced around 1986, I have had opportunities to interact with some of the renowned scientists from Wildlife Institute of India (WII), Aligarh Muslim University (AMU) and Saurashtra University during their PhD field work on Asiatic Lion, Indian Wolf, Leopard, Hyena, Lesser Florican, etc. in Gir National Park & Sanctuary, Blackbuck National Park, Velavadar, Rann of Kachchh, etc. Some of my rare images have been published in their respective PhD thesis also.

### **Photographs Published in Books:**

Biodiversity Conservation Management Plan of Gir National Park & Sanctuary – 1995, “Land of the Tiger”, by Valmik Thapar (BBC Books), “The Story of Asia’s Lions”, by Divyabhanusinh (Marg Publication), “Natural Heritage of Gujarat” by Dr. H. S. Singh (GEER Foundation), “The Gir Lion” by Dr. H. S. Singh (Pugmark Qmulus Consortium), “Mammals of Gujarat” by Dr. H. S. Singh (Biodiversity Board, Gujarat), “The Asiatic Lion” by Dr. H. S. Singh, “Gir National Park – A Handbook” by Sanat Chavan & Dhun Karkaria (Tourism Corporation of Gujarat Limited), “The King and I”, by Prerna Singh Bindra (Rupa & Co), Golden Glimpses of Gujarat by Vivek Desai, “The Best of Indian Wildlife” by Vijay Mane (Wildlife Concerns), “Endangered Birds of Maharashtra” in English & Marathi languages by Asad Rehmani (Bombay Natural History Society), “Vultures – The Feathered Scavengers in Gujarat” (GEER Foundation), “Gidh – Gujaratna Gaganvihari Safai Kamdaro” (GEER Foundation), “Sarp Sandarbh” by Ajay M. Desai (City Printers), etc.

### **Documentation of Census:**

- Documented Asiatic Lion censuses in 1995, 2001, 2005, 2010. Also, Documented two Leopard censuses in Gir National Park & Sanctuary.
- I was one of the observers at Asiatic Lion census in 2015 and *Poonam Avlokan* in 2020.



#### **Photographs Published in Magazines:**

- BBC Wildlife, BBC Earth, Sanctuary Asia, Sanctuary Cub, Hornbill (Bombay Natural History Society), Zoos' Print, Geography & You, Environ, Frontline, Indian Forester, Gir Darpan, The Taj Magazine, Jetwings, Srushti, Vihang, Vishva Vihar, Kalkaliyo, etc.

#### **Photographs Published in Various Print Medias:**

- The Times of India, The Indian Express, DNA, The Maharashtra Times (Marathi), Divya Bhaskar, Gujarat Samachar, Sandesh, Phulchhab, Jai Hind, Nutan Saurashtra, Akila, Sanj Samachar, Aaj Kaal, Aaj Tak, Gujarat Darpan, etc.

#### **Photographs Used in Interpretation Centre at:**

- Sasan (Gir), Devaliya (Gir), Zoological Society of London - London Zoo, Velavadar, Kanha, Nal Sarovar, etc.

#### **Awards:**

- Won 1st Prize in All India Mother & Child Photo Contest by Fefol in 1986.
- Won 3rd Prize in wildlife photography contest organized by WWF, Gujarat Forest Department & Gujarat Ecology Commission at Vadodara in 1993.
- Honored by Sanctuary Asia in 2015.
- Credited as "**BBC Earth Photographer of the Month**" in December 2016.
- Honored by The Gujarat Forest Department in 2015 and 2016.
- Conferred with Gujarat Gaurav Award in wildlife category by Ahmedabad Photographers' Association in 2003.
- Conferred with Rajkot Gaurav Award by Camera Club of Rajkot in 2004.
- Honoured by Navanagar Nature Club, Jamnagar and North Gujarat University, Patan in 2012.

#### **Others Achievements:**

- Worked as a Consultant with the team of Icon Films, Bristol, UK for the documentary "The Great Cats of India" for Animal Planet TV channel in the year 2002.
- Worked as the Scientific Advisor with the team of **Icon Films, Bristol, UK** for "The Last Lions of India" for BBC/Discovery TV channel in 2005. It was made in the collaboration with the Gujarat Forest Department. The documentary has won "The Best Conservation Message Award" at the International Film Festival at Montana in 2006. Incidentally, "The Last Lions of India" is termed as the best and the most complete documentary reflecting important facts of Asiatic Lion conservation.
- BBC had also used some of my images in publicity campaign of "The Last Lions of India" for its premier in England in 2006.
- Worked with the filming team of Icon Films, Bristol, UK for National Geographic TV channel during the filming at Gir in "Desert Lions" episode of "Secrets of Wild India" Series in 2011. The documentary was conferred with "The Best TV Series" award at the International Film Festival at Montana.
- I have donated sixteen high resolution images to **Zoological Society of London - London Zoo** in 2016.
- Done official documentation of Gir Nation Park & Sanctuary for three and a half years from 1995. Done official documentation of Girnar Wildlife Sanctuary also.



## “Tiger in a Pipe”

Text and Photographs by: **Sanjay Thakre IFS** (Retd. Chief Conservator of Forests)

A very funny incident happened in the Chimur Range of Bramhapuri Forest Division.

*On 28<sup>th</sup> May 2015, at around 3.00pm. Range Forest Officer, Chimur received information about a full grown Tiger sitting inside a pipe culvert near Bhisi Village on Bhisi-Jambhulghat road.*

By the time RFO, Chimur Shri Akkewar visited the spot along with his field staff, hundreds of people had already gathered near the spot. Shri Akkewar closely examined the animal and confirmed that it is a full grown Tiger. He immediately conveyed the situation to Shri Ashish Thakre, Dy. Conservator of Forests, Bramhapuri Division and Shri S.P. Thakre, Chief Conservator of Forests, Chandrapur Circle, who immediately directed the field staff to take all necessary precautions regarding Law and Order. Immediately S.P.Chandrapur and Collector were appraised about the situation who in turn gave directions to their S.D.O. and S.D.P.O.

After studying the condition of the animal it was decided to block one end of the culvert by putting iron plates and on the open end a trap cage was put in place. While all these arrangements were going on, surprisingly the animal remained very peaceful. Infact after lot of luring techniques like putting meat and water in the cage, the animal didn't even once stepped towards it and take the bait.

Hence finally a very innovative idea of blasting fire crackers at the other end was resorted which immediately worked and the animal with a loud roar entered the trap cage which was promptly closed and the animal was loaded on a standby tractor and immediately taken to Khadsangi.

On reaching at the Forest Rest House Khadsangi, the animal was closely observed by all including the Veterinary Doctor Mr. Khobragade and to everyone's surprise the animal was found to be a very healthy and full grown individual. Hence the animal was given a proper shower of cool water to calm down and provided with proper food. This made the animal completely comfortable and the decision was taken by Chief Conservator of Forests Shri S.P Thakre to release on the next day.

On 29<sup>th</sup> May 2015 the animal was sedated and all the health checks like blood samples, measurements, weight etc. were carried out. The animal was male and found to be weighing around 185 Kg., with overall length of 277 cms., a very healthy individual indeed.

In the night it was taken on the tractor to compartment no.21 nearby a waterhole and released in the presence of Field Officers, Doctors, Members of WCT., The animal quickly vanished into the thick forest and the entire team returned with all the satisfaction of one of the very successful trapping and releasing operation of a full healthy tiger.



Tiger released into the wild



# The Kingdom of Swamp Tigers

Text and Photographs by: Mainak Ray

Jungle Rhythms - Monsoon 2021



*The Sundarbans contain the world's largest mangrove forests and one of the most biologically productive of all natural ecosystems. Located at the mouth of the Ganges and Brahmaputra Rivers between India and Bangladesh, its forest and waterways support a wide range of fauna including a number of species threatened with extinction. The mangrove habitat supports the single largest population of tigers in the world which have adapted to an almost amphibious life, being capable of swimming for long distances in salty waters and feeding on fish, crab and water monitor lizards.*

*The islands are also of great economic importance as a storm barrier, shore stabiliser, nutrient and sediment trap, a source of timber and natural resources, and support a wide variety of aquatic, benthic and terrestrial organisms. They are an excellent example of the ecological processes of monsoon rain flooding, delta formation, tidal influence and plant colonisation. Covering 133,010 ha, the area is estimated to comprise about 55% forest land and 45% wetlands in the form of tidal rivers, creeks, canals and vast estuarine mouths of the river. About 66% of the entire mangrove forest area is estimated to occur in Bangladesh, with the remaining 34% in India.*



Sundarbans unique Landscape

The Sunderbans tiger is different from any other tigers of the world because of its adaptability to the unique mangrove habitat. Although it is yet to be confirmed scientifically that the 'Royal Bengal Tiger' is genetically different from terrestrial tigers, there are certainly many physiological adaptations. Their behavior is largely individual specific and studies made on other tigers of the world or the country, even in Sunderbans itself cannot be extrapolated. Much of the "aberrations" are actually attributed to its adaptation to a hostile land. Tigers in Sunderbans eat fish and crabs, can swim very fast in the big rivers, climb trees, drink salty water, take their prey in broad daylight, and do not have any common preying techniques.

In one of my expeditions, I was tracking one male tiger, the most dominant male of the tourism zone. His large territorial area is crisscrossed by creeks and tributaries, intersected by a network of tidal waterways, small islands of salt-tolerant mangrove forests and mudflats. A kingdom with almost 6 to 7 adult females who he partners with. We had already spent several days out in the field tracking. Pugmarks on the soft mud and clear signs of sliding into canals and rivers and getting out of those were our only hope for any directions.

*One such winter morning, we were slowly cruising along the silent waters with a sharp lookout. The entire landscape was still dull and misty. In that faint light, quite a distance away, a shadowy creature just had entered the water. Tiger!!! Tiger!!! – we excitedly pointed out.*





Since we could only traverse in the boat, our movement had to be restricted to the wider rivers/canals where the water levels were deep. This made the tiger pursuit more difficult. Whether Sundarbans tigers have well marked territory and protect it is still a debatable issue. However, it seemed that very day, the tiger was ready to walk long and explore new territory.

After getting off the water the tiger started walking along the banks while patrolling and marking his territory.



The specialties of mangrove plants are that they are inundated by salt water during high tides. Hence to adapt to these adverse conditions the plants develop negatively geotropic breathing roots (known as pneumatophores) which occurs vertically from the ground most of which are very sharp and hard. We were surprised to see how comfortably the tiger could move on these surfaces ranging from the soft pneumatophores to hard and sharp pneumatophores or from grassland to the snake roots. Most of the time his legs is deep inside the mud but he walked with élan. He jumped often to cross the narrow ditches, stretched more to cross the wider ones.

Occasionally he did spray marking (A fluid mixed with urine thrown on the tree trunk, bushes etc.) to announce his presence and dominance with their pheromones. The scent of these markings may remain up to two months. Other tigers, while passing by the area can get to know how recently another one has passed by. A female can pick up the trail of a male following the scent. We could also document him sniffing tree trunk to check the presence of any other individual and female scent. He did defecation and typical to other tigers dug mud to cover them.

There are two high tides and low tides in a day at an interval of six hours each. The tide level and timings also vary every day. During the low tides the mudflats get exposed and that is when Tigers prefer to cross the big rivers. Our big man crossed a huge river and 5 big canals during these 6 hours of our sighting. He did take some rest in between inside the mangroves. We were surprised to see how effortlessly he could camouflage among many mangrove plants as he totally hide himself inside the "Hental" (Phoenix paludosa) trees whose leaves are of red, green and brown color matching the tigers coat. No wonder why people in this part of the world call Hental as "Tiger-Palm". When he was not visible, we waited patiently for him in our boat with hopes to see him again. Every time, after a while, he did come out in the open and resumed his walk, in search of food, sweet water and companion.

The soil is always soft, the ground is full of sharp breathing roots, the water is salty, the air is humid but nothing stops the Royal Bengal Tiger rule his kingdom.





## Sundarban Tigers – Maneaters or Myth?

Text by: **Shakti Ranjan Banerjee** (Ex WWF India. Hon. Director, Wildlife Protection Society of India)

[Photo Credits: Swimming Tiger © Apurba Chakraborty. Swamp Tiger © Abhishek Mistry

Tiger Release © Himansu Malhotra]

On 8 Feb 2002 I had gone to make a documentary film from our WWF-India, West Bengal state office on the Environment Awareness campaign program at Bali island, Sundarbans. I was accompanied by Dr Saswati Sen, the then Senior Education Officer and Himansu Malhotra, a well known documentary film maker from Delhi who was making the film.

*In the evening I was sitting on the river bank watching the beautiful Sundarbans forest on the opposite side of the river. The villagers were worried about me sitting alone as there were frequent Tiger straying in the village. Due to the insistence of the villagers, I decided to retreat to my hut along with the film crew.*

The next morning - there was a commotion that some Tiger had strayed into the island through the exact spot where I was sitting the previous evening. We also found pug marks of a tigress which had gone inside the village. After some search the tigress was located close to the main market of Bali ie Bali Hatkhola. I reached the spot. The Tigress was sitting on a pine apple garden surrounded by a crowd of approximately five hundred people.

A local NGO named Bali Nature and Wildlife Conservation Society - Secretary Anil Mistry was trying to appeal to the crowd to move back. I could see the panic in the face of the tigress standing within twenty feet. Disturbed, the Tigress ran inside a hut mauling a woman and a boy who were standing on its path. The society members quickly closed the door to keep the Tigress trapped inside. Since there were no mobile operative in those days, messages about the Tiger straying could be intimated to the Chief Wildlife Warden at Kolkata through radio telephony by the local range office at Bidya. In the mean time a team from Gosaba Police Station reached the spot so that the Tigress was not harmed.



Photo © Himansu Malhotra

The Tigress was tranquilised and placed in a cage to be transported to a place Katuajhuri on the eastern most part of Indian Sundarbans for its release. I was at the spot of release and witnessed the entire operation. This was a unique effort in conserving the Royal Bengal Tigers.

There is a constant tension between the villagers who venture inside the forest for fishing, wood, crab hunting, honey gathering etc and the opportunistic tigers who look for an easy meal. Vengeance killing by villagers was common as and when tigers strayed in the villages.

Before this incident, a Tiger which had strayed in at a place Pakhiralay on 31 August 2001, was killed and cut into pieces and thrown into the river.

Again another Tiger which had strayed in at a place Kisorimohanpur near Kultali, was shot dead by the villagers on 1 November 2001. This was the third incident from August 2001 and this time the strayed in Tigress was returned back to the wild - safely. As per record, there was no vengeance killing of Tigers in Sundarbans thereafter.

### **THE MANEATER THEORIES**

Sundarbans' tigers were thought to be man-eaters. It was believed that intake of saline water was the cause for the tigers to turn to man eating. The scientists and the Forest Department devised various techniques to discourage the man eating habit of the Tigers. One such method was to dig fresh water ponds within the forests to make availability of such rain filled water for Tigers to drink.

However, it was found that in spite of the fresh water ponds, Tiger would also drink saline water from the creeks and rivers and hence this theory could not be proved.

There was another concept of placing the dummy of a human being which was connected with a battery. Towards the evenings the dummy was soaked with human sweats and the battery was connected to give the Tiger a feel of electrical shock. It was presumed that a Tiger would get a shock on touching the dummy there by instilling a fear of humans. Again this experiment could not achieve success as tigers completely avoided such dummies.

*It is a fact that Sundarbans tigers avoid attacking people in a group and after careful stalking, pick up a lone individual. Hence it will be safer to stay in a group while entering forest rather than being singled out.*

The Forest Department advises the honey gatherers to use human masks at the back of their heads which may be effective to a great extent. Since the tiger generally strikes its prey from the neck, breaking the cervical vertebrae causing instant death, the mask would confuse the tiger as to the location of the neck giving some time for the victim to raise alarm. How successful is this process to confuse a tiger is not known. But the honey gatherers are still using this mask in both in India and Bangladesh.

There were a total of nine subspecies of Tigers existing in the Asiatic region since the beginning of the twentieth century. We lost four sub species namely Caspian Tiger (*Panthera tigris virgata*), Bali, Indonesia Tiger (*Panthera tigris balica*), Javan Tiger (*Panthera tigris sondaicus*) and very recently South China Tiger in the wild (*Panthera tigris amoyensis*).

The surviving subspecies are Indian Tiger (*Panthera tigris tigris*), Indo-Chinese Tiger (*Panthera tigris corbetti*), Malayan Tiger (*Panthera tigris jacksoni*), Siberian or Amur Tiger (*Panthera tigris altaica*) and the Sumatran Tiger (*Panthera tigris sumatrae*). The Sundarban Tiger is the same sub-species as the Indian Tiger or Royal Bengal Tiger. Having been adapted in the mangroves of Sundarban, it can also be termed as Swamp Tiger. In fact, Sundarbans is the only mangrove in the world where Tiger survives.

As per the famous hunter naturalists Jim Corbett & Kenneth Anderson, Tigers generally avoid killing human beings except for the following circumstances:

1. Tiger has become old and is unable to hunt its natural prey
2. Tiger may have been inflicted with bullet injury or other injuries including porcupine quills being embedded on its paws (while hunting porcupines) disabling it from hunting its normal prey.
3. If the mother was man-eater, the cubs too take to man eating.

But once a tiger becomes a man-eater, then it prefers human flesh and will not hesitate to go into the villages to kill humans. From Jim Corbett stories, we come to know as to how a Tiger taken to human killing had created terror in the region.

But once a tiger becomes a man-eater, then it prefers human flesh and will not hesitate to go into the villages to kill humans. From Jim Corbett stories, we come to know as to how a Tiger taken to human killing had created terror in the region.

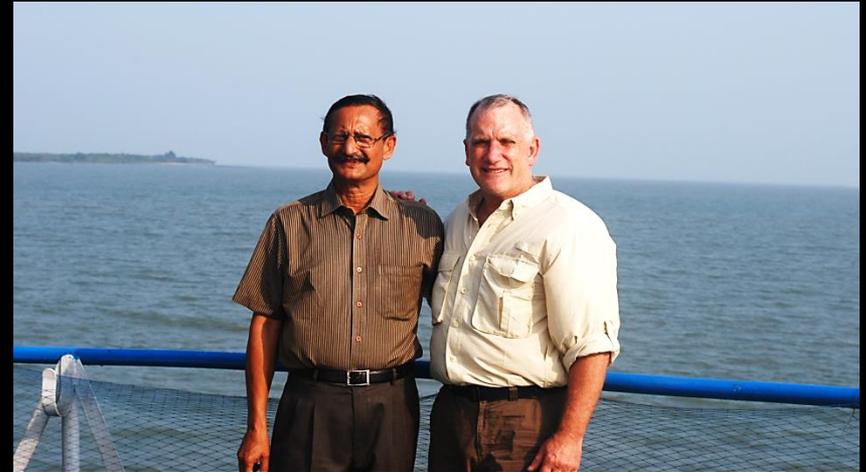
*In the case of Sundarbans tigers, people going in to the forests for fishing/crab collection/honey gathering sometimes are killed and eaten by tigers. But whenever tigers stray in the villages willingly or mistakenly, they never kill humans. People may get injured on many occasions for going close to the animals foolishly.*

Tigers straying in the villages mostly go for cattle or goats. The tiger stray incident at Bali in 2002 bears evidence to this fact. I remember in 2004, a girl named Rupali Bauli was killed by a Tiger in the village of Samsernagar at the easternmost edge of Indian Sundarban. In all probability it appears that the Tiger mistakenly killed the girl by pulling her out of the hut taking her as an animal and left her when her parents shouted.

I can cite another incidence in a village Satyanarayanpur at Bali when two young tigers consisting of a male and female had strayed in. With the intervention of the Forest Department, the tigress was trapped in a hut whereas the Tiger went inside the paddy field. The villagers insisted on tranquilising the tiger in the paddy field first. Late Gopal Tanti, the expert tranquiliser accompanied by Anil Mistry and armed forest guards spotted the tiger while standing over a bundh (raised ground separating the paddy fields). A tranquiliser was fired hitting the Tiger. The Tiger immediately charged and in the melee Anil Mistry fell backwards on the paddy field with Gopal Tanti falling on his right leg causing injury to his knee and he was unable to stand and run back. The guards in defence tried to scare the Tiger by firing. Unfortunately an unintended bullet hit on the left side of the animal. Ultimately the tiger had to be put to sleep. This was a very unfortunate incident though it proves that - had the tigers intended to kill any human beings, they could have easily got away by carrying a human. Anil Mistry had to undergo an operation on his knee at a Hospital in Kolkata.

Tigers in Sundarbans are vital to keep the ecological balance of Nature. Because of its peculiar habits, strength, power, valour and spirit, the Mangrove Tiger has given rise to many legendary beliefs. The Tiger is admired, feared and has been attributed to many supernatural qualities. It is believed that Tigers were controlled by Dakshin Ray, the ruler of the forest who used to kill people going in to the forest through his Tiger disciples. Banobibi (the lady of the forest) accompanied her twin brother Shah Junglee came to the region to alleviate the distress of the people and challenged Dakshin Ray who was defeated after a fierce battle. Since then anybody before entering Sundarban forest, would worship Banobibi and take her blessings so that they remain safe from the wrath of the Tiger. There are many Banobibi temples inside the forest camps and also inside the villages. People going inside the forest for Honey collection would perform the worship of this deity. A unique part is that this mythological deity is worshipped by both Hindus and Muslims alike. I have noticed this deity being worshipped in Bangladesh as well.

There are also certain category of people called Samans/ Saindars/ Gunins who are believed to possess magical power over tigers and are credited with being able to ward them off with spells. The team of Honey collectors (Maulis) and wood cutters (Baulis) hire such people to protect themselves from the tiger. I really cannot comment on their efficacy, but on many occasions these people get isolated to display their fearlessness from tigers and fall victims to Tiger attacks. One famous Gunin by the name of Phoni Gayen from Dayapur village of Sundarbans had narrated many such stories and also had been attacked by tiger several times and survived through sheer luck.



I was fortunate to have accompanied Late Dr Alan Rabinowitz, a well known international expert on Tigers and at that time Chairman of the Panthera group of which the famous Dr George B Schaller was also a member. We were sailing aboard MV Paramhansa of Vivada Cruises while New York based White Mountain Films were making a documentary film titled “ Tiger Tiger “ in both Indian and Bangladesh Sundarbans. Dr Rabinowitz had agreed to my views on the peculiarities of the Sundarban Tigers. Many scientists have carried out various studies on the habit of the Swamp Tiger and produced their own analysis. I have spoken to many Forest Officers, guides and villagers of Sundarban and they all feel the **Swamp Tiger is not a true man-eater.**



# 'Mangroves'

Text by Dr Debdut Ghoshthakur (Ex Chief Reporter, Anandabazar Patrika, Kolkata)

## Introduction

It was the night of 20th May 2020. A cyclone that hit the coast of South 24 Parganas and straight way hit Kolkata with a speed of 130kmph. Trees got uprooted. Electric poles overturned. Electricity went off. Some residents of high risers in the city started crying during the cyclone as they thought it might be their last night. Electricity returned after 7 days in some parts of City of Joy. There was no water. Whole city was under lock down and blackout too. Residents Kolkata will never forget those seven days.

In last few years Kolkata has experienced many cyclones namely Aila, Pheni, Bulbul, but Amphan was different. The other storms got a fence wall of mangrove in front of them. Mangroves acted as resistance before the strong wind and eventually when they hit Kolkata they lost their strength subsequently.

## Cyclones in Bay of Bengal

Scientists say, due to climate change strong cyclones are forming at Bay of Bengal very frequently and they are becoming more powerful day by day. So it was the destiny of Kolkata. During tsunami of 2004, many tourist spots of Andaman, Thailand and Sri Lanka were destroyed completely. Thousands of people died. But the areas which had thick band of mangroves survived.

*This was our final call. But we did not give ears to it. Yaas followed soon after.*

## The Mangroves

The leaves of the mangroves are fleshy. Strong stilt roots come out from different parts of the trunk and go inside the mud. The stilt root embrace one another under the water and thus held the soil. If you look upwards you might find some cylindrical objects hanging here and there. They are young trees. As germination is not possible in saline water, seeds germinate in the fruits and when roots develop it falls down in the soil. This unique adaptation of mangroves is called viviparous germination.

### **Dwarf plants**

In early 2000 when remote sensing technology has been introduced to know the density of forest cover - the real scenario of Sundarbans came out. In the satellite image it was found that the middle portion of the jungle the height of mangroves have significantly decreased. Due to these dwarf plants, the middle part of Sundarban looks like a bald. The baldness of Sundarbans has been increasing.

It is a type of adaptation by the mangroves. The landscape Sundarban is convex ,i.e. like the dorsal part of a tortoise. The middle part where the jungle is dense, that part is elevated . The elevated regions of Sundarbans get flooded during the high tide water from sea (mixed with nutrients brought by rivers and canals during low tide). As the flow of sweet water to Sundarban becoming low day by day the supply of nutrients to the higher part of the mangrove forest has been decreased. The salt concentration increased. In this new condition adaptation occurred. The tall Sundari trees became dwarf.

### **Supply of Sweet Water**

Actually we the humans are responsible for this. If you had been to Canning in the eighties, you would have seen the ferocious Matla river at the side of the railway station. It was a port city in the British regime. The port city was named after lord Canning , a British ruler in India. That time Calcutta was the capital of India and Canning was the gateway of Sundarbans as well as Bay of Bengal.

If you now go to Canning you will have a complete different view. You will have to take a auto rickshaw to go to the river. The upward stream of the river is no more. Either the river bed is occupied by brick field or people occupied it for prawn cultivation. Not only Matla, the upstream of many other rivers are no longer there. Water table is drying up and so is the supply of sweet water to Sundarbans going down day by day. And the result is too bad. The 'new' mangroves are now weaker and they cannot withstand strong wind. They get easily uprooted . So the wall of mangroves becomes weaker day by day.

### **Last days of Kolkata?**

We have already prepared our graves which might destroy our loving 'city of joy' one day. A cyclone of the capacity of 150kmph may strike one day and the city will tumble. A new novel will be written like The last days of Pompei - The last days of Calcutta.

Regards

Dr Debdut Ghoshthakur

Ex Chief Reporter, Anandabazar Patrika, Kolkata





# Sundarbans – Plight and Preservation

Text and Photographs by: **Indrajit Sengupta and Anupa Roy**

Indrajit Sengupta

Jungle Rhythms - Monsoon 2021





This isn't the first time that Sundarbans has borne the brunt of a cyclone, and it rather won't be the last either. In the last 23 years, the area has witnessed 13 super cyclones. Since 2019, there have been three cyclones in 12 months - Fani in May 2019, Bulbul in November 2019 and Amphan in May 2020.

Now, present day - June 2021, it is reeling under the onslaught of yet another Cyclone - Yaas which hit Sundarbans with brutal effect on May 26, 2021. That day also happened to coincide with a Blood Moon Lunar Eclipse and thus extreme high spring tides, caused by the effects of the full moon and the Lunar Eclipse. High tide means a higher water level, but when combined with the full moon and the eclipse, this add another level of powerful surge of water. This swept in unhindered and drowned a huge part of the islands under several feet of water. It was like as if a sea has been formed where once there was land with homes and agricultural fields. All vanished overnight.

There are many factors that attributed to such severe damage to this land. **Deforestation** being the key factor.

Mangrove forests are well known for their ability to reduce the intensity of storms. In 2013, the University of Florida pointed out that mangroves can **even reduce hurricane intensities**, like the North American cousin of the cyclone, weaken from Category 5 to Category 3 through the "Mangrove Reduction Effect".



Over the last 250 years, cracks have formed in the protective shield offered by the mangrove forests of the Sundarbans. In 2012, Bengal State Action Plan on Climate Change noted that five percent of its forest cover had been lost since 1989, in spite of the area being designated as a protected biosphere reserve. A noticeable indication of this loss is the vanishing Sundari tree - the dominant species of mangroves in the Sundarbans which gives the area its name. The tree is now a rarity, classified as endangered by the International Union for Conservation of Nature. The Sundari tree is slowly dying due to numerous reasons - as per a report by the Indian Institutes of Technology, "excessive flooding", "increased soil salinity", and "cyclone-induced stress" are the main reasons.



Samsung Quad Camera  
Shot with my Galaxy M31s

Sundarbans' damage scale caused by Yaas due to loss of mangrove protection

Deforestation is happening due to the unsustainable cutting of trees. Despite regulations and protected status, there is a **thriving timber trade** which is seriously damaging the ecosystem and its ability to survive.



Temporary embankments washed off by Cyclone Yaas



**Rising temperatures and Salinity** is another major cause for the proliferation of cyclones in these areas. Mangroves grow in water within a certain temperature tolerance range. If this range overshoot, the mangroves slowly start to die. Recent study has shown that the temperature in Sundarbans has seen a significant rise over the past decades.

Compounding the issue is the fact that the sea level has also been rising by more than the average level. Salinity in the water increases whenever a cyclone strikes, since seawater enters the rivers and then the riverine islands, this increases the saline content of the soil which, in turn, leads to stunted growth and weak roots for the mangroves.

Humans living in the Sundarbans are also living on the edge. Embankments are thus vital in Sundarbans to stop the flooding of human establishments and property. A project has been started to develop and build concrete embankments in Sundarbans, this project is ongoing as there is a lot of area to cover. Embankments of human establishments and The areas where work is pending - temporary mud embankments have been made. These embankments wash away during every major storm and increase the effects of loss and damage. Even when the local residents try to build up more effective embankments using cement bags to reinforce the mud embankments, this is not always fool proof when faced with severe cyclones and high levels of water which overflow and wash away these temporary stoppers. These concrete embankments are a great saviour as they effectively stop the overflow of water and are strong enough to withstand storms without majorly damaging the fields and villages beyond its perimeter.



Temporary embankment rebuilding work in progress after it was washed off by Cyclone Yaas and intensely flooded.

2021/5/26 10:03



**Cyclone Yaas flooded  
the Sundarbans  
landscape.**



Sundarbans now needs rehabilitation, restoration and long term work to conserve and protect this important ecosystem from permanent and irreversible destruction. There are many projects and work that has been undertaken to preserve and save Sundarbans.

Sundarbans cyclones each time have caused severe damage and losses in every sphere. During these calamities, the people needed emergency help and relief aid which had to be provided on urgent basis. Saving Tiger Society has for the past few years, been providing relief aid in any form that has been required in the affected and damaged areas. Villages and communities were provided with food, clothing, temporary shelters, sanitation equipment. The NGO also set up community kitchens where food gets cooked fresh everyday for those who don't have access to food. These kitchens are run for lunch and dinner for as long as there is genuine need for the people.

Medical camps are organised by Saving Tiger Society for check ups and qualified doctors are at hand who conduct the check ups and distribute medication as per their requirement. These camps and the medicines are free for the people. During the last couple of natural disasters, along with the all the relief aid, generic over the counter medicines for fever and common ailments were also distributed.



**Saving Tiger Society** is an NGO based in Kolkata and who have been working in Sundarbans for the past 13 years or so. The NGO works primarily for wildlife conservation however they also need to work for the community and look at the development and progress of the inhabitants living in the areas which are sensitive to man animal conflict and require help for the purposes of conservation and protection of both the wildlife and the human inhabitants.



Cyclone Yaas has caused extreme damage which would take significant time to recover from this disaster. The flooding which has been the main destructive element, has totally inundated areas to oblivion. Land where there used to be entire villages with homes and agricultural fields and livestock are now under vast expanses of water, looking like large unbroken lakes. Apart from homes, there is loss of livelihood, loss of agro-land with almost no hope for recovery. Weeks after the cyclone has gone, there still is stagnant water several feet deep. People are homeless with no clothes or food, no place to go and no place to rebuild their homes.

With the current pandemic, the way we now move around and conduct ourselves has changed drastically. Items like masks, sanitizers, clean environment and personal hygiene has become the new normal and very vital part of life. Keeping in mind these needs, distribution of all such products are also handed out to the people - masks, soaps, bleaching powder (for the outside areas). Sanitisation of certain areas were also done.

Since Cyclone Yaas hit Sundarbans, the NGO swung into action from the very next day despite the absolute decimation of many villages and entire areas which got flooded due to the high tides. With no roads and water still gushing into many areas making it impossible for travel, with the use of boats and surmounting every possible obstacle to reach certain destinations, the NGO managed to reach relief supplies to stranded people without too much delay.

A survey was conducted to ascertain which areas were most affected and in need of aid, community kitchens were set up which is, as I write this, still serving food even today. Hot meals are cooked for both lunch and dinner and everyone who comes there are fed.





Cyclones and storms in Sundarbans have now become a yearly feature. There is enough destruction to warrant serious relief aid and help in recovery. This means that governments and NGO'S all need to collaborate and bring some order to help restore normalcy there. Recovery and rehabilitation is also a big requirement, all of which is cost prohibitive, if it is done on a temporary, short term basis.

This situation needs long term plans and solutions. We have experts who are looking into the overall scenario and also putting together projects that will help Sundarbans and also it's inhabitants. The efforts are on-going to preserve and protect.

Saving Tiger Society (STS) is doing it's best possible, working day and night trying to alleviate the suffering to the best of its capabilities. However without help and support it is impossible to continue helping people survive. All the work we have done and achieved would not have been possible without the generous, empathetic support of our supporters and donors. We also give a special mention to Phil Davis of Tiger Awareness in United Kingdom who has been our constant support throughout the years.

STS is available at [www.savingtiger.org](http://www.savingtiger.org).





# A Leopard Village

By: Dr. Oishimaya Sen Nag - Managing  
Editor (World Atlas)

A country of over 1.3 billion people, India has surprisingly managed to conserve its wildlife relatively well. Adherence to the Indian culture is one of the reasons for the country's success in conservation. Across the length and breadth of India, one can witness the unique bond that the people of India share with the wild animals. The levels of tolerance are often high. Be it India's financial capital of Mumbai or a remote Indian village, one can see Indians sharing space with wild animals including large predators like tigers, leopards, and lions. In this article, I describe one such place I had visited recently - a sleepy little village in Rajasthan, and its unusual residents.





### A 'SLEEPY LITTLE VILLAGE' – NARLAI

Located at the foot of a towering granite hillock called the Elephant Hill, Narlai is a small village with densely packed homes and god-fearing residents. Identified by the bright red turbans worn by their men, the villagers are primarily members of the Rabari community. Their ancestors were nomadic herders who would travel far and wide in search of new pastures for their livestock. With changing times, the Rabaris have now settled down and started practicing crop cultivation as well. However, enter a Rabari home, and you will be greeted by the sight of large herds of goats, sheep, and cows. Livestock continues to be the pride of the Rabaris and their primary source of livelihood. These people live simple lives steeped in traditions. Temples are found in every home here and also dot the entire landscape.



## THE ARAVALLIS LANDSCAPE

It is not just the people but the landscape of Narlai is also very interesting. Located at the foothills of the Aravallis, Narlai has a rugged, undulating terrain surrounded by hillocks and massive rock outcrops and dotted with lakes and streams. The vegetation is typical of the arid conditions here where summers can get uncomfortably hot. Rainfall is, however, not as scarce as in the more arid desert regions of Rajasthan and locals claim that Narlai transforms into a completely different place during the monsoons.



## THE LEOPARDS OF NARLAI

Narlai is also a nature lover's delight. Just step out for a walk outside the village and you can enjoy the sights and sounds of many species of birds. The lakes here are full of crocodiles that can be seen basking in the sun. Mischievous monkeys hover around the temples here in the hope of morsels of food from the temple visitors. *But the most precious residents of Narlai, the ones that attract tourists to this remote village from across the globe, are its elusive leopards.*

Narlai's leopards have earned the village a reputation as the "leopard village." And it is well-justified. Almost every day, as the sun sets on the horizon, and Narlai's human residents retire into their homes to call it a day, the elusive big cats, the leopards, silently enter the village searching for their meal. Feral dogs and an occasional livestock animal become easy prey for these big cats who then return to the hills to relish their meals.

When I came to learn about these leopards of Narlai, I was surprised to know how people live with such predators in their midst. We have grown up learning about the colonial era; their interpretation of India's wildlife and man-eating predators and a sporting means to eliminate carnivores from the country. Narlai, however, represents the Indian way of living with wildlife in harmony.

My curiosity compelled me to speak to many of Narlai's residents about their thoughts on living with leopards. I was taken aback when I learned that many of them had not even seen a leopard in their lifetime. The closest they had come to leopards was seeing their pugmarks in the mud of their crop fields and occasional carcasses of kills left behind by a leopard in a hurry. Yet, they all knew about the existence of these animals and their frequent visits to their village. Also, although the leopards prey on their livestock, there is little collective anger among the people of Narlai. It appears that they have accepted the presence of these big cats and their way of life. Because if the thousand-strong population of Narlai wanted to eliminate about a dozen leopards, it would not have been impossible, would it? This tolerance of the people might change, however, if leopards attacked humans. But Narlai's naturalists claimed that such incidents are unheard of. The leopards are also wary of humans and like to keep a safe distance from them.

Tourism does increase the star value of leopards for Narlai's residents. For tourists visiting Naralai, leopards are a major attraction. They come to see them with their own eyes. Equipped with binoculars, cameras, and knowledgeable naturalists from the Rawla Narlai resort in the village, visitors are almost always gifted with sightings of the elusive leopards of Narlai.



Tourism is only a nascent industry in the village, and until now, it was the culture of tolerance that had allowed the humans and leopards of Narlai to co-exist. Such models are still common in many parts of India but conservationists fear that this might change as India reels under the pressure of climate change and other crises threatening the planet today. Experts predict that as people will get more dissatisfied with their way of life, their behavior towards wildlife will change. Hence, in addition to promoting the culture of tolerance in India, sound policies and laws and their proper implementation will become more important than ever in the coming times.



# The Green Carpet

Text and Photographs by: **Sunnapu Lekhana** (Executive Member – Wild Roots)

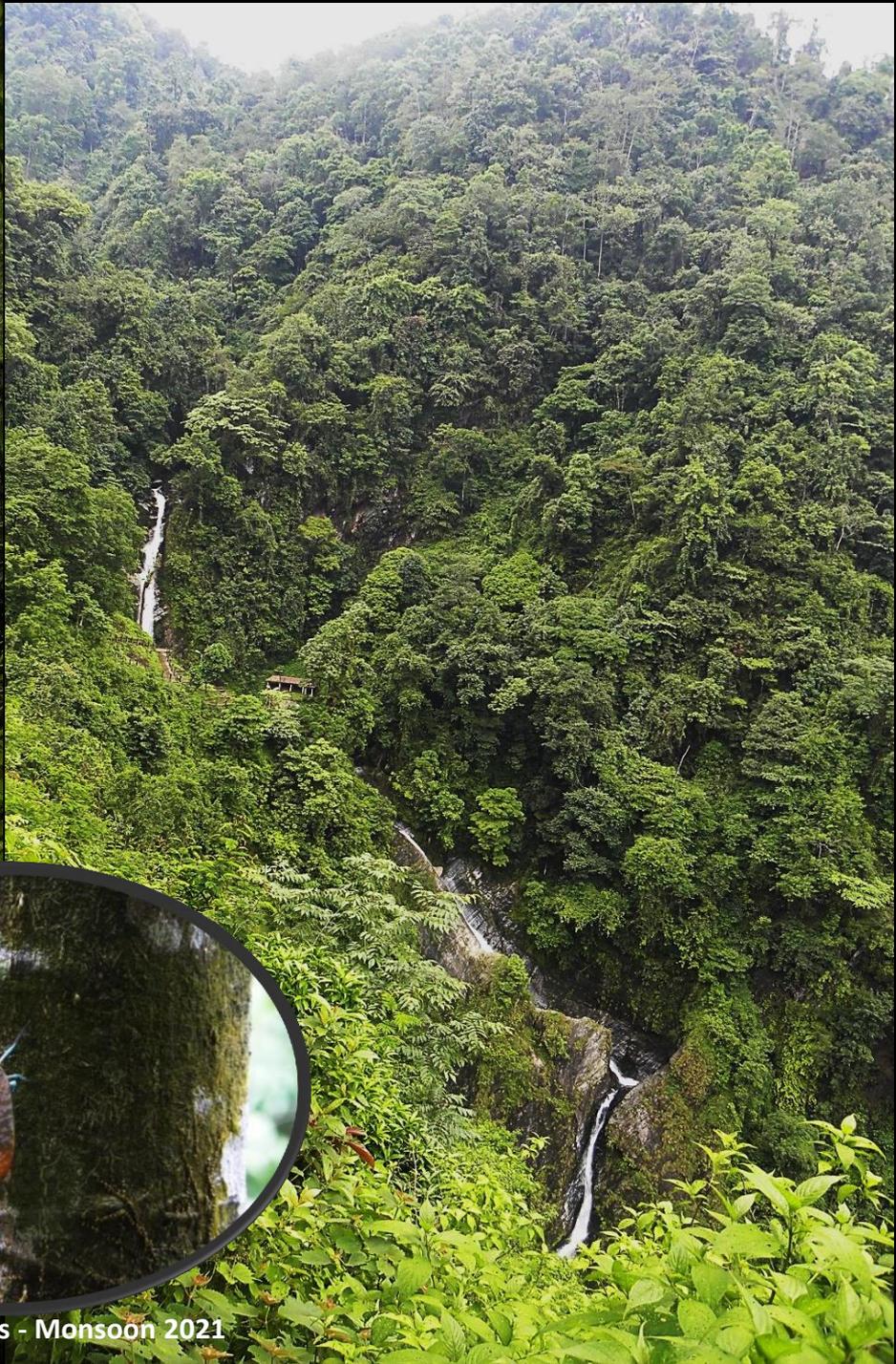
Jungle Rhythms - Monsoon 2021



*Living in the vicinity of a deep jungle, surrounded by endemic flora and fauna is really a nature lover's treat. Getting the view of majestic range of Kanchenjunga right from the balcony is indeed worth all the efforts. Just behind the cottage, was a damp shady zone, one could observe a variety of lower groups of plants like mosses including Marchantia polymorpha and species of Polytrichium.*

The lush greenery of Neora Valley National Park, the warmth of the sun and the mild chillness among the trees were the elements of freshness. With a friendly mountain dog as my perfect companion, I used to trek along the forest trails of Rishyap - *Ri* stands for mountain peak (some say it is *lofty*) and *shop* means age-old tall trees in Tibetan.

The forest was full of surprises. Never before I have witnessed such richness in biodiversity in such a small patch of pristine forest. Being a botanist, the first thing which caught my attention was the rich variety of ferns growing beside each other. Some were dichotomously branched (*Dicranopteris linearis*), some with prominent upright spiral young Fronds. Sword ferns including species of *Polystichum* and *Nephrolepis* growing beautifully and ferns of family Aspleniaceae growing as epiphytes on the trunks & branches of trees covered with thick blanket of algae and moss. The linear arrangement of sorus in a mature frond of *Polypodium* *sp.* depicted the idea of continuation of generations of these lower groups of plants amidst the forest bed.





A bunch of fresh wild Enokitake mushrooms were found growing in the old logs of trees. *Russula* sp. a fairly large, and brightly coloured fungus caught my attention immediately. It is known to be one of the recognizable genera among mycologists. One of the shrubs which I was able to identify was Tailed-Leaf False Nettle (*Boehmeria ternifolia*). Species of this family, Urticaceae are mostly edible with medicinal properties. *Callicarpa macrophylla* is used in Ayurveda as cooling, refrigerant, deodorant and antipyretic, leaves are applied in rheumatic joints.

*Arisaema consanguineum* (Himalayan Cobra Lily) is one of the exotic looking plants I have ever witnessed till date. The unusual flowers consisted of a dark, purple brown hooded spathe marked with fine green and white strips. Handful of these lilies were found growing in partial shade of shrubs and trees. I also spotted a peculiar unidentified insect which baffled me the most. And amongst all these floras, one could sense the interactions taking place between different organisms in their ecological niche.







At Lava, we stayed in the cottage of the Forest Department, the premise situated within a pine forest. Lava is at a height of 2350 meters (4 Km downhill from Rishyap). Here, the chirping of birds would be my morning call, and I would notice Olive-Back Sunbirds right in front of my cottage. While taking a leisure walk in the early morning sun, I once came across a bunch of beautifully grown white orchids (*Coelogyne nitida*). The presence of lichens in all the trees indicated a pollution free environment of Lava.

On a visit to the nearby Changey water falls near Lava, I saw distinct varieties of insects. Some of the brightly coloured fluttering butterflies included *Cirrochroa aoris*, *Euploea mulciber*, *Cyrestis thyodamas*, *Neptis sappho*. Groups of Millipedes, differently patterned Leafhoppers and Spiders dominated the place with their abundant presence. The green background of mountain, primitive old shelter covered with vines just beside the breath-taking water falls added to the beauty of this place.

This habitat is also the home of the endangered Himalayan Red Panda.



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# Biodiversity

Text and Photographs by Kamal Kishore Srivastava (Ex Joint Secretary – Govt. of UP)



The reported loss of 90% biodiversity under four Biodiversity hotspots is alarming. It should not only raise eyebrows; it is a cause of serious concern. The fast vanishing green cover, habitat destruction and insidious industrial expansion are but few causes of massive destruction and extinction which leads to colossal loss of valuable protoplasm and gene pool. It widely affects the globe and in turn, life of human beings.

Biodiversity has become a frequently used catchword. Generally speaking, it is this diversification in the natural world that gives us a variety of things to eat and enjoy. Various types of foodgrains, fruits and vegetables are part of divergent life forms. The permutation and combination of genetic materials have given rise to various genera and species. They add colour, variety and aesthetics to our life besides giving us food and fresh air necessary for survival.

India is a country blessed with numerous and divergent life forms is evident from the fact that it houses over 45000 species of plants and 91000 species of animals. The climatic conditions, topography, numbers of biomes, wetlands, marshlands and mangroves are the cause of such divergent life forms.

Sun, the eternal source of energy, fuels the vigour to run lives. The abiotic and biotic factors combine to form an ecosystem, a linchpin of all activities. It consequently forms a vital but complex food web among all life forms - flora and fauna - which trap energy to circulate in the system.



Disturbance in the balance and/or disruption in cycles leads to the situation the world is in. The onus is conveniently put onto the faulty development and priorities that led to the present or impending catastrophe.

A beaten argument that undue human intervention in the natural cycle causes havoc is usually put forth. The argument of undue human intervention is convincing and explains most of the catastrophic occurrences well. We have numerous incidences of natural fury translated into disasters, especially in the fragile Himalayan ecosystem. The one which is harrowingly itched in our minds is the flash flood and resultant widespread destruction in the Kedarnath area of Uttarakhand in 2013. In addition to it, tormenting incidences of cloudbursts and incessant rains have become frequent in the Himalayan region causing rampant loss of life and property; the latest in the series was in the month of May this year. However, lessons are yet to be learnt. Encouraging tourism and the creation of artificial amenities has led to a surge in tourist activities. It severely damages the ecosystem due to frequent human activities, heavy transport operations and the creation of luxury.

Is it the only cause of the loss of biodiversity? To a maximum extent, yes. The development and economic well being of human society are justified but the fact that overexploitation of natural resources is creating imbalances can also not be overlooked. The artificial and lopsided development causes unabated human traffic and widespread habitat destruction. However, it is not the only cause. Extinction and organic evolution are also responsible.

Since the emergence of the earth as a planet, it took billions of years to reach its current position. Many life forms emerged and later vanished in oblivion. Huge trees, bogs, morass and gargantuan animals had been the usual life forms of the aeon. They roamed freely, proliferated and died their natural death.



Suddenly, because of still unsure causes, they vanished and petrified to divulge their existence millions of years thereafter by scientists. Life travelled through phases. The animal and plant world evolved organically in a phased manner. From unicellular to multicellular, from incipient all-in-one to complex organisms and from them to highly evolved human race - all are the outcome of organic evolution.

The evolutionary process of the past, however, has been gradual and organic. It replaced a particular species only when the new one was adapted to the changed condition. The current pace of change is not gradual but drastic. It does not give time to evolve a new life form to suit the change creating a sort of vacuum. It is proving harmful for the smooth transition from one to another more advanced life form. The species are fast vanishing. The reported extinction of 25 species is a glaring example. It is the era of Holocene extinction, dangerous not only to the biotic and abiotic components of the ecosystem but for the overall existence of the most beautiful planet in the universe that possesses water and life - the earth. The drastic change shocks the delicate eco-balance. This needs to be taken care of. The policymakers and experts should moot out a congenial way out for sustainable development vis a vis environmental protection.



## **Tuskers of Sri Lanka - The Deciding Decade**

Text and Photographs by: **Rajiv Welikala**



*My love and passion for the wild tuskers of our land runs deep within my veins. Seeing a tusker in the wild is a sight to behold, when he steps out of the forest canopy and into the sunlight, he strides along the plains like a colossus showing absolute confidence and dominance over all before him. The female elephants rumble and trumpet in excitement and the other males move away in fear. The tusker truly is the king of the Sri Lankan wilderness.*

*Tuskers constitute only a very small proportion of the entire elephant population, and are scattered across the dry zones of our country. To encounter one in the wild is extremely rare, and when I do find one, the spiritual and emotional connection I have when making eye contact with him is beyond words. I sometimes feel they are trying to tell me something, perhaps they know that their days in this land are outnumbered and that their future is uncertain.*



Throughout the years the tusked males of Sri Lanka have been diminishing gradually, due to many reasons. From the times of the kings of old, the elephants of Sri Lanka were prized and hence many were exported to neighbouring kingdoms. Further tuskers were prized as beasts of war and stately purposes which also could have affected the wild population. Finally as the colonials arrived, elephants widely considered vermin they were killed in their thousands for sport and pleasure. Among those killed the tusker would be a prized trophy hence targeted even more. Post-independence many land management and allocation projects further marginalized the wild elephant populations. Big elephant drives such as the ones with the Deduru Oya herds further resulted in deaths of tuskers and elephants alike. As a result of these actions we now end up with a small fraction of the tuskers that would have been roaming the island. Instead we have mostly tuskless bulls or “Makhnas” as they are referred to in mainland india. The superior feature of ivory on these bull elephants are gradually being lost through time.



It may come as a surprise to many that the majority of tuskers and elephants are found outside the protected national parks and sanctuaries. These giants are scattered across small pockets of forests which are surrounded by an ocean of human settlements. When I venture into certain areas in search of them, I am in shock that such large animals could live in such a small space just next to a busy, bustling town. This is the harsh reality these elephants have to face – habitat loss.



Over the decades the habitats of these animals has shrunk whilst thousands of human settlements have sprung up around them. This isolation has resulted in loss of lives from both sides of the fence. Due to sheer desperation the villagers in the conflict areas have resorted to drastic means of retaliation such as the use of the dreaded “Hakka Pattas” which is a small homemade explosive which is hidden among vegetables, waiting to explode in the mouth of an unknowing animal. The death from such a device is astoundingly agonizing and it takes days to finally succumb to the horrific injuries. In turn villagers may lose their fathers, mothers and children overnight when they are caught unawares by a marauding pachyderm. I personally feel this is a war in which we cannot blame any side, as both are placed in a situation of utter desperation and hopelessness.

*When I think about the plight of the wild tuskers, I sense a very heavy feeling in my heart, because I know their future is unsure. Do tuskers and elephants still have a place in a fast developing Sri Lanka? Will he have a future where the only remaining tuskers are those poor creatures who spend their lives in chains, and occasionally parade themselves in lit up costumes to appease a nation’s view on culture? These are questions to which I do not hold the answer.*

The fate of the tuskers and all other wildlife lies in the hands of every Sri Lankan, not only the poor villagers or those that are in power, it is within every one of us. The deciding decade is upon us and the choice is ours to make.

Rajiv Welikala  
Manager - Classic Srilanka



# Wild Art – Winged Magic

Text and Art by: Esha Munshi



1. Red-Headed Trogon 2. Malabar Trogon 3. Narcondam Hornbill

Since I was a child I had a strong bond with colours. My bonding with colours continued throughout my formative years that turned to be a soul-soothing therapy than remaining only as a hobby. When I became an architect and interior designer, it created superb opportunities for me to play with the brights, the darks and the midtones and it enhanced my understanding of relationships among the colours.

When I entered the world of the birds, I realized that the Mother Nature has the way of creating some of the most amazing spectrum and combinations of colours which is beyond human imagination. I had started bird watching as completely independent hobby and have always been fascinated with the bird's display of colours through their feathers. From the most colorful to the very ordinary and drab-looking birds, each feather has its own beauty if observed in detail. Though it didn't come during the initial years of my birding, Intuitively my hands picked up the pencil and I drew my first bird, Malabar Grey Hornbill (*Ocyroceros griseus*).



1. Blyth's Pheasant



2. Oriental Dwarf Kingfisher



3. Black Headed Shrike Babbler

4. Black Throated Parrotbill

5. Blackburnian Warbler

6. European Bee-eater





1. Chestnut winged Cuckoo 2. Amur Falcons 3. Blue Jays 4. Indian Pitta

*As I started drawing and painting the bird, a whole new world of the intricate details of feathers unfolded in front of me, that perhaps is never visible while watching the same bird in the field. I discovered the finer details of each feather and the shades of colour each feather. With this newfound passion, a whole new world emerged for exploration. Not only that I started seeing many more colours but it also changed the way I see the birds in the field. Chestnut-winged Cuckoo (*Clamator coromandus*) is the bird which made me go to the depth of the finer variations of shades of a color.*

The birds I have painted so far have enhanced a deep understanding of colours and have kept me close to the birds even when I am not watching them in the field which gives me more time to spend with birds. Painting a bird has become my way of nature-walk. It has taught me that the art of creating a bird on paper is much more satiating than clicking a photograph in the field. To create a bird on paper which talks to you one needs to know the bird, its behavior and its habitat.

Today we do not find so many people involved and enthusiastic about the art of painting a bird which has lived for ages since pre-historic times through the medium of cave paintings of birds. I would wish to continue to paint the birds for as long as I can.

*There are various ways to conserve wildlife, but art provides an intimate connection that helps people feel the importance of protecting the planet. Through the power of true pieces of art, the viewer's eyes open and appreciate beauty and, through this, the wonderful uniqueness and preciousness of flora and fauna. Conservation then become implicit. Jungle Rhythms in this issue features Esha Munshi - our bird artist. If you wish to buy any bird paintings, do reach out to us.*



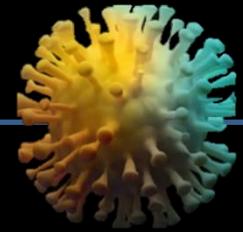
## Covid19 - Protected Areas Update - II

The Current Episode

Text by Diptarka Ghosh



# Jungle Rhythms Watcher



## Covid19 - Protected Areas Update - II

### The Current Episode

Text by Diptarka Ghosh Photographs: Nirmalya Chakraborty

*“Nature is sending us a message with the coronavirus pandemic. Failing to take care of the planet means not taking care of ourselves.” – Inger Andersen, UN Environment Chief.*

The COVID-19 pandemic has forced most humans to retreat within the safe confines of their homes, with the hope of containing the novel coronavirus. On March 25, 2020, Government of India had announced a country-wide lockdown to combat the virus and prevent the further spread of the infection. Conforming with the government orders, most of the Indian citizens had confined themselves at their houses and several working sectors resort to ‘work-from-home’ options. However, despite this raging pandemic, India’s Forest Protection Staff is continuing their most challenging work of protecting the forests and their wild denizens.

The Tiger Reserves, National Parks, and Wildlife Sanctuaries needed to be monitored and patrolled by the forest field staff regularly to keep illegal activities like poaching, hunting, human-wildlife conflict, and other wildlife crimes at check. Besides this, the patrolling staff also were needed to create ‘fire lines’ before the dry season to protect the forest from the wildfires.

A recent report from TRAFFIC, a leading wildlife trade monitoring organization, revealed that there has been a significant rise in poaching and wild meat consumption incidents during the lockdown. It is indeed difficult for the Forest Departments and their limited staff to continuously monitor and secure the forested areas during these hard times. Nevertheless, the brave and dutiful Forest Guards are trying their best to protect the forest from the rising poaching cases during the lockdown.

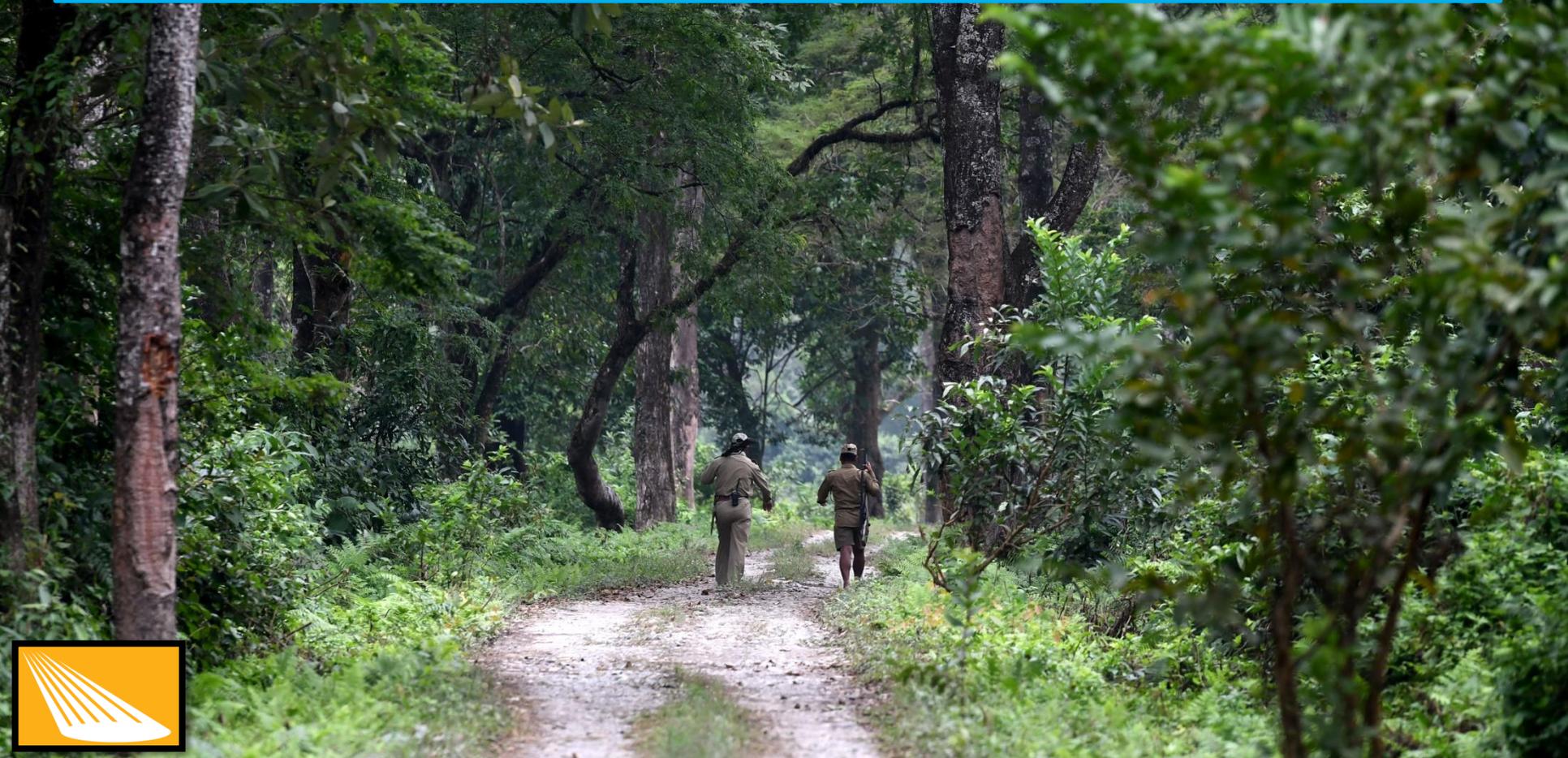
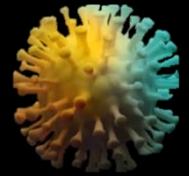


News of a 4-year-old Malayan tiger named 'Nadia' from New York Bronx Zoo, was tested positive for COVID-19. This raised much concern for the human-to-animal transmission of the novel coronavirus. Along with Nadia, her sister Azul, two other Amur tigers, and three other African lions also developed symptoms like dry cough and subsequent loss of appetite. Recently, on May 04, 2021, about eight Asiatic Lions at the Nehru Zoological Park in Hyderabad, have also tested positive for the COVID-19 virus. Taking these cases into account, the Wildlife Division of the Ministry of Environment, Forest & Climate Change, Government of India, and the National Tiger Conservation Authority (NTCA) have released a strict advisory to all the Chief Wildlife Wardens, regarding the "*management of COVID-19 in the Protected Areas*" and for taking "*immediate preventive measures to stop the spread and transmission of the coronavirus*". To reduce the human-wildlife interactions, **all National Parks and Tiger Reserves of the country were closed down till further notice**. Only those forest guards who are engaged in monitoring and protection of these areas were allowed to enter the parks and reserves while following all COVID protocols.

## Precautionary Measures Taken by the Forest Department

Keeping in mind the need for 'social distancing' and other COVID protocols, the Forest Department has taken the following precautionary measures for all their staff:

- Masks, handwashing soaps, and sanitizers have been distributed among the forest staff in the protected areas.
- The Forest Department has given instructions to the field staff, for wearing masks and maintaining a safe distance when on duty.
- Many 'Standard Operating Procedures' containing the necessary COVID appropriate guidelines have been released by various Central Wildlife Agencies, for the welfare of the forest staff and for preventing the spread of infection among them.
- The Forest Management Staff have also been instructed to keep a check on the work of field staff through virtual communications.



## Remembering Our Brave Foresters and Environmentalists

*Jungle Rhythms pays a tribute to all those who lost their lives due to COVID and to all the brave forest protection staff who continue to risk their lives and protect our forests during this critical times.*

### **Padma Vibhushan Sundarlal Bahuguna (Indian environmentalist, Pioneer of Chipko Movement)**

Sundarlal Bahuguna was born on January 9, 1927, in the village of Maruda in the Tehri district, in the hilly state of Uttarakhand. From an early age, Bahuguna led a life of social work and activism, inspired by the principles of Mahatma Gandhi. In the 1970s, Sundarlal Bahuguna pioneered the famous Chipko Movement in the Garhwal Himalayas of Uttarakhand.

The Chipko Andolan started on March 26, 1974, when the forest department decided to auction off a large area for clear-felling in the Reni village, Chamoli District, Uttarakhand. Local people including a group of 27 peasant women led by Gaura Devi marched to the forest and declared that they would hug trees and the loggers would have to kill them before axing the trees.

Sundarlal Bahuguna underlined the non-violent principles of the movement and in 1981-1983 he undertook a 5,000km trans-Himalaya foot march from Srinagar in Jammu and Kashmir to Kohima in Nagaland. Bahuguna coined a slogan for the movement: - *“Ecology is permanent economy”*. Sundarlal Bahuguna’s meeting with the then Prime Minister Smt. Indira Gandhi resulted in a 15-year moratorium on commercial felling in the Himalayan forests.

In the early 1990s, Bahuguna launched his protest against the construction of the Tehri Dam. In this movement, Bahuguna also used the peaceful and non-violent Satyagraha methods to fight against environmental injustice.

Bahuguna undertook a 45-day long fast at the banks of the River Bhagirathi in 1995, which he ended after the intervention of the then Prime Minister Sri P.V. Narsimha Rao. In 2001, he again sat on a 74-day long fast at the Samadhi of Mahatma Gandhi in Rajghat. However, despite all his efforts, Bahuguna could not stop the construction of the Tehri Dam. It is to be noted that in 1987, Bahuguna refused the Padmashri award in a protest against the government’s decision to construct the Tehri Dam.

In 2009, Sundarlal Bahuguna was conferred with the Padma Vibhushan for his contribution to environmental conservation.

On May 21, 2021, this 94-year-old noted environmentalist and social worker, passed away due to Covid at AIIMS, Rishikesh.

## Remembering Our Brave Foresters and Environmentalists

### **Padmashri PK Sen (IFS, Retd., Former Director – Project Tiger)**

PK Sen joined the Forest Department of Bihar in 1967, where he was involved in the day-to-day management of forests and wildlife in the state. He served as the Field Director of the Palamau Tiger Reserve and then rose on to become the Chief Wildlife Warden of Bihar. In 1996, PK Sen was put on Central deputation and served as the Director of Project Tiger, until his retirement in 2001. After his retirement, Mr. Sen joined WWF-India, where he served as the Head of WWF-India's Wildlife Division and its Tiger Conservation Programme, till 2006. After his stint at WWF, he joined the non-profit organization "*Ranthambore Foundation*" where he worked on spreading awareness and education on the conservation of biodiversity with a special focus on Tiger. In his illustrious career, PK Sen had been bestowed with numerous awards including Sanctuary Asia's Lifetime Achievement Award for Wildlife Conservation in 2002.

In 2011, PK Sen became the 1<sup>st</sup> IFS Officer from Bihar to be honored with the Padmashri.

On May 2<sup>nd</sup>, 2021, Padmashri PK Sen lost his battle with Covid and passed away after a massive cardiac arrest.

### **S. G. Neginhal (IFS Retd)**

Born on May 1, 1929, Sethuram Gopalrao Neginhal was an IFS officer and a noted urban forester. During his tenure as the Deputy Conservator of Forests in the Karnataka Forest Department, he was appointed by the then Chief Minister R. Gundu Rao, as the Chief of the 'Urban Green Project' and was assigned the task of creating greenery in and around the city of Bengaluru. Using his extensive knowledge of flora and fauna, Mr. Neginhal selected the tree varieties that would be most suitable for Bengaluru's weather and planted about 1.5 million trees on the city's roadside and open areas within 5 years.

The Urban Green Project earned Mr. Neginhal so much fame that then Prime Minister Rajiv Gandhi, took trees from him for planting them at Shakti Sthal. Mr. Neginhal also served as the Head of the Bandipur Tiger Conservation Project and played a significant role in developing the Bandipur Tiger Reserve. He also played a critical role in developing "Kokkare Bellur" as a Bird Sanctuary. Throughout his career, Mr. Neginhal had authored several books and has been bestowed with numerous awards including the Indira Priyadarshini Vriksha Mitra Award and the TNA Perumal Memorial National Photography Award (for his incredible photographs).

S. G. Neginhal succumbed to COVID on May 2, 2021, a day after his 92<sup>nd</sup> birthday.



Dr Atanu Kumar Raha belonged to the West Bengal cadre of Indian Forest Service. He had graduated from Presidency College with Physics (Honors) and had received his post-graduate degree in Physics from Delhi University, having 1st class throughout his academic career. He had joined the Indian Forest Service in 1977. He received his PhD degree from Jadavpur University. He was promoted to the highest rank of Principal Chief Conservator of Forests, West Bengal in 2007 and retired from service in October 2012 after serving in various capacities for long thirty five years.

Dr Raha's memoirs are an absorbing read. These will be savoured by all lovers of nature and wildlife. One cannot but marvel at his deep involvement in and unwavering commitment to protection and conservation of ecology and wildlife. His style of narration - lucid, easy flowing and refreshingly anecdotal - is definitely a high point of this engrossing book.

Book Reviewer:

No matter how many times we have trodden the forest path, yet we are ignorant of the doodled reality within. Dr Raha unveils it as real colours. It is not only a pathfinder to the realm of forests, but a pensive account of the path loved by many, yet not fully explored. Written in lucid English, it narrates in a story-like form, his journey of 35 years in various capacities, highlighting his contributions at each step of his career. It is not just a diary, but an in-depth insight into the running of the department with colligate real-life incidents which would keep the readers glued to the book, right from the start to its finish.

Dr Anireddha Bose MBBS, FRCS, FICS, Diplomate NB, FISBI

If you start reading a few pages of this book you won't be able to stop till you finish it. "The Path Least Travelled: a Forester's Diary" is a flavoured florilegium which instantly transfers the individual reader to the muddy jungle roads of Mahananda Sanctuary, Dalma hills or Goranara National Park. One can touch and smell the majestic forest and fauna of Sundarban or even visit far off places like Japan or South Africa through the author's anthology. A famed forester of his stature who is unveiling his unfathomable wealth of experience layer by layer and weaving gems and pearls of his wisdom in words in two hundred thirty pages. This unique multidimensional book will surely be treated as a collector's item by a lazy urban bookworm like me and as a Biblical ready reference by any new comer in this field.

Dr Koushik Lahiri, FIAD, FRCP, Professor and Senior Consultant

The Path Least Travelled a Forester's Diary | Dr. Atanu Kumar Raha



## The Path Least Travelled a Forester's Diary



Dr. Atanu Kumar Raha



# 'The Path Least Travelled: a Forester's Diary'

Book by Dr. Atanu Kumar Raha (Ex Principal Chief Conservator of Forests, West Bengal)

"The Path Least Travelled: a Forester's Diary" is a flavoured florilegium which instantly transfers the individual reader to the muddy jungle roads of the National Parks, Sanctuaries and the Reserved Forests of West Bengal. Dr Raha, in this meritorious compilation of fifty nine priceless write ups surely but effortlessly will grow into yourself with the help of his crisp and unpretentious language and amazing treasure of experience. You will feel the freshness of nature all around. A famed forester of his stature who retired as the Principal Chief Conservator of Forest is unveiling his unfathomable wealth of experience layer by layer and weaving gems and pearls of his wisdom in words in this book. If you start reading a few pages of this book you won't be able to stop till you finish it. This unique multidimensional book will surely be treated as a collector's item and as a Biblical ready reference by any new comer in this field.

An excerpt from the book, as follows: "A country-made fishing boat was coming out of a narrow creek in the core area of the Tiger land. It was late afternoon and the eerie silence was broken only by the pair of oars, steering the boat, sweeping across the low tidal current. The Forest Ranger, who was on a routine patrol of the core zone of the tiger reserve, had an uncanny feeling about the scenario. He ordered the boatmen to stop for a check and search operation as entering the core tiger zone is strictly prohibited.

## The Path Least Travelled a Forester's Diary



Dr. Atanu Kumar Raha

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*The Ranger wanted to determine whether the boatmen were poachers, as killing a spotted deer with a trap made of nylon rope is not uncommon in this part of the world. Some people have strong desire to taste the forbidden meat. The boat came close to the Range Officer's motorized launch without making an attempt to escape. The Ranger wanted to know why the fishermen had entered the core tiger area and whether they even had any permit to enter the buffer zone. Two bare bodied men wearing short dhotis came out of the small thatched shade on the boat, with folded hands and anxious faces. They told the Ranger that they had entered the restricted zone for a bigger catch of fish as the rivers in the buffer zone were not yielding enough "catch". Unfortunately, when all the four were busy spreading their net, the boy who was busy cooking rice for the day, was attacked by a Bengal tiger from the backside.*

*All of them made enough noise scaring away the tiger and chasing it back to the forest, but the boy was seriously injured and bleeding profusely. Since they had no valid permit, they were trying to sneak out of the core area to avoid anticipation by the patrolling forest staff and a resulting strict punishment under the Wildlife Protection Act. There was no way to provide life saving treatment to the boy as the nearest Primary Health Centre was at a distance of 8 hours travel by the sail- based country boat. They had given up hope for the boy's life and were more concerned about saving themselves from the potential punishment. The young Ranger, who had passed out of the Rangers' Training College at Dehradun, was shocked to see the dying boy. He set aside his enforcement role and came to the humanitarian aid of the fishermen. He requested the fishermen to rush the bleeding boy to the Health Centre on a speed boat which was being towed alongside the Range Officer's motorized launch. That would have saved the fishermen a lot of travel time and the required medical help could be provided in two hours time...."*

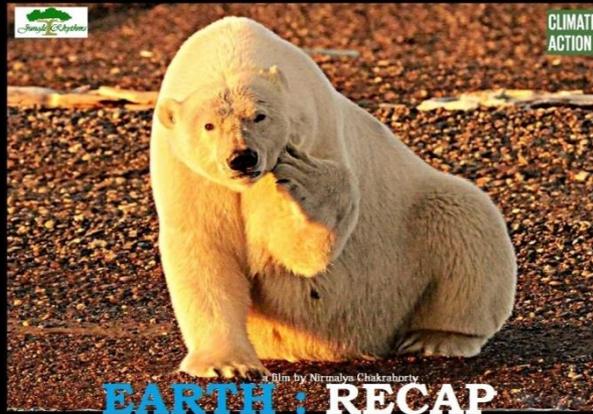
Jungle Rhythms recommends all us our readers who love the mystical Sundarbans to have a read of this beautiful work. We also wish Dr. Raha, a very Hearty Congratulations to from Jungle Rhythms family.



# Jungle Rhythms News

## JUNGLE RHYTHMS PRODUCTIONS

### EARTH: RECAP



<https://www.youtube.com/watch?v=VWkDbGa-cAg&t=14s>

"Earth Recap" is a short documentary film by Nirmalya Chakraborty on the detrimental effects of human activities on Planet Earth and the possible solutions to heal our only planet. The film introduces the hostile life of the Arctic where a Polar Bear family survives in an ice-less world of climatic change, global warming and food scarcity. The film moves on to the high carbon footprints of urban megacities like New York and Las Vegas. The lights that dazzle and energy consumption and human created waste outweigh any other place. The film also provides a strong reminder of how we destroyed prime biodiversity hotspots by deforestation, mining and deliberate forest fires; all for our vested interests.

Remember: **Climatic Change is Real.**

The film instils a sense of positivity in the belief that all can change if we pledge to save and heal our planet. Adoption of renewable energy like solar and wind energy, habitat restorations and rainwater harvesting, biodiversity conservation and community support and awareness; all have become solutions towards a greener future and a better world. The film premiered on World Environment Day on 5th June and is available online on Jungle Rhythms YouTube channel. Research, script, camera and production for the documentary solely has been done by one man crew - Nirmalya Chakraborty.



### RAIN FORESTS

<https://www.youtube.com/watch?v=fBY9uEAbtI&t=8s>

Rain Forests are our carbon sink and help significantly to absorb the atmospheric carbon that are emitted by human activities. Forests also release oxygen in the air which is the survival ingredient for other living organisms. Rainforests trap the rain clouds, and the showers help in cooling the climate and reduce global warming. These pristine forests are an abode of rich biodiversity and endemic life forms (both flora and fauna) nowhere found in the world. Many herbs and plants still unknown hold the solution to many medical treatment.

Rain Forests - A Jungle Rhythms Production - This short presentation is all about the rainforest services and the solutions to save it. Save our forests to save our Planet.

Remember: **Rain Forests are the 'Lungs of our Planet'!**

“Rainforests” is now available online on Jungle Rhythms YouTube channel. Research, script, camera and production for the documentary solely has been done by one man crew - Nirmalya Chakraborty.



### ONE WORLD

<https://www.youtube.com/watch?v=Q2YindDlaiA&t=8s>

“One World” - is a small slice of our vibrant planet and a true sense of biodiversity- the enormous variety of life on Earth. If we observe silently and closely, nature also has solutions to all our problems - clean air, fresh water, food security, medical care and many more. Conserving and protecting nature and living eco-sensitively is true way ahead.

Remember: **Our Solutions are in Nature**

One World is now available online on Jungle Rhythms YouTube channel. Research, script, camera and production for the documentary solely has been done by one man crew - Nirmalya Chakraborty.



### LIVING ON THE EDGE

<https://www.youtube.com/watch?v=GOsQmlnd98o&t=218s>

“Living on the Edge” is about spreading awareness about the importance of protecting endangered and critical species, their habitats and taking actions necessary to protect them. The film covers the engineers of the jungle, 'Elephants', the secretive leopards, the whistling hunters - the dholes, the mighty water buffaloes, the Asiatic lion and the tiger.

Remember - **EXTINCTION IS FOREVER!**

“Living on the Edge” is now available online on Jungle Rhythms YouTube channel. Research, script, camera and production for the documentary solely has been done by one man crew - Nirmalya Chakraborty.

# Jungle Rhythms News

## JUNGLE RHYTHMS EVENTS



<https://www.youtube.com/watch?v=tYPDEBivCO4&t=70s>

Jungle Rhythms presented on 18<sup>th</sup> October, an unique wildlife conservation online talkshow - "Connecting Communities!" - Meeting our Bishnois. This was conducted directly with the Bishnoi communities who has been pioneers in spreading love and protection for nature and wildlife. Their key contribution and sacrifices have helped in saving both flora and fauna, especially the khejri trees and the black bucks of India. The spirit of conservation has been deeply ingrained in every Bishnoi for over five centuries. It arises from the belief that every living organism on this earth has an equal right to live.

Key Speakers: Shankar Lal Bishnoi - Ex Forester (Rajasthan), Rajiv Bishnoi - Shayak Van Rakshak - Asst, Forester (Rajasthan), Raj Bala Bishnoi - School Teacher, Sangam Bishnoi - Student (Youth) - Next GEN, Subhash Bishnoi -- President, Bishnoi Sabha, Bhavna Bishnoi - Human Rights Department (Rajasthan Govt.), Bhavna Sharma - Researcher and Media Professional

The Session was conducted by Nirmalya Chakraborty (Founder and Editor - Jungle Rhythms), Oishimaya Sen Nag (Senior Editor - World Atlas) and eminent wildlife conservationist - Lt Col Shakti Ranjan Banerjee (Hon. Director, Wildlife Protection Society of India).