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# Sanctuary Asia

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11th WORLD WILDERNESS CONGRESS

## WILD 11

Birding in

## YALA NATIONAL PARK

News from

## MUD ON BOOTS

The desert fox of

## RANN OF KUTCHH

# THE WILDERNESS PROTECTORS

## MEET SANCTUARY'S WILDLIFE AWARD WINNERS

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Editor: Randhir Sahgal.

VEDWATI PADWAL-BIRJE

*This mayfly, photographed at Amboli Ghat at the end of the monsoon, belongs to one of the most ancient orders of insects, Ephemeroptera. Eggs are laid in water and the aquatic nymphs stay submerged for around two years, feeding on detritus and plant materials. They moult into a pre-adult stage, with full-formed wings but underdeveloped reproductive organs, before becoming fully-formed adults. No other insect has two stages of winged adulthood. As adults, they do not feed, and have only one purpose – to breed. Males usually die soon after breeding, while females can be seen on the water surface, laying upto 8,000 eggs at a time, after which they too succumb. Mayflies are an important food source for fish, and are vital to freshwater ecosystems.*

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*An author and former journalist with the* Telegraph *newspaper, his work has been widely published in books, newspapers and magazines. He is currently the Wildlife Projects Manager in India for World Animal Protection.*



*A senior scientist with the Zoological Survey of India at Kolkata, he is studying the endangered hispid hare in Uttar Pradesh and West Bengal using camera traps to estimate the species' population.*



*An architect practicing in her hometown, Udaipur, she has spent a few months working on rural interventions in Uttarakhand with the firm Compartment S4.*



*A doctor by profession, he loves to escape from his medical practice on birding trips to remote places. By writing about them, he hopes to stimulate interest in nature and the conservation of vanishing natural resources in this era of climate change.*

Sanctuary Asia

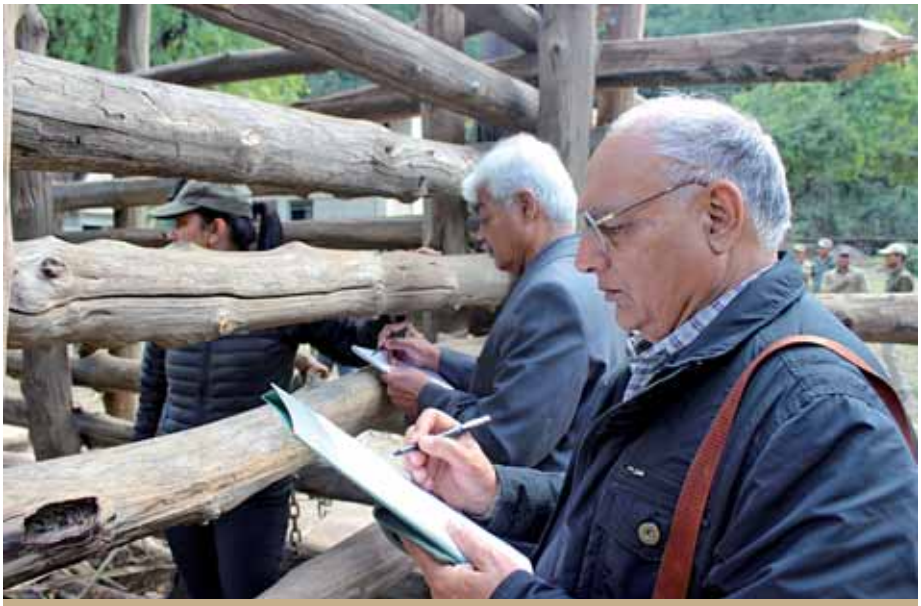
# CONTENTS

***February 2020***

## ON THE COVER

*Between the slender stalks of mountain knotgrass* Aerva lanata *on the outskirts of Coimbatore, Tamil Nadu, the amber eyes of an Indian Eagle Owl* Bubo bengalensis *stare, unwavering, breaking the perfect camouflage of its white-grey plumage. Around dusk, when this image was taken, crepuscular Indian Eagle Owls set out on their nightly hunt, looking for rodents, reptiles or even small birds. What those eyes seem to be asking, also, is what the natural world can possibly do about the most dangerous animal in the world…* Homo sapiens.

***Cover Image: Krishnamurthy S.***





## NEWS






## PHOTOFEATURE



## PEOPLE



## NATURAL HISTORY



## OPINION


# RED SKY AT SUNSET

This tiger's sky sends a message. A reminder that life is beautiful. That given free rein, the five senses gifted by the magical biosphere that birthed us will continuously amaze, delight and sustain us and ours, forever and a day.

How lucky we are. Dynamic, fascinating, reliable... our living planet, with its immeasurable permutations and combinations, is more than a miracle machine. It breathes, as do we. It hurts, as do we. It self-repairs. As do we. And... indulge my anthropomorphism a touch longer... it even angers... as do we.

At the receiving end of insult and injury for decades, the planet is fighting back. Actually, no. Not fighting. Merely snarling angry warnings of hissy-fits to follow if we – the naked apes – refuse to heed the signs. Droughts in Syria. Floods in India. Rare weather system clashes in North America. Melting glaciers and polar caps. Disappearing aquifers. Dead rivers and seas. And, of course, Australia's devastating fires. All gentle warnings. Very gentle warnings we are free to heed... or disregard.

So... two messages from red skies. One from Neel Soni at the Corbett Tiger Reserve, reminding us that life is beautiful. The other from Australia, screaming at us from our phones, TV sets, newspapers and more, warning us that wayward behaviour can and will be punished severely by the biosphere.

Our ability to absorb and act on the messages will determine how we will be remembered – as arsonists, or firefighters.

Bittu Sahgal

Photographer: Neel Soni
Location: Corbett Tiger Reserve, Uttarakhand, India
Details: Camera: Canon EOS 5D Mark IV, Lens: Canon EF 100-400 mm. f/4.5-5.6L IS II USM,
Shutter speed: 1/8000 sec., Aperture: f/5.6, ISO 400, Focal length: 400 mm.
Date: May 07, 2019, 6:51 p.m.

# WORLD SCAN

OKSANA VASHCHUK/PUBLIC DOMAIN

*The mountain gorilla population has risen from 240 in the Virunga mountains in the 1980s to 1,063 in the Virunga-Bwindi-Sarambwe landscape in 2018.*

## AFRICA'S MOUNTAIN GORILLA POPULATION RISES

In the 1980s, only 240 mountain gorillas *Gorilla beringei beringei* were counted in the wild in the Virunga mountains, which straddle the Democratic Republic of Congo (DRC), Uganda and Rwanda. An unknown number was known to exist in the then inaccessible Bwindi National Park, Uganda and the adjacent Sarambwe National Park, DRC. A 2011 census suggested a population of 400 here. A recent census, conducted by WWF and partners, however, reveals that persistent conservation efforts, including anti-poaching patrols and dedicated vets to treat injured animals over the past four decades have resulted in a significant increase in mountain gorilla populations. The Virunga mountain gorilla population saw an increase from 480 to 604 over a five-year period while the population in Bwindi and Sarambwe improved to 459, bringing the global wild population of mountain gorillas to 1,063. However, during the census, surveyors found and deactivated around 88 snares; a reminder that despite the good news, the species' survival is precarious. The challenges are manifold – loss of habitat, risk of human disease transmission, unchecked poaching and violence from civil unrest. Bas Huijbregts, African species director at WWF says, "It's remarkable to see that the positive trend for mountain gorillas continues since it was once thought the species might be extinct by the end of the 20th century. Effective long-term conservation efforts have helped and will be contingent on sustaining [the population growth]."

## GUAM RAILS BACK IN THE WILD

Scientifically sound captive breeding has once again brought back a species from near extinction. For four decades, the Guam Rail, a flightless endemic bird in Guam, was believed to have been driven to extinction in the wild due to rampant predation by brown tree snakes, a non-native species reportedly brought in from foreign ships during World War II. In 1981, scientists captured the last 21 birds from the wild, to initiate a captive breeding programme. Over the next few years, they reintroduced the birds back into the wild, in the snake-free Rota island, but the birds failed to actively breed and produce offspring – they were either killed in car accidents, or eaten by feral cats. Studying individual birds' personalities, the scientists finally cracked the code – they released birds as mating pairs interested in breeding. Now, there are about 200 wild Guam Rails in Rota, and about 60-80 individuals in Cocos Island, in addition to the 170 in captivity. With strategies in place to control the brown snake population, scientists hope to reintroduce the birds in Guam in the next two years.

## NEW GHARIAL NESTING SITES

Loss of natural habitat, excessive sand mining, and decline in fish populations have pushed the gharial, a fish-eating crocodile once found across north India, to be critically endangered. Only 100 odd adult gharials are found in Nepal, with a single breeding population in Chitwan National Park. But recently, Biodiversity Conservancy Nepal (BCN) and Zoological Society of London recorded three new gharial nesting sites on the banks of the Babai river, Bardia National Park in southwest Nepal, after almost 37 years. They also spotted 100 gharial babies, guarded by three adult females and one adult male. Locating nesting sites is critical to protecting the future of the species, especially considering that the construction of new dams will modify river flow and flood patterns. Conservationists plan to work with local communities to guide them on protecting and tracking new populations. Ashish Bashyal, conservation biologist, BCN, told Mongabay, "People generally have a great affinity for gharials, they don't attack humans as they generally feed on fish. We want to try and harness that love for the animal into local community conservation action in order to help monitor how the hatchlings [fare]."

## UNIQUE FLORA DISCOVERIES

Last year, around 102 new plants were discovered and named. However, scientists note that some of these are already endangered, which is why naming the plants is crucial as they can then be officially incorporated in the IUCN list. Here are a few interesting new additions in 2019:

1. *Galanthus bursanus* – a new snowdrop species found in Turkey by a Ukrainian expert who spotted the species in a tourist's social media photograph. It is currently critically endangered.
2. *Synsepalum chimanimani* – a new miracle berry species in the Chimanimani Mountain's rainforests, on the Mozambique-Zimbabwe border. Its fruits have a compound that blocks taste buds, called miraculin, which miraculously makes sour foods taste sweet! It is endangered due to habitat destruction.
3. *Inversodicraea koukoutamba* – a rubbery shrub species found to have a superglue compound that enables it to withstand heavy forces of water while sticking to rocks. It is found only in one place in the entire world – a waterfall on the Bafing river, Guinea, Africa. It could go extinct as a hydroelectric dam project is to be built on this river!
4. *Mischogyne iddii* – a tree of the ylang-ylang family that grows 20 m. tall, of which only seven individuals are found on Earth! It was found in the Usambara Mountains of Tanzania.

*Australia Aflame! See page 10.*

# INDIA SCAN

CHALOKLUM DIVING/PUBLIC DOMAIN

*Invasive American mussel species threaten to choke out this native green mussel* Perna viridis, *a major source of income for the local communities in Kochi's coast.*

## 17-ACRE LAKE COMES BACK TO LIFE

The resuscitation of the 17-acre Otteri lake in the Arignar Anna Zoological Park, Chennai, is proof that nature needs only time and space to revive itself. Located in the north-western side of the park, Otteri lake hosts around 10,000 birds of 70 migratory species including the Open-billed Stork, Painted Stork, Cormorants, Little Grebes, Darters, Egrets, and Moorhen during the winter months. The lake also meets half of the zoo's water requirements. But since 2016, due to a devastating cyclone that damaged its vegetation, and subsequent years of consecutive and extreme drought, the lake shrivelled. It lay bone dry. by the end of 2018, not a bird in sight. But now, just over a year later, the lake is once again brimming with water and birds, thanks to the consistent efforts of the Zoo's team led by Deputy Director, IFS Officer Sudha Ramen, under the guidance of Director Yogesh Singh. From February 2019, the team worked on identifying, clearing and desilting the natural drainage channels, deweeding the banks, identifying and linking other catchment ponds nearby, and building shallow mounds in the lake, on which fast-growing trees like Arjuna, *Ficus*, and *Barringtonia* were planted. With good rains this year, the lake revived as its natural drainage patterns were restored, and around 300 birds were spotted, with more expected to arrive.

## SUPREME COURT GIVES GO AHEAD TO THE COASTAL ROAD PROJECT

In late December 2019, in a move that will irreversibly damage Mumbai's coastline and its various marine species, the Supreme Court overruled the Bombay High Court order that had rescinded the Coastal Regulation Zone clearance for the construction of a coastal road. The SC order allowed the reclamation work that was already in progress before the July 16 Bombay HC stay, to resume immediately at four points – Priyadarshini Park, Napeansea Road, Haji Ali and Worli. The fate of the marine intertidal biodiversity that thrives in the land to be reclaimed, the artisanal fishing communities who will now be cut off from their coasts, and the city of Mumbai as a whole, which will now be even more vulnerable to climate change disasters, is yet to be acknowledged. The SC bench has set a final hearing in April 2020.

## COAL INDIA LIMITED UNDER SCANNER

Coal India Limited (CIL), the world's largest producer of coal, responsible for India's 83 per cent coal production, has disregarded environment safety norms. This is a major cause for concern as CIL has 500 mines and 15 washeries across eight states in India, most of which are located on the banks of rivers that feed rich forests, wildlife and sustain several tribal communities. The report, published by India's Comptroller and Auditor General (CAG), scrutinised in detail 41 mines and two washeries of the CIL, and found that coal extraction in these locations were causing pollution of air, water and land, and that six of the seven subsidiaries of CIL did not formulate or follow any environmental policy as they were stipulated by the Ministry of Environment, Forest and Climate Change (MoEFCC) when given Environmental Clearance (EC). The Ministry of Coal acknowledged the report, and is looking into the allegations for appropriate action. With Pralhad Joshi, Minister for Coal, Mines and Parliamentary Affairs, stating that he aims to increase domestic coal production to reduce import, the CIL's flouting of environmental concerns is of prime concern for the safety of our forests and biodiversity.

## FOREIGN MUSSEL SPECIES INVADE KOCHI WATERS

In the port city of Cochin, researchers recently found large masses of the American brackish water mussel *Mytella strigata*, an invasive species, which is choking out the native green mussel species *Perna viridis*. Native to the central and south American continents, the American brackish water mussel was found near the Cochin port, where international cargo vessels, freight ships and passenger cruises dock, leading researchers to believe that the species must have arrived through ballast water. A highly adaptable species, the American mussel had been previously found to have invaded the coasts of Thailand, Singapore and the Philippines, where it displaced the local mussel species entirely. As the fishing of local green mussel species is highly profitable for the local communities, this would be catastrophic to their livelihoods. Research is currently underway to find a way to reduce the spread of the invasive species, and to understand how it affects the food web of the marine ecosystem in the region.

# CLIMATE WATCH

STEVE COREY/PUBLIC DOMAIN

*Populations of the monarch butterfly, one of the oldest and most resilient species, are declining. Between 1990 and 2015, a billion monarch butterflies have vanished.*

## AUSTRALIA BURNS BUT GOVERNMENT REFUSES TO ACT ON CLIMATE

Around 17.9 million acres of bush (grassland), forests and national parks across six states in Australia have been ravaged in record-breaking wildfires that began in late July 2019. While an exact count of the animals that have succumbed may be impossible, the approximate estimation is a staggering one billion, pushing already endangered species to the brink of extinction, including the dunnart and Black Glossy Cockatoo. The koala population may have possibly been cut by half, with over 25,000 estimated dead. Australia is experiencing one of its worst droughts with last spring being the driest on record. December's heat wave was recorded as the highest national average temperature. However, the Australian government continues to negate human-induced climate change and using an "accounting loophole" to excuse poor climate action; official greenhouse gas records have been adjusted so that the emissions data of years under the Coalition is lower than that of years under the Labour. Much of the changes were made due to differences in estimation of carbon dioxide released from or absorbed by soil in grazing pastures. Greta Thunberg tweeted, "Not even catastrophes like these seem to bring any political action." To which Australian Prime Minister Scott Morrison responded by refusing to downsize the coal industry.

## CLIMATE CHANGE ADVERSELY AFFECTS MONARCH BUTTERFLIES

Populations of the monarch butterfly, one of the oldest and most resilient species, are declining during migration. The butterflies move to northern United States and Canada for the summer, southern United States to breed in the spring and fall, and Central Mexico in the winter. However, between 1990 and 2015, a billion monarch butterflies have vanished, a decline largely caused by two events; a winter storm in 2002 and a heatwave in 2012. Since 95 per cent of the entire population travels in a single mass, a single disaster can threaten the entire species in the American subcontinent. Last year saw the hottest September in 125 years in Oklahoma and Kansas, when the monarchs passed through during their fall migration. The impact remains to be calculated.

## COP25 CLOSES WITH INEFFECTIVE CONCLUSIONS ON CLIMATE ACTION

The UN climate discussions at the Conference of Parties (COP)25, which took place in Madrid, ended with subpar negotiations, with no effective plan of action to mitigate the climate crisis. COP brings states, nonprofits and citizens together for two weeks of productive discussion and strategising of ambitious solutions and targets to combat the climate crisis. However, despite signing the Paris accord in 2015 with the aim to limit global warming under 1.5 °C and with current warming trends already at 1.1, governments worldwide offered poor, ineffective action plans. Nations in the global north, like the U.K., made promises to achieve "net zero emissions" by 2050 – by which time the leaders making promises may not remain, and many regions would have already suffered from the effects of climate change, like sea level rise and heat waves. Tuvalu, two of whose islands are at risk of going under the sea, said that the U.S. government's decision to block financial aid to the island nation could be regarded as a "crime against humanity."

## LAST DECADE HOTTEST IN RECORDED INDIAN WEATHER HISTORY

According to the Indian Meteorological Department, temperatures between 2010 and 2019 were 0.36 °C hotter on average than any decade recorded since 1901. Moreover, India's five hottest individual years were between 2010 and 2019 as well, with 2016 being the hottest. About 1,500 people lost their lives to extreme climatic events – 850 people succumbed to flooding and heavy rains, 350 to heatwaves and higher-than-normal summer temperatures, and 380 to storms. The average temperature of 2019 was lowered only by the excess cold in the month of December in the north. The changing climate does not just intensify summers; it makes the winters colder as well, with the possibility of prolonged winters in the north.

The 11th World Wilderness Congress, WILD11, will meet in Jaipur, India, between March 19 and 26, 2020 to tackle these and other problems that face our planet. Be a part of the solution.

**Register today at www.WILD11.org**

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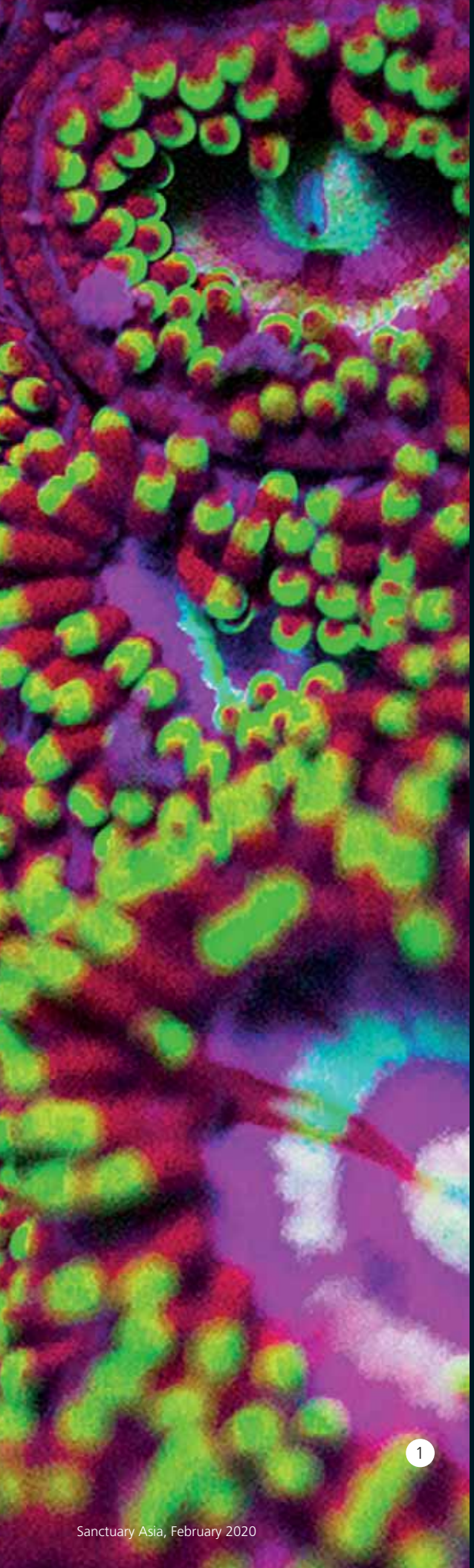


# The Other World

## SMALL IS BEAUTIFUL

*When one thinks of wildlife, the flagship species come to mind; feline carnivores, graceful ungulates, canid predators, large pachyderms. However, the non-megafaunal world is equally dazzling, each organism an important component of its ecosystem. Without bacteria and nematodes, the soil would be unable to support plant life and create expansive forests. Without praying mantises and predatory insects, populations of smaller insects would explode out of control, and birds and other wildlife that depend on these large insects would decline. On the following pages,* Sanctuary *showcases our tiny saviours, through macro images of life forms that an untrained eye would miss.*

**GAURAV PATIL** *Glowing zoanthid marvels*

**LOCATION: Malvan, Maharashtra**
**DETAILS: Camera: Canon EOS 70D, Lens: Canon EF 100 mm. f/2.8L Macro IS USM, Aperture: f/5, Shutter speed: 1/40 sec., ISO: 1000, Focal length: 100 mm.**

1

2

**SUBHAJIT BANERJEE** *Lost in luminescence*

**LOCATION: Santiniketan, West Bengal**
**DETAILS: Camera: Canon EOS 1200D, Lens: Canon EF 50 mm. f/1.8 STM, Aperture: f/11, Shutter speed: 1/200 sec., ISO: 400, Focal length: 50 mm.**

3

**AMIT ROY** *Assassin in action*

**LOCATION: Botanical Garden, Puducherry**
**DETAILS: Camera: Nikon D500, Lens: Tamron SP 90 mm. f/2.8 Di Macro VC USD F017N, Aperture: f/14, Shutter speed: 1/160 sec., ISO: 100, Focal length: 90 mm.**

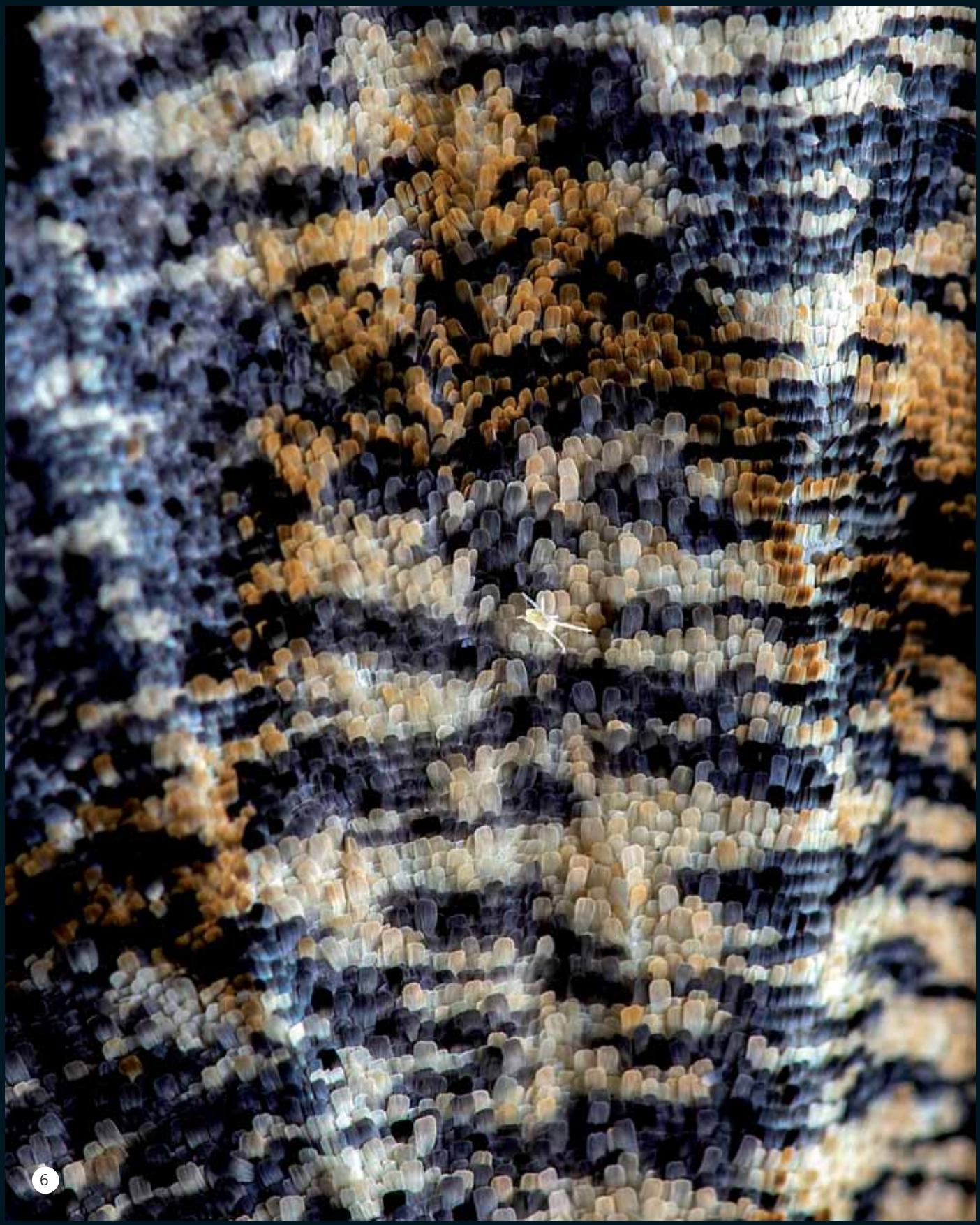
4

**LUCKY JAISWAL** *Guardian of the brood*

**LOCATION: Phansad Wildlife Sanctuary, Raigad, Maharashtra**
**DETAILS: Camera: Olympus E-M10 Mark III, Lens: Olympus M.90 mm. f/2.8 Macro, Aperture: f/9, Shutter speed: 1/100 sec., ISO: 320, Focal length: 60 mm.**


**Hanumantharao Satish** *Mossy monarch*

**LOCATION: Agumbe, Karnataka**
**DETAILS: Camera: Nikon D850, Lens: Nikon 105 mm. f/2.8, Aperture: f/18, Shutter speed: 1/250 sec., ISO: 400, Focal length: 105 mm.**




**Prajwal J. Ullal** *A mightless mite*

**LOCATION: Nagla block, Sanjay Gandhi National Park, Mumbai, Maharashtra**
**DETAILS: Camera: Canon EOS 80D, Lens: Canon EF 100 mm. f/2.8 Macro USM, Aperture: f/10, Shutter speed: 1/125 sec., ISO: 160, Focal length: 100 mm.**


**Robert Coelho** *Life on the line*

**LOCATION: Karkala, Karnataka**
**DETAILS: Camera: Canon EOS 7D, Lens: Canon 24-70 mm., Aperture: f/2.8, Shutter speed: 1/200 sec., ISO: 320, Focal length: 70 mm.**


**Aniket Thopate** *Calm after the storm*

**LOCATION: Badlapur, Maharashtra**
**DETAILS: Camera: Nikon D750, Lens: Canon 105 mm. f/2.8, Aperture: f/29, Shutter speed: 1/200 sec., ISO: 1250, Focal length: 105 mm.**

9

**Mandar Ghumare** *Floating grave*

**LOCATION: Matheran, Maharashtra**
**DETAILS: Camera: Nikon D750, Lens: Nikon 105 mm. f/2.8, Aperture: f/13, Shutter speed: 1/100 sec., ISO: 1600, Focal length: 105 mm.**

10

**AGNISWAR GHOSAL** *A mutual exchange*

**LOCATION: Bolpur Deer Park, West Bengal**
**DETAILS: Camera: Nikon D5200, Lens: Tamron SP AF 90 mm. f/2.8 Di Macro 1:1 272NII, Aperture: f/22, Shutter speed: 1/200 sec., ISO: 320, Focal length: 90 mm.**

11

**Jitendra Manohar Marathe** *Compound glare*

**LOCATION: Waghzira, Jalgaon, Maharashtra**
**DETAILS: Camera: Canon EOS 600D, Lens: Canon EF 100 mm. f/2.8 Macro USM, Aperture: f/8, Shutter speed: 1/100 sec., ISO: 100, Focal length: 100 mm.**


**Shashwat Swami Jaiswal** *Birth on a bouquet*

**LOCATION: Bengaluru, Karnataka**
**DETAILS: Camera: Nikon D7200, Lens: Nikkor 105 mm. f/2.8G Macro, Aperture: f/18, Shutter speed: 1/200 sec., ISO: 640, Focal length: 105 mm.**


**Apurv Dilip Jadhav** *Cannibalising the queen*

**LOCATION: Lonand, Satara, Maharashtra**
**DETAILS: Camera: Nikon D3200, Lens: Nikon 18-55 mm. (reversed), Shutter speed: 1/250 sec., ISO: 200 (The photograph was captured using 'reverse lens' technique, and the lens-CPU was not connected to the camera body. Thus, details about focal length and aperture were not recorded and cannot be predicted).**


**ARNAB DEBNATH** *Brutal kill*

**LOCATION: Pundi Bari, Cooch Behar, West Bengal**
**DETAILS: Camera: Canon EOS 70D, Lens: EF-S55-250 mm. f/4-5.6 IS II, Aperture: f/5.6, Shutter speed: 1/125 sec., ISO: 640, Focal length: 250 mm.**

**1.** Photographed in Malvan, Maharashtra, zoanthids are soft corals, which form a sprawling mat on flat platform rock, either on shores or around reefs in tropical and subtropical waters. Using stinging cells on their tentacles, zoanthids feed on zooxanthellae, symbiotic microscopic algae, which then live in the host's tissues. Zooxanthellae glow vibrantly when they reflect UV light, giving the coral unique colours. The green colour is a result of photosynthesis by algae. Zoanthids are different from other soft corals because they incorporate external building materials, like sand, into their structure.

**2.** This glimmering lynx spider's web was photographed in Santiniketan, West Bengal. The nearly 500 species of lynx spiders are largely characterised by the prickly spines on their legs and their unique hexagonal eye arrangement. Despite their ability to spin intricate webs, lynx spiders barely use them to hunt prey. Instead, they stalk and pounce on their prey, lurking patiently behind flowers for unsuspecting pollinators.

**3.** An assassin bug transports its kill, a bee, through post-monsoon shrubs in Puducherry. Over 7,000 assassin bug species are known to science and are so called for their strange predatory habit of sucking their insect prey dry using hardened mouthparts called rostrum. This done, they attach the dry corpses to their backs to mask their scent and for use as camouflage. Some can inflict painful bites on humans and other vertebrates and could transmit diseases too.

**4.** While some mantidflies mimic wasps, most are green, yellow or red. This mother was photographed while guarding her eggs during a windy monsoon shower in Maharashtra's Phansad Wildlife Sanctuary. Interestingly, the larvae thrive on spider eggs. They have been reported to ride piggyback on spiders and stealing eggs right out of the spiders' sacs! Amazingly, a 44 million-year-old spider was recently found preserved in amber with a mantidfly larvae fastened to its underbelly.

**5.** Camouflaged flawlessly in the moss in Agumbe's rainforests is a praying mantis, whose antennae, dead giveaways, are often missed by both predators and prey. The mantis will ambush moths, crickets, grasshoppers and flies at lightning speed. Females are notorious for decapitating and consuming males while mating. Some scientists conjecture that this affords the offspring a better chance of survival, thanks to the protein intake from the male's corpse.

**6.** The wing of a peppered moth has been magnified to focus on the microscopic mite invisible to the naked eye. In the late 1800s, the first white peppered moth was discovered in England. Darker morphs emerged only after the advent of the industrial era, as an adaptation to avoid standing out against trees coated with soot. Evolutionary biologists observed that the adaptive population fluctuations, began outnumbering the white moths, which are today barely seen.

**7.** Dangling precariously on a finer-than-hair line of webbing in Karkala's forests are crane flies, which look, for all practical purposes, like large mosquitoes with long, delicate legs. Much of their lives are spent in a larval state in both dry and wet habitats, where they survive on living and decomposing plant matter. Females can mate as soon as they pupate and deposit their eggs in wet soil, algae or, sometimes, just air-drop them on the wing.

**8.** The dripping wet corpse of a damselfly makes for a stunning pattern, its paper-thin wings dotted with water droplets during a monsoon shower in Badlapur, 52 km. from Mumbai city. As the damselfly floated on the water surface, a minuscule springtail bug scuttled out of its head – and the photographer managed to capture the arthropod perched on the damselfly's wing. A myriad species of dragonflies, damselflies, waterfowl and herpetofauna emerge during the rainy season, when wetlands are frequented by jackals and jungle cats attracted by the sudden abundance of prey in the form of breeding and nesting birds.

**9.** The photographer was studying a dry stream bed in summer in Maharashtra's Matheran forests. He found a swarm of insects hovering inches over a shallow puddle in which honeybees and flies that had died could be seen afloat. The image was obtained using an underwater light and a diffused flashlight that illuminated the gently floating insects and the tiny particles dotting the water around them.

**10.** An ant laps up honeydew, a sweet fluid secreted by a treehopper nymph, at the Bolpur Deer Park, West Bengal. Some treehoppers are solitary, while others form fascinating relationships with ants that they herd like 'cowherds' by creating ant farms. In return for the nutritious honeydew, the ants protect the treehoppers against predators and parasites in a two-way beneficial association scientists call mutualism.

**11.** The clouded wings of this normally immobile Tephritidae fruit fly opened for a mere fraction of a second, time enough for the photographer to capture this image. The wings of thousands of species of fruit flies vary in different families, based on their anatomy and behaviour. When courting females, fruit flies will perform special wing movements and even buzz a melody or two. They are, undoubtedly, utterly fascinating creatures.

**12.** With each measuring about a millimetre in size, these pin-sized eggs placed gracefully on the ends of thin stalks are those of a green lacewing. These stalks are driven into twigs and leaves on vegetation, where aphids thrive in large numbers. In under a month, an adult female may lay over 200 eggs. Aside from feeding on pollen and honeydew, green lacewings are also underappreciated predators of many soft-bodied insects and eggs, and play a role in keeping the insect population in check.

**13.** Red worker ants dispose off their colony's large dead queen, which caught an *Ophiocordyceps* fungus infection. Contagions could potentially wipe out entire colonies. There are about 140 species of *Ophiocordyceps* fungi, of which *Ophiocordyceps unilateralis* parasitises ants. Soon, behavioural changes take place in infected ants that leave the nest and affix their mandibles to the underside of a leaf, and die macabre deaths with the fungus literally growing out of the ant's head.

**14.** The photographer was out looking for dragonfly larvae in the Eastern Himalayan foothills in Cooch Behar, West Bengal when he happened across this fish-eating spider gorging on a fish kill. These semiaquatic spiders are known to catch prey over five times their size, according to some researchers. A study published in 2014 noted that these arachnids are prevalent on every continent other than Antarctica.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# Earth Heroes

## The Sanctuary Wildlife Awards 2019

Supported by DSP Investment Managers Pvt. Ltd, IndusInd Bank and Greenko

In the doom and gloom scenario of India's wildlife conservation and climate change canvas, some human beings stand out, not merely because their values are shining beacons in a world tarnished by false ambition, but also for their ability to overcome the odds to work for a better and safer world in tune with nature's imperatives. Here is an inspirational shortlist of some individuals from among a veritable legion, who are making a difference.

### LIFETIME SERVICE AWARD

**We were in search of a true hero – someone whose life's purpose and respect for nature could be held out as inspiration to Indian youth.**

### Vinod Rishi

***Former Additional Director General of Forests (Wildlife), anti-poaching strategist, and biodiversity and climate specialist***

Wildlife warrior and former Director of Project Tiger and Project Elephant, Vinod Rishi is a true-blue wildlifer. One amongst the old guard of India's wildlife conservation movement, Vinod Rishi's contributions to wildlife and conservation span parks, states and disciplines.

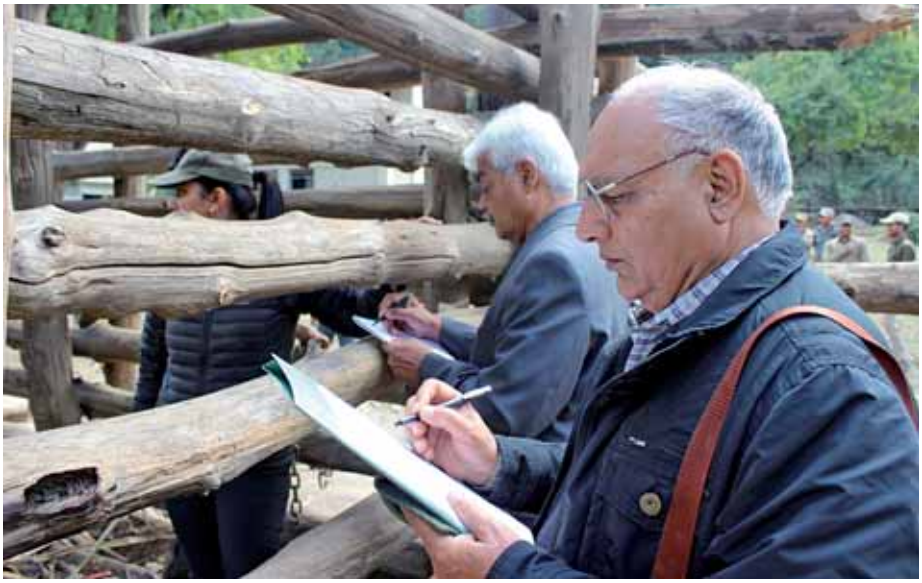
Born in Jalandhar, Punjab, he graduated as an engineer from IIT Delhi in 1968, joined the Indian Forest Service (IFS) in 1969, and went on to complete his post-graduation at the Forest Research Institute, Dehradun in 1971. Over his 38-year-long career (April 1969 – December 2006) with the IFS, Rishi has worked in every imaginable

discipline in this field, discovering an India that only few get to experience. He has worked to manage and conserve several pristine sanctuaries and reserves, including the Sundarban Tiger Reserve, Buxa Tiger Reserve, Singalila National Park, Neora Valley National Park, Jaldapara Wildlife Sanctuary, and more.

He helped turn science into a shield for wildlife, confronting ruthless international syndicates that were running rampage through our forests in search of ivory and tiger bone. His stint at the Darjeeling Zoo later helped him set up successful projects, including a captive breeding programme for snow leopards in Southeast Asia, and the Red Panda Conservation Programme in Singalila National Park. He has also helped design and implement human-wildlife conflict resolutions in challenging landscapes such as the Sundarbans.

He is a Founding Faculty Member of the Wildlife Institute of India (WII), and also served as Director of the Indira Gandhi National Forest Academy. He is now based in Dehradun where he continues to work for the protection of India's wilds.

Humble and determined, Vinod Rishi is a discreet hero, a nation builder, and a guiding light for young men and women stepping into the fold of the Indian Forest Service.



COURTESY: VINOD RISHI

**LIFETIME SERVICE AWARD:** *Over a remarkable 38-year-long career with the Indian Forest Service, Vinod Rishi introduced innovative techniques in wildlife management, succeeded in first-of-its-kind species rehabilitation projects, and set the course for wildlife education as a founding faculty member of the Wildlife Institute of India.*

## YOUNG NATURALIST AWARDS

**We looked for young naturalists or conservationists, for whom the study and defense of nature is the purpose of life, whose actions speak louder than words and who inspire hope for the future.**

### Taukeer Alam

***Self-taught bird expert, trekker, citizen scientist and* Gujjar *community representative***

As a child of the nomadic *Van Gujjar* community, Taukeer Alam grew up around the Rajaji National Park in Uttarakhand. When he dropped out of school after the eighth grade, he accepted to serve as a cook and then as an assistant to a group of researchers from the Centre for Ecological Sciences, just so he could continue to live and work in Rajaji. Taukeer soon learnt to conduct surveys, and identify and monitor bird behaviour. He later received training from scientists of Dehradun's Nature Science Initiative on collaring birds and tracking their movements, and soon grew to be indispensable to his scientist mentors, assisting them with data entry, analysis, camera trapping, collar tagging and more. He is now considered to be one of Uttarakhand's finest birders and is well known on e-Bird, a global online database of bird observations.

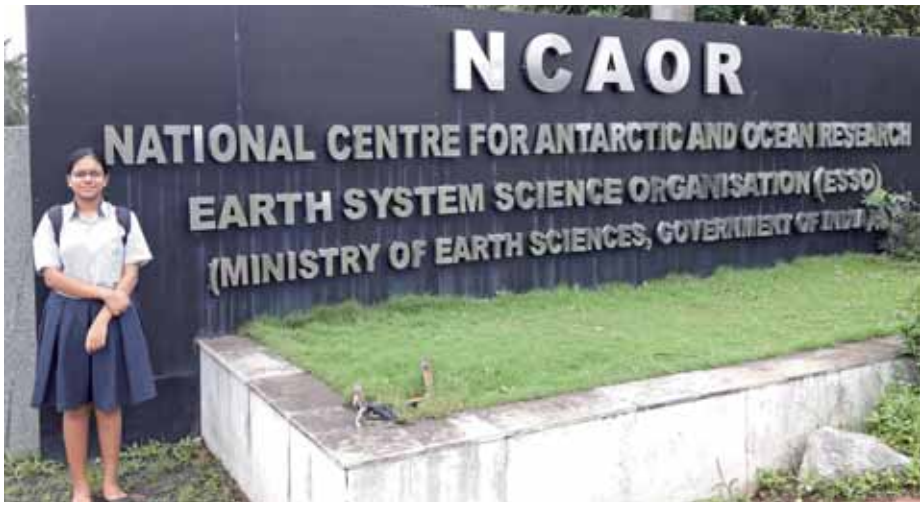
Now a field assistant with the Nature Science Initiative, Dehradun, Alam freely shares his knowledge of avians with birders who visit his state from across the globe, and also works as a guide and naturalist. He believes that rural children deserve to be exposed to nature conservation and therefore conducts educational awareness activities in schools and for the children of his community.

At once both technically and emotionally driven, he is a remarkable young birder and conservationist who has a lifetime of vital conservation ahead of him.

COURTESY: TAUKEER ALAM

**YOUNG NATURALIST AWARD:** *Born with an innate love for wildlife, Taukeer Alam's passion and intuitive knowledge of nature took him from being a cook for field researchers, to being recognised as one of Uttarakhand's finest birders.*

COURTESY: NEHARA PANDEY




**YOUNG NATURALIST AWARD:** *A young ocean connoisseur, Nehara Pandey is an advanced rescue-diver whose love for the sea was forged during her childhood. On a mission to protect marine ecosystems, she helps with her school's Eco Club, writes for print and online journals, produces short films and works with local communities to save their own source of livelihoods.*

## Nehara Pandey

***School student, marine activist, scuba diver and conservation communicator***

Confident, knowledgeable and creative, Nehara Pandey is an amateur marine conservationist. A Class XII student, she grew up in Goa where she forged a deep connection with the ocean and its denizens. She received her Open Water Diver certification when she was just 11 years old and at 17, is already an advanced rescue-diver, emergency first-responder and an amateur sailor.

The leader of her school's Eco Club, Nehara raises awareness on environmental causes amongst her peers and the public. Ever creative, she has created several short films on water conservation. Her film, '70%', was screened at Saraya during the programme she organised for World Oceans Day 2019, and her previous short film commemorating World Oceans Day through body art was screened by WWF-Goa at Goa Science Centre and People Tree, Goa.

Balancing schoolwork and conservation, she routinely attends various workshops on mapping of wildernesses, wildlife identification, GPS tracking, natural history surveys and more. She was felicitated at the National Institute of Oceanography in 2015. She also represented India at the World Ocean's Day International Youth Advisory Council between 2016 and 2018. In September 2019, she became one of the youngest climate correspondents for the iconic *Youth Ki Awaaz* platform.

Nehara says her life's purpose is to study our increasingly troubled marine habitats and to protect our oceans.

**WILDLIFE SERVICE AWARD:** *Chandni Gurusrikar has dedicated her life to wildlife conservation. Asked why, she replies: "Because it's the right thing to do". With her husband, Ashwin, and volunteers of the Vanodaya Wildlife Trust, she works on community conservation initiatives in the Cauvery river catchment forests.*

COURTESY: CHANDNI GURUSRIKAR

## WILDLIFE SERVICE AWARDS

**We were in search of inspired wildlifers, forest employees, researchers, villagers... anyone currently involved with *in situ* nature conservation who have displayed extraordinary courage, dedication and determination and set high personal standards for others to follow.**

## Chandni Gurusrikar

***Cauvery forest and river guardian, community champion, wildlife conservationist and academic coordinator***

A software engineer by qualification, Chandni Gurusrikar began her journey in wildlife conservation in 2008, when she started volunteering for conservation projects. A trustee with the Vanodaya Wildlife Trust, she works in and around Karnataka's largest Protected Area – the Cauvery Wildlife Sanctuary.

Chandni and her husband Ashwin, a Sanctuary Mud on Boots' Project Leader, lead a team of volunteers and focus on community conservation through awareness programmes, stakeholder management, wildlife research, conservation training for young boys and girls, and initiatives to mitigate human-elephant conflict (HEC) in the region. Vanodaya volunteers also work with the Forest Department on waterhole mapping, anti-snare drives and regular ground patrolling with crowd control measures, particularly during major festivals, when poaching activities tend to peak. Chandni helps provide actionable inputs in real time to enable the Forest Department to curb poaching and control illegal activities. She has also given representations and filed RTI applications and supported petitions to the authorities through the

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Vanodaya Wildlife Trust, to implement road closures at night in the Cauvery Wildlife Sanctuary.

Chandni is a fierce protector of those who put their lives on the line for our ecological security and works closely with forest watchers and village volunteers, who she says are critical to conservation success on the ground. In 2017, she spearheaded a campaign in support of Forest Department staff who had been illegally framed in a shootout against poachers inside the forest. She also raises money for the families of forest watchers such as Mahadev, who tragically lost his life during an elephant driving operation.

A woman of many parts, she is the Academic Coordinator of the Post-Graduate programme in Wildlife Biology and Conservation, a collaboration between the National Centre for Biological Sciences (NCBS) and the Centre for Wildlife Studies (CWS). Soft-spoken and steely-willed, Chandni inspires young minds to look beyond wildlife science, to marshall community engagement for hardcore conservation.

## Kheer Babu and Mahila Bai Pardhi

***Community pioneers, next generation nurturers, forest defenders and wildlife protectors***

Kheer Babu and Mahila Bai, belonging to the *Pardhi* nomadic tribe, are torchbearers of wildlife conservation in their community. Traditionally a hunting tribe, the *Pardhis* live near the Panna Tiger Reserve, and their knowledge of jungle craft is legendary. But it is their hunting prowess that has been exploited for generations.

Thankfully, over the past decade the *Pardhis* have begun to move away from hunting, in large part due to Kheer and Mahila's incessant advocacy, with the help of the Madhya Pradesh Forest Department in association with the Last Wilderness Foundation and Sarva Shiksha Abhiyan. Kheer Babu and Mahila Bai have been working to change the mindset of the community with regards to hunting, despite opposition from other members. They mentor children to join the *Pardhi* hostel and school, enlightening the community on the unwelcome impact of hunting. Their guidance has spurred several students towards academic success, and their enduring work has resulted in a decline of big cats and other wild species' deaths in the Panna forests.

They have demonstrated how alternative sources of livelihood can provide a stable source of income, while preserving their ancient cultural knowledge and have thus nudged an entire generation of *Pardhi* youth towards positive change.

## Arun Prasad

***Livelihoods creator,* Pahadi *protector, community tourism advocate and traditional beekeeper***

A spirited 29-year-old from the Bangsil village, Tehri Garhwal District, Uttarakhand, Arun Prasad is a messiah of sustainable ecotourism. His nascent years were spent in the wilds around his home and he began training as a beekeeper at the Khadi Gram Udyog at just eight years of age. By 16, he was winning science awards for beekeeping. He completed his B.Sc. from Garhwal University in 2015. Unhappy to see Garhwali youth migrating away from the mountains to cities, he set up the Devalsari Paryavaran Sanrakshan Awam Tekniki Vikas Samiti (see page 88) in 2014. Within five years, he has managed to instill a sense of pride in the community and has helped create sustainable livelihoods in the conservation arena. Towards this end, the Samiti has effectively propagated nature ecotourism, involving bird and butterfly watching, nature trails, trekking, in combination with heritage and culinary experiences. Today, hundreds of farmers have been trained by Arun in beekeeping techniques that provide the community with additional income sources.

Working at the forefront of nature conservation in the Devalsari landscape, Arun has helped motivate people to protect forests, counter poachers and combat forest fires by assisting the Forest Department. Slowly, attitudes towards nature conservation have undergone positive change. Today, he

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**WILDLIFE SERVICE AWARD:** *The* Pardhi *community around the Panna Tiger Reserve, once labelled as poachers, is now protecting wildlife. Kheer Babu and Mahila Bai Pardhi, two trail-blazers, are key to this turnaround. They publicly gave up hunting, and today they work with other* Pardhi *families, to introduce them to optional livelihoods and education. They also run* Pardhi *hostels for children when their parents are away working.*

COURTESY: ARUN PRASAD

**WILDLIFE SERVICE AWARD:** *Arun Prasad's beekeeping expertise and innovative ecotourism initiatives have inspired his village youth to value and nurture the stunning Devalsari landscape.*

has become a role model for young people who protect the forests of the western Himalaya upon which their own futures are dependent.

## Abhijit Rabha

***Senior Forest Officer, anti-insurgency specialist, wildlife defender and inspiring leader***

Growing up in the indigenous *Rabha* community in Assam, Abhijit Rabha feels a visceral connection with nature. The only member of his community to be inducted in the Indian Forest Service, his life has been dedicated to the protection of the forests, wildlife and the communities of Northeast India.

In his early years, as an Assistant Conservator of Forests (ACF), in the Nagaon Territorial Division, he established a protection network that staunched timber poaching. He served Project Tiger for 12 years and helped nurse the battered Manas National Park back to health, eventually being appointed as the Field Director of this World Heritage Site. Steeped in tradition, he recognised and introduced cutting edge science to wildlife protection for Manas, using VHF radio, GIS and GPS tracking, in combination with Long Range and conventional and traditional patrolling methods. He worked briefly in the office of the PCCF, Wildlife Wing of Environment and Forest Department, Assam as the CFO, Wildlife prior to his posting to the Karbi Anglong Autonomous Council, where he is presently the Special Principal Chief Conservator of Forests.

Rabha clamped down on the illegal trade in deer, monkeys, bears, porcupines, tigers and exotic birds, and arrested dozens of poachers. Ever the capacity builder, he nevertheless felt empathy with their families and was instrumental in changing the course of life for over 75 poachers, who he helped train and find employment with the Assam Forest Department.

Throughout his career, his life was all too often threatened by the ruthless, well-armed gangs he was sworn to stop. Somehow, he managed to survive as many as seven assassination attempts, and once, in March 2012, he was abducted by militants from the Karbi People's Liberation Tigers (KPLT). Undaunted, he continues to nurture and protect Manas, Karbi Anglong and Kaziranga. For this and more, he has become a hero to his own people and to the youth of Assam.

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**WILDLIFE SERVICE AWARD:** *The epitome of valour and integrity, Abhijit Rabha has overcome innumerable obstacles, and even assassination attempts in his life-long battle against poachers and organised wildlife crime in the forests of Northeast India. His empathy for his own hard-pressed* Rabha *community has won him the love and admiration of the people of Assam.*

## Debadityo Sinha

***Zoologist, writer and researcher, Green Tribunal litigant and conservation campaigner***

Whether in the courtroom, classroom or field, he strives for the protection of little-known wildernesses in the state of Uttar Pradesh. Growing up in Kolkata, Debadityo Sinha graduated with a B.Sc. (Hons.) Zoology from Delhi University, and went on to pursue M.Sc. (Tech.) Environmental Sciences from the Banaras Hindu University (BHU). It was during this tenure that he decided to dedicate his life to the protection of the wildlife of Mirzapur, where he is working to establish a sloth bear sanctuary. He set up the first Eco Club of BHU and won an 'Environment Equity and Justice Partnership' fellowship, 2011.

In 2012, while pursuing his Master's degree, he set up the Vindhyan Ecology and Natural History Foundation.

COURTESY: DEBADITYO SINHA

**WILDLIFE SERVICE AWARD:** *Over the past seven years, Debadityo Sinha's unflinching pursuit of environmental justice has helped stop several industrial projects that threatened to destroy India's wildernesses. He founded the Vindhyan Ecology and Natural History Foundation and conducts wildlife surveys. Right now, he is pushing for a sloth bear reserve in Mirzapur.*

A singular achievement of his has been cleaning waterfalls in Mirzapur, for which he was justifiably recognised by Development Alternative's under 'The City I Want' campaign. He undertook specialisation in Tropical Forest Restoration from Yale University, is a Board Member of EKO-Energy network; and a Trustee of the Uttarakhand-based organisation, Ganga Today.

Sinha now litigates against destructive development projects at the National Green Tribunal, and has challenged the environmental clearance for a proposed 1,320 MW coal-based thermal power plant in Mirzapur. The clearance has been revoked.

Sinha has also undertaken several wildlife surveys in Mirzapur. Thanks to VENHF's first-ever wildlife inventory using camera trap survey conducted in three forest ranges in the Mirzapur Forest Division along with the Divisional Forest Officer, the state could soon have the first Protected Area dedicated to the sloth bear.

A compassionate environmentalist, he assists other activists in the preparation of scientific grounds for environmental litigation related to destructive dams, coal and power projects, particularly in Uttar Pradesh and Uttarakhand.

Dogged in his pursuit of environmental justice and determined to shine a light on Uttar Pradesh's ignored biodiversity, Sinha is an environmental campaigner and an example to the youth of today.

## GREEN TEACHER AWARD

**We were in search of an individual with missionary zeal and a proven environmental track record, who set an example for other educators to follow.**

### Laxmi Maravi

***Forest guard, environmental educationist, anti-poaching squad member and community collaborator***

Over the past decade, forest guard Laxmi Maravi has confronted overwhelming odds and shattered glass ceilings. Coming from the small hamlet of Ajhwaar in Dindori, Madhya Pradesh, Laxmi was the first woman from her village to join the Forest Department as a Forest Guard in 2005. She was subsequently posted to the Kanha Tiger Reserve and has since been patrolling this globally celebrated tiger reserve. A determined wildlife defender, she undertakes fieldwork including data collection for the preparation of Kanha's Tiger Conservation Plan. She was also involved in the massive Gaur Translocation Project from Kanha to Bandhavgarh. Almost casually, she confirms that she once managed to ward off an angry wild pig, equipped with nothing but an umbrella!

Her educational background, faculty with languages and knowledge of nature, coupled with her warm and amiable demeanour, drew Laxmi towards Kanha's Nature Education Programme, an initiative launched by Last Wilderness Foundation (LWF) in association with the Forest Department. School children from Kanha's buffer zone and other large cities including New Delhi benefit from her educational tours. She also manages the Bhoorsingh Pre-Primary

**WILDLIFE SERVICE AWARDS 2019:** *From across India's geographies, diverse communities, ages and backgrounds, the winners of Sanctuary Wildlife Awards 2019 exemplify that protecting and nurturing nature and wildlife is a pre-requisite to improve the human condition.*


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School, Mukki village, a private initiative of the Park Management, which is run on public donations.

Maravi assists LWF and the park authorities that jointly help resettled *Baiga* tribals to craft traditional jewellery, which serve as an alternative source of income for the community. Large organisations working for wildlife including WWF-India, The Corbett Foundation, and the wildlife lodges including the Taj Resorts, and the Singinawa Conservation Foundation speak highly of her resourcefulness and expertise in the arena of conservation education.

All this and anti-poaching patrolling work too! She has overcome daunting odds to carve a place for herself, for which she humbly credits the help and guidance she continues to receive from the Kanha park authorities.

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**GREEN TEACHER AWARD:** *The first woman of her community to join the Forest Department, Laxmi Maravi is an educator, managing a public school at Mukki in the Kanha Tiger Reserve buffer. A die-hard believer in community conservation, she organises walks, talks and trails for village children, including some who are hearing and visually impaired. Like any other forest guard, she also patrols the vast, difficult terrain of the Kanha Tiger Reserve.*

## A STEP FORWARD

COURTESY: LAST WILDERNESS FOUNDATION

A shy girl from Balaghat, Shweta Uikey shifted to the little hamlet of Mukki, Kanha in 2013 after her wedding. Little did she know that starting a new life in a new region would also mean moving in a new direction. Always eager to learn, she was thrilled when approached by two forest guards, Nisha Patta and Laxmi Maravi (Sanctuary Green Teacher Award 2019 winner), to start a canteen in Mukki. Shweta was willing to take up the challenge and even encouraged other women in the village to embrace their culinary skills to enjoy possible entrepreneurship. An initiative masterminded by the Assistant Director, Surendra Kumar Khare, the idea behind the canteen was to empower the women in the village and make them financially independent. However, it was not easy. After the feisty team of Shweta, Nisha and Laxmi convinced four women, they had to battle it out with other community members who did not approve of the women ditching the traditional attire of sarees and donning aprons, as they pursued a three-month culinary training programme at the Taj Banjaar Tola in Kanha. "We were looked at as a bad influence and were taunted every morning," said Shweta as she recalls what the toughest part of the journey has been. "We were daughters-in-law of the village, our job was to look after the house and children; working outside the home was considered a waste of time and disrespectful."

However, after the training, during which the ladies learnt how to bake bread, biscuits, and cakes, the chefs-in-the-making refused to look back. Boldened by the success of the four trainees, six more women joined the force and soon, they formed a self-help group called 'Morni Tejasvini Sah Sahayata Samooh.' Armed with confidence and ingredients, the canteen at Mukki was started in 2016. "The most exciting part of working at the canteen was meeting new people and hearing stories about what they saw during the safari in the forest."

As Shweta's culinary expertise grew, Khare encouraged her to become a forest guide too. By 2017, Shweta, clad in a smart *khakhi* jacket, would go with tourists during the peak tourism season when the park was short on regular guides. *"Tourists se humko 'sheher' ke bare mein seekhne ko mila, aur humne unhein jungle ke baare mein bataya. Lekin jungle mein mujhe sabse zyada maza us din aaya, jab maine hornbills dekhe."* ("We get to learn much about the city through our conversations with tourists, and we tell them about our jungles. The day I enjoyed exploring the jungles the most was when I spotted hornbills.")

With Malabar Hornbills being her newfound love, Shweta took to learning more about birds. Birdwatching became a passion for her and in 2018, she attended the guide training programme held at Kanha. *"Pehle daar lagta tha, lekin ab main chahti hoon, aur mahilein bhi canteen aur jungle se joodein."* ("At first, I used to be afraid, but now I hope that more women begin working at our canteen and in the forest.") Shweta, who is a mother of two, is content about the education of her children too. "Vinanya, who is studying in class 1 and Ujwal, who is in kindergarten, are studying in one of the best establishments we could have hoped for," she says with a smile. *"Jungle mein achi padhai mushkil hai, magar Bhoorsingh ki wajah se, wo dikat bhi khatam ho gayi hai."* ("It's usually hard to find quality education near the jungles, but thanks to Bhoorsingh, we don't have to worry about it.") Bhoorsingh Public School, started by the management of the Kanha Tiger Reserve, is an educational institution undertaken for the benefit of the village kids and children of the frontline staff who work tirelessly for the protection of our wildernesses. The school is a unique learning place, where the teaching is streamlined by means of smart classrooms and well-versed faculty who have ample experience in the education stream. A library of children-friendly books and playgrounds assure a healthy balance of experiential and interactive learning. "Vinanya now teaches me English and various nursery rhymes owing to the English lessons at Bhoorsingh," she shares.

Shweta attributes her journey to her family, with her husband being the strongest support system, and the management of the reserve for believing in her. "We are now looking to train more women from the remote village of Huditola, to make the pattern of confidence and financial independence a trend."

**By Bhavna Menon, Last Wilderness Foundation**

COURTESY: SHUBHOBROTO GHOSH

## The *Sanctuary* Interview

# Meet Virginia McKenna

*As the star of 'Born Free', Virginia McKenna portrayed the character of Joy Adamson to demonstrate the relationship between her and her husband, George Adamson, with Elsa, a lioness. Together with her co-star, Bill Travers, she founded Zoo Check in 1984, an organisation that has now grown into the Born Free Foundation, a leading voice for wild animals in captivity in zoos and circuses. Virginia McKenna was awarded the OBE (Officer of the Order of the British Empire) in recognition of her contribution to performing arts and conservation in 2004. On the 35th anniversary of the Born Free Foundation in 2019, she speaks to author and journalist* ***Shubhobroto Ghosh*** *at the Foundation's headquarters in Horsham, England, to commemorate the occasion.*

**Tell us a little about the Born Free Foundation's journey?**

One can only be very grateful to the people who started the organisation with my husband Bill, our eldest son Will and myself, in 1984 as Zoo Check, a handful of whom are still with us. We have been lucky to have a growing number of people who share our core philosophy that wild creatures should not be kept captive.

Today, along with our partners at the Kenya Wildlife Service, Born Free Foundation operates the Pride of Meru programme to protect wild lions and preserve the unique heritage of Meru National Park, Kenya. It involves tracking and monitoring lions and working with communities to nurture tolerance and implement mitigation measures to reduce human-wildlife conflict. Another key priority is education, and that's where we work closely with the Kanjoo School (with 800 children) as one of a growing number of partner schools.

The Born Free Foundation and our friends and supporters have helped with building senior classrooms, commissioning a science lab, a kitchen, a playground and providing books. As a result, more children have remained in school and been able to learn about coexistence and the importance of their

wild neighbours. All these developments are in my thoughts today.

**What about Zoo Check?**

My husband Bill and I had worked with an African elephant named Pole Pole for the film 'An Elephant Called Slowly' in 1968. Prior to filming, she had been captured by the authorities as a gift to the London Zoo and after the film was complete, we attempted to have her be given to Daphne and David Sheldrick and, ultimately, returned to the wild. Unfortunately, we were told that even if we were successful, the Kenyan government would capture another elephant for the London Zoo. This was unthinkable, so she returned to the zoo.

In 1982, Bill and I went to visit Pole Pole. Alone and in clear distress, she remembered us and put out her trunk to touch our outstretched hands. It was one of the most agonising moments that I can remember. Mixed up with the memories of the joy of being with her in Africa and our unique friendship with her, I have never really lost that terrible sense of guilt that we let her down. We launched a campaign to give Pole Pole a better life. The wonderful Daphne Sheldrick offered to take her because she was rearing two young orphan elephants at the time but London Zoo refused. We also had the chance for her to be rehabilitated in a sanctuary in southern Africa but the zoo turned down this suggestion as well. In 1983, London Zoo said they would send her to Whipsnade Zoo in Bedfordshire where she could be among other elephants. However, kept in her travelling crate for several hours, she collapsed and was subsequently put down. She was just a teenager.

Determined that her death would not be in vain, on March 19, 1984, Bill, Will and I launched Zoo Check as a challenge to the zoo ethic, which relegated animals to a captive world for lifetime imprisonment, a world without a soul.

**And how did Zoo Check transition to the Born Free Foundation?**

Captivity gives animals no choice – about what to eat, what to do, where to live, who to live with. It is true that the wild is not necessarily safe, but it is naïve to think that we can keep wildlife in captivity for their salvation by recreating the wild. Captive animals resemble little more than living trophies collected for amusement or personal pleasure.

COURTESY: COLUMBIA PICTURES

COURTESY: BORN FREE FOUNDATION

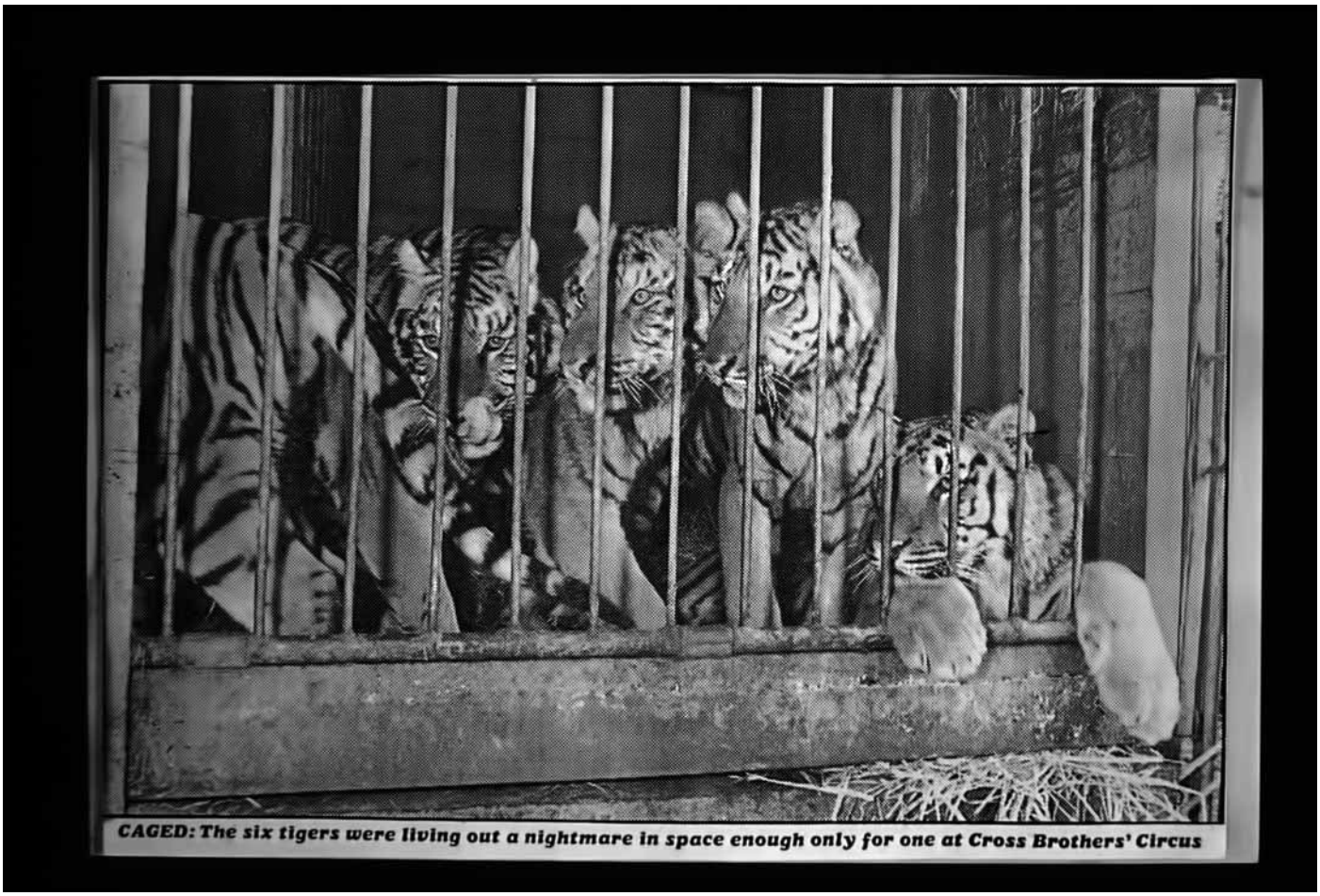
ABOVE *Stills from 'Born Free', in which Virginia McKenna and Bill Travers portrayed naturalists Joy and George Adamson. The impact of the experience led them to fight against the captivity of wildlife and become conservation campaigners.*

FACING PAGE *Founded by Virginia McKenna, the Born Free Foundation focusses on field conservation, rescue and care of captive wildlife, education and mitigation of the wildlife trade.*

We have been able to make the matter of wild animals in captivity a mainstream issue of public interest. People continue to go to zoos out of tradition and habit – indeed as a child my father took me to the zoo. Now our work to raise the issue of wild animals in zoos has created a more informed public, who can critically decide whether to go to the zoo to have a 'good day out' – or not. Zoo Check, in essence, has sown a seed in people's minds to reflect on the plight of captive wild animals and try to understand the reality of life for wild creatures who can never be free.

It was Bill's idea. Given that we were increasingly getting involved in wild animal protection work in the wild

COURTESY: BORN FREE FOUNDATION




*Six tigers rescued from the Cross Brothers circus in Kent, England were offered refuge at the Bannerghatta National Park, Karnataka in 1986.*

apart from our work in zoos, he felt that a new name was necessary to better reflect this scope of work. Zoo Check transitioned into the Born Free Foundation in 1992.

We still have a very strong anti-captivity component at the Born Free Foundation. It will always be my greatest focus, and I still visit zoos to check on conditions in which wild animals are kept captive. Yes, we do conservation work on behalf of the Born Free Foundation, and we will never give up on highlighting the plight of animals in captivity. For the past 25 years, we have been pressing for the ban on animals in circuses in the U.K. I am glad to say that the government has now promised that this activity will be outlawed in 2020.

**Born Free inevitably highlights the plight of zoo animals.**

Yes! Captive wild animals in zoos suffer mentally and physically. If we do not speak for them, who will? Captive wild animals share the same physiological characteristics as those that are free-living. Tragically, in today's world, animals are still being captured from the wild to cater to the seemingly insatiable appetite of unscrupulous zoos. African elephants are being captured from the wild in Zimbabwe for zoos. All these years later, the issue of wild animals in captivity is still with us, and we will always continue to oppose it.

**What are the linkages between the work on captive wildlife and animals in the wild?**

It is about educating people about wild animals in all situations, be they wild or captive. I was extremely touched by a question put to me by a nine-year-old boy at Kanjoo School. "Please, miss, why do men kill lions?" Indeed, the answer is inexplicable to me. To appear brave and macho? Maybe to corner a lion in an enclosure and then shoot the helpless creature as they do in canned hunting operations. This despicable activity, that fuels the capture and killing of wild animals, is one powerful illustration of the link between our work on captive wildlife and our work with animals in the wild.

**Does your work involve armed intervention to stop wildlife poaching and trade?**

Our work against the wildlife trade is hugely important. We work with communities to help tackle this. We do not provide arms nor do we arm anyone in our team. We believe all life is to be valued – that is the philosophy of the Born Free Foundation.

**Tell us something about your work in India.**

In 1986, we rescued six tigers from the Cross Brothers circus in Maidstone in Kent, England. The circus owner, a former taxi driver, lacked a proper license for keeping the animals. I was preparing for a trek in Zanskar in India when I met Ramkrishna Hegde, the Chief Minister of Karnataka, whilst he was passing through London. He offered us the Bannerghatta Reserve in his state for rehabilitation of the tigers in a huge enclosure. We took a second set of tigers to Bannerghatta some years later. The tigers King, Royale, Harak and Zeudy were rescued from

an Italian circus, Ginny from Limburgse Zoo in Belgium, and Roque from a pet shop in Spain. With Roque's death in 2018, the saga of the rescued Born Free Foundation tigers came to an end sadly in India. Bannerghatta National Park decided that although they would continue their rescue efforts for big cats from India, they would no longer accept big cats from abroad. However, the facility now offers a home to injured tigers or 'conflict tigers' (those that have become a threat to human life) and so I am delighted that, all these years later, it is still helping address the welfare of tigers in need.

**How do you compare Virginia McKenna the actress with Virginia McKenna the activist?**

I think animals have been a common connecting theme in my performances as an actress and my work as an activist. Actors and activists are both communicators who express their feelings to an audience. As an actress I have been a communicator, a conduit, for other people, playwrights and directors. In my transition from actress to activist, I no longer have the need to remember other people's words. Today, I can speak freely from my heart about the plight of captive animals that mean so much to me. As an activist, I can draw on the comparisons I see between captive animals and humans and the lives we lead in our increasingly crazy, pressure-cooker world. My enormous gratitude goes to the original Zoo Check team who helped me make the transition and become the campaigner I am today.

**What do you think of zoos like the proposed one at Aarey in Mumbai that will be created by cutting forests?**

We do not have the right to see everything up close. Nature should be about preserving natural areas and not 'ticking a box' to say we have seen everything from penguins to polar bears. Today, we have the most magnificent documentaries that can bring nature to our homes without the need for caging and keeping animals in captivity. If any politician has an ambition to bring polar bears to a city zoo, then I think they ought to think again and work out what really matters in life. My principal opposition to the zoo being proposed in Aarey is that the captive animals they will incarcerate will have no life. Existence for them will become meaningless, and the public will learn very little of any *real* value.

COURTESY: BORN FREE FOUNDATION

*One of the six tigers that was rescued from the Cross Brothers circus in 1986, after release in the Bannerghatta National Park, Karnataka.*

**There is a perennial debate about working for human benefit over that of animals.**

Why must there be a choice between helping humans and animals? Animals feel the same emotions as humans. My concerns for animals are based on the same concerns I feel for underprivileged, disenfranchised and marginalised people. I can't stand the thought of children who cannot go to school, the mother who has to trudge miles a day to collect basic needs such as water, the man who is paid a pittance for his labour and whose work simply makes someone else richer. But does that mean I should not care about the bird in a cage who will never fly? You only have to ask the question, "Why does a bird have wings?" to understand my outrage. Our compassion should be universal and extend to all those who are vulnerable and in need – human and animal.

**What are your views on animal products that are obtained by cruelly killing animals?**

I am completely against making products for fashion and clothing by killing animals, whether it is wearing fur, leather or silk from silk worms. We do not need these products to satisfy our vanity. We should always choose humane alternatives when it comes to fashion. Cruelty-free silk is available – let's use it.

**And on hybrid animals?**

While hybridisation does occur in nature and may be an important part of the process of evolution by natural selection, human manipulation to satisfy the whims of fashion or ego must stop. Examples of human manipulation includes crossing a lion with a tiger to create a liger, or a donkey with a zebra to create a zedonk. Already existing hybrids must of course be treated with compassion and care.

**Are we doing enough to deal with our planet's climate change?**

The climate change crisis is fearful and cannot – must not – be denied. Climate change is a reality in the here and now that must be confronted. This will require changes to human behaviour. We must adapt, and do it fast. We cannot leave it up to the next generation – by then it will be too late. The reaction of many young people shows us the way. They see the enormity of the crisis facing humanity and all life on earth. They call on our leaders to take action, not to deny reality and to accelerate measures that will reduce and reverse the processes that are causing the planet to warm up. It is our generation that has

ARPIT KUBBA

*This is how the world is meant to be – where tigers rule wild spaces and thrive. Captive animals resemble little more than living trophies collected for our amusement or personal pleasure, says Virginia McKenna.*

caused this potential catastrophe – it is up to us all to do something about it.

**What is your message for our readers in India?**

Live your life to the full and play a role in a true story. You see, our relationship with George Adamson during the making of the film, 'Born Free' was more than a role; it became a profound life experience. It changed our perceptions and caused us to chart a new course for the rest of our lives. When filming finished, Bill, George and I were able to prevent three of the lions used in the film from going to zoos and other captive facilities. Bill started his documentary film career by making *The Lions Are Free*, the story of those three lions and our filming with Pole Pole eventually led to the formation of Zoo Check. So, if you really believe in something, do not be afraid to be criticised. Be brave. Trust in your own compassion and what you hold to be true.

Bill, Will and I were vilified by the zoo industry when we spoke out on the sad plight facing Pole Pole. We withstood this and deployed the resistance to criticism Bill and I had experienced in our acting careers.

If you believe in doing good, you can always find the space in your busy life to make a positive difference and help all living creatures.

**What's your take on the 11th World Wilderness Congress?**

The WILD11 global gathering in Jaipur in March 2020 is timely indeed. I feel that the plight of wild animals has become even more serious, as their habitats are increasingly occupied by people. We so often tend to ignore – or forget – that these fascinating creatures create the world's wild environments, and without them humans will inhabit a diminished and sterile planet. I very much hope the conference will be well attended. More and more people need to spread the word to ensure there is hope for us all.

**Your message for the future?**

We have to be humane as well as human beings. We have to be concerned about our actions and the consequences of our actions. We need to respect the individuals that make up non-human species. We must marvel at the wonders of nature, admire the way birds fly, the manner in which lions behave in prides and how mother animals protect their young. Compassion, understanding and selflessness must become the cardinal qualities of human life, integral parts of our hearts and minds. Every human being has the capacity to do great evil, to cause great suffering, to inflict great hardship and to ignore the plight of others. However, by the same token,

COURTESY: BORN FREE FOUNDATION

# *Interview with Dr. Liz Greengrass*

## *Head of Conservation programmes*

**Dr. Liz Greengrass:** We are also working with wild tigers to safeguard their future in India. The Born Free Foundation created the Satpuda Landscape Tiger Partnership with the Wildlife Conservation Research Unit (WildCRU) of Oxford University in 2005. Today, I manage this project along with our partners in India, including NCSA (Nature Conservation Society Amravati), Bombay Natural History Society (BNHS), Conservation Action Trust (CAT), The Corbett Foundation, Tiger Research and Conservation Trust (TRACT), Satpuda Foundation, and BAAVAN (Bagh, Aap Aur Van). Our consultant experts in this project include Dr. Claudio Sillero Zubiri, Kedar Gore and Raghu Singh Chundawat.

This project is aimed at protecting India's Satpuda forest region – the largest block of tiger habitat in the country – to provide the best chance for wild tigers to survive, through conservation bursaries, community conflict-prevention activities, population monitoring and tackling wildlife crime. The project involves field research and monitoring, lobbying, human-tiger conflict mitigation measures and environmental education. With less than 4,000 wild tigers left in the wild, the future for this iconic species in its natural habitat is precarious.

On the Indian subcontinent, where the largest tiger population persists, only 11 per cent of their original habitat remains in an increasingly fragmented and often degraded state. Tigers are a conservation dependent species, requiring large contiguous forests with access to prey and water, undisturbed core areas in which to breed and dispersal corridors.

The Satpuda forests of Madhya Pradesh and Maharashtra offer perhaps the best hope for India's remaining 2,967 wild tigers (2018 estimate). Constituting several tiger reserves connected by forest corridors, this is the largest viable block of tiger habitat in India. The Satpuda Landscape Tiger Partnership (SLTP) brings together a network of Indian conservationists working in seven tiger reserves across this very important tiger range – Bori-Satpuda, Kanha, Melghat, Pench MP, Pench Maharashtra, Navegaon-Nagzira and Tadoba-Andhari and habitat corridors linking them.

Through conservation bursaries funded by Born Free Foundation, dedicated NGOs and individuals are implementing a variety of conservation activities to protect tiger habitats, mitigate tiger-human conflict, tackle wildlife crime, monitor tiger populations, raise awareness and improve the livelihoods of people living next to tigers.

One of the principal partners of the Born Free Foundation in the Satpuda Landscape Tiger Partnership are Poonam and Harsh Dhanwatey of TRACT (Tiger Research And Conservation Trust) who have worked closely with local communities to mitigate human-wildlife conflict and improve livelihoods. Also involved is Kishor Rithe, Founder of the Satpuda Foundation, who has spent more than three decades in the forests of Central India working to protect these forests, tigers and other wildlife. As part of the Born Free Foundation's unique 'Living with Tigers' programme, the Satpuda Foundation works with local communities to help them coexist with wildlife, and lobbies the government to ensure that Central India's diverse but fragile natural landscape is protected. We are working together to tackle the poaching crisis, safeguard tiger habitats and find conservation interventions for communities and wildlife to live together peacefully. Efforts include our dedicated teams of Tiger Ambassadors – local villagers trained to identify signs of tiger presence and take action to avoid conflict. Then there's our Mobile Education Unit, visiting local schools to teach children about wildlife conservation.

It is hard, committed and long-term work, and we haven't much time left. The good news is that, together with our Indian partners, we are making progress. In the last 10 years, the tiger population of the Satpuda landscape has increased to approximately 500.

every human being has the capacity to tap into a limitless well of compassion, to serve the needs of others as well as themselves, break down walls and build bridges between people, with animals and between species.

My core message for the future of humanity is: respect all creatures. We will destroy the natural world and ourselves if we do not follow a kinder path. We should encourage diversity in life. We inhabit a fascinating world and I tried to encapsulate my views about the world in this poem:

*What is the Earth?*
*A ball in space? A little paradise?*
*Planet of melting ice and inner fires?*
*Under my hand its surface crumbles*
*Crushed underfoot its myriad flowers.*
*Forests lie trembling under my sword.*
*The ocean darkens weeping black tears.*
*Death of sweet rivers, death-giving rain,*
*Silent and secret, invisible pain.*
*A gift from heaven this little world.*
*Each bird a jewel, each tree a mother.*
*What is the earth?*
*A fragile heart.*
*Tender my touch to save its life –*
*and mine.*

# DUDHWA

## A Cornucopia of *Terai* fauna

By Gopinathan Maheswaran

SHARAD VATS

My tryst with the *Terai* region and its associated fauna started in 1994, when I visited the Dudhwa National Park in Uttar Pradesh for the first time, for my research on the Black-necked Stork *Ephippiorhynchus asiaticus*. I would often venture into the grasslands to look for evidence of wildlife presence, especially after it was burned. The burning of grasslands in many Protected Areas in India is a common management practice to enhance soil fertility and enable herbivores to access and feed on emerging shoots.

One day, while walking on recently burned grasslands near the Sonaripur Forest Range office, I observed several clumps of hare pellets. These appeared different from those of the Indian hare; most of them had escaped the fire, while a few were half-burnt. The miasma of the burnt soil and grass was unique and I had never experienced such a scent before. The pellets, I later realised, belonged to one of the most elusive mammal species of the *Terai* grasslands of India and Nepal – the hispid hare *Caprolagus hispidus*.

### A QUEST FOR THE RARE HISPID HARE

Intrigued, I later pursued my research on this species in another location a few hundred miles further east – the Jaldapara Wildlife Sanctuary, West Bengal (The reclusive hispid hare, *Sanctuary Asia*, Vol. XXII No. 6, December 2002). In 2018, I returned to Dudhwa to document the species using camera traps. Many days and several localities later, I finally managed to capture a sub-adult hispid hare in a grassland near the Sonaripur Range. As it was December, the grasses were tall and yet to be cut by the Forest Department. In fact, a few grassland patches behind the Sonaripur range had already been cut by the locals on the advice of the Forest Department. But in the adjacent grassland, I saw two tractors in action. It was a harrowing scene; I was worried this could have killed any small animal, including the slight hispid hare, that may find it hard to flee.

knowing what could be ahead. The threat of running into a rhino or elephant is ever present. Once, in the Kakrahataal area, my team and I were searching for hare pellets with two *mahouts* atop tamed elephants keeping a lookout. One of them suddenly alerted us of an approaching wild tusker a mere 80 m. away. This tusker was notorious for intimidating female camp elephants. With no time to spare, both the *mahouts* helped us climb up onto their elephants and we managed to escape what would surely have been a dangerous encounter.

The sighting of wild elephants in Dudhwa is a rare occurrence. But during the rainy season, a few herds come into the park from Nepal and stay in the region year round.

## RISE AND FALL OF SPECIES IN DUDHWA

Aside from looking for hispid hare pellets, we also spotted a herd of swamp deer quenching their thirst at the Amhataal. I had never seen swamp deer at such close quarters in Dudhwa, as they are commonly seen only at Muthnataal in the Satiana region.

Over the years, I have witnessed several significant changes in the grasslands of Jaldapara and Dudhwa, caused due to floods and siltation, which then resulted in the disappearance of several unique faunal species. The population of hog deer has plummeted in both places, but the decline of swamp deer from the grasslands of Dudhwa is particularly deplorable.

Fortunately, some species are doing quite well. For example, crocodiles have proliferated in the Suheli river near Salukapur and on the way to Satiana. During my stay there from 1994 to 1997, I saw only a few crocodiles. But now, basking crocodiles on the sandbanks of the Suheli are a fabulous sight, indicating a healthy population of large fish in these waters.

In the Badhitaal region, in the core area of Dudhwa, the management has introduced four rhinos from the Kakrahataal region. In 1978, the last known rhino in Uttar Pradesh was shot in the Pilhibit district, not far from what is now the Dudhwa

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Apart from spotting that one hispid hare, I had little luck, though the camera traps did obtain images of an adult male and a sub-adult female tiger. Both the tigers were captured leaping into the tall grasses in split seconds, unnerved by the unusual object in their path.

However, using camera traps was the only way to capture the elusive hispid hare as they conceal themselves well in the tall grass. The cameras were set up after seeking evidence of hispid hare pellets and thatch cuttings left over by the animals. Seeking fresh pellets is not an easy task either; one has to wade through the thick tall grasses, not

COURTESY: GOPINATHAN MAHESWARAN

ABOVE *Reclusive and shy animals, hispid hare, unlike the Indian hare, sport shorter ears and darker coats and prefer the dense cover of the tall* Terai *grasslands.*
FACING PAGE *Resplendent with picturesque grasslands,* sal *trees and long dirt roads, the Dudhwa National Park is an ideal home for a diverse* Terai *fauna, including these star attractions.*

GOPINATHAN MAHESWARAN

*In search of fresh hispid hare pellets, the author and his team navigate through the impenetrable grasslands, as* mahouts *keep vigil. Moments after this image was taken, a wild tusker showed up!*

National Park. Sometime in the early 1980s, the IUCN Rhino specialist group and the Rhino sub-committee of the Indian Board for Wildlife (IBWL) recommended the establishment of an additional rhino population in India. An area of 25 sq. km. in Kakrahataal with grassland swamp terrain was chosen to reintroduce the rhino.

The hispid hare too continues to survive in both Jaldapara and Dudhwa. After 2001, when I visited Jaldapara in 2015, I was disappointed to not see any evidence of the species in the prominent localities where I had previously recorded them. But in 2018, their presence was evident in almost all the grasslands. A good sign, as many other grassland species had also revived – except the hog deer.

## MEMORIES OF DUDHWA

The nostalgia of my erstwhile days in Dudhwa will remain with me for many years to come. The vast stretches of tall grasslands surrounded by *sal* trees with long dirt roads make this region ideal for tigers. The ancient metre gauge railway line that passes through the core area of the park is still active. Though few stations have been dismantled, trains continue to pass through the reserve and animals often cross the railway line.

During my stay in the late 90s, I had spotted tigers around 28 times along the long roads. In 2018, though I stayed for 12 days, I never spotted one directly, though the camera traps captured a few, one of which was probably an adult male that I had seen in Badhitaal the previous year. Interestingly, on two consecutive days around 10 a.m., the same tiger was seen passing through the stretch of dirt road inside Badhitaal. The cameras also captured four other cat species – the leopard, jungle cat, fishing cat and leopard cat.

## A TIMELINE OF THE *TERAI*

Till the early 1950s, the whole *Terai* region had a negligible human population, except for the local tribe of *Tharus* who inhabited the area. It is believed that the prevalence of malaria prevented the colonisation of this area till DDT brought it under control and opened the area for colonisation. The north Indian *Terai,* which once covered many districts of Uttar Pradesh is now restricted to Pilihibit, Lakhimpur-Kheri, Bahraich, Gonda and Gorakhpur covering an area of about 6,500 sq. km. Small patches are left in Bihar. Expanding agricultural activities, current land-use pattern and other biotic and abiotic factors have reduced the once extensive *Terai* into small fragments.

Together with the Royal Suklaphanta Wildlife Reserve and the Royal Bardia National Parks in Nepal, Dudhwa is an example of the often marshy, alluvial lands between the Bhabar and the Gangetic

**BELOW LEFT** *Greater one-horned Indian rhinos, once thrived in the region but were wiped out in the 1980s. A reintroduction programme in 1984-85 and then in 2015 proved successful. The current count is over 30 rhinos.*

**BELOW RIGHT** *Swamp Francolins, listed as vulnerable, are specially adapted to the* Terai *region, and thrive in swampy areas such as Kakrahataal.*

GOPINATHAN MAHESWARAN

GOPINATHAN MAHESWARAN

plains – an area that has been largely converted to agricultural use elsewhere in the sub-continent west of Assam. There are a good number of birds and mammals, which are characteristic to this habitat. For example, Swamp Francolin and hispid hare occupy the tall and wet grassland habitats whereas medium-sized grasslands are occupied by the Bengal Florican and hog deer. During my 2018 visit, I had seen Swamp Francolins in good numbers inside the rhino enclosure in Kakrahataal, which has sufficient swampy areas, an encouraging sight as these birds were previously seen only in the Satiana region, especially outside the reserve in sugarcane fields. The Bengal Floricans can only be seen inside the park from late April until the end of the monsoon. During my earlier days, I had even seen four Bengal Floricans together in the Banketaal region and often displaying males in Kakrahataal. Furthermore, next to Manas in Assam, Dudhwa is the only place in India where one can find five species of deer – chital, sambar, barking deer, hog deer and swamp deer – besides the largest antelope, the nilgai.

An abundance of prey species substantially supports the tiger population of the park. My field notebooks show that on average, I had seen one tiger a month in Dudhwa during my earlier days. However, the pressure on the tiger is also increasing, especially in the Belrayan range as many instances of cattle lifting by tigers had been reported. As retaliation, a few tigers have been poisoned by the villagers. The park's proximity to Nepal with porous borders only aggravates the problems.

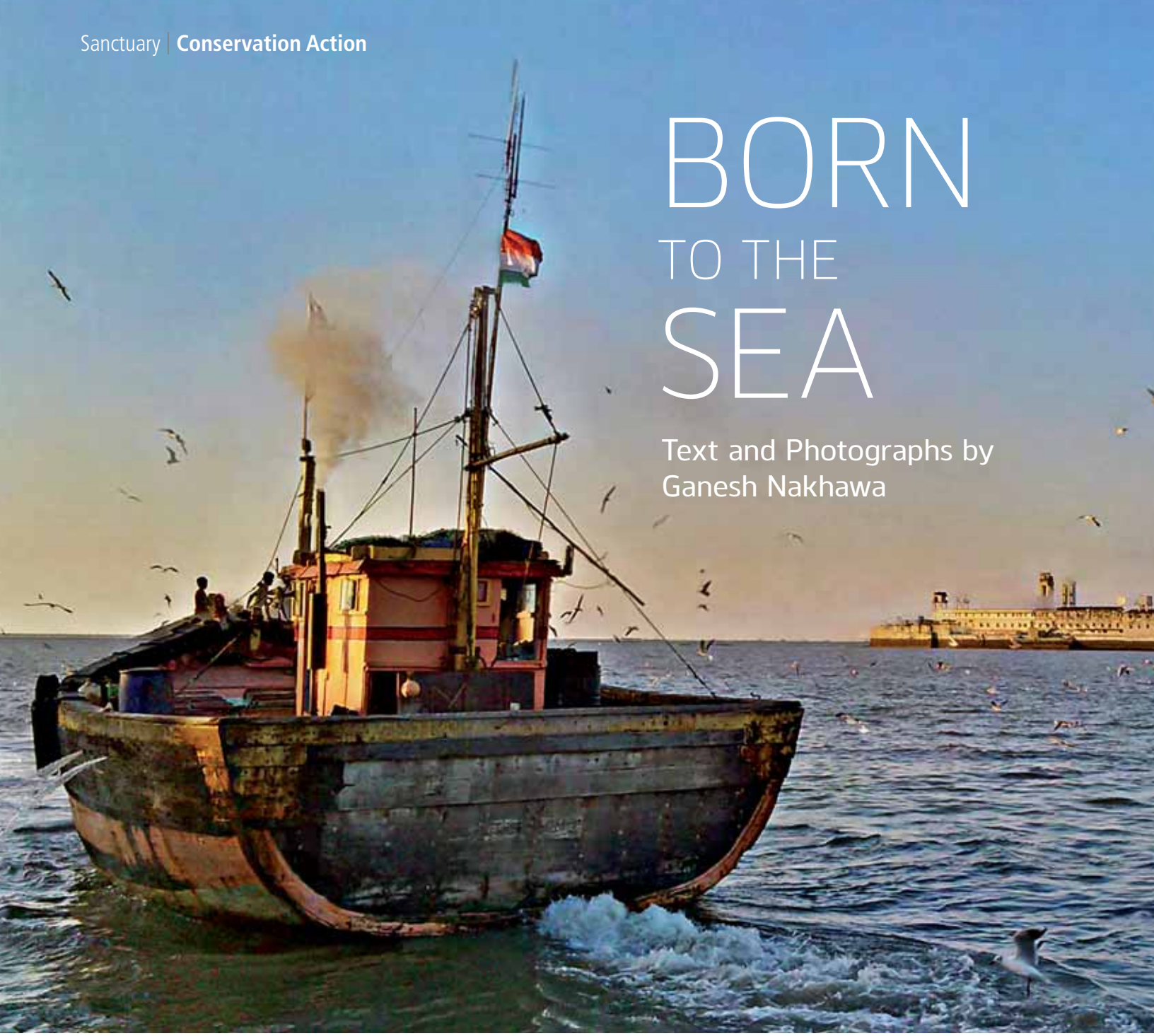
Unless urgent conservation practices are taken up, most of the wetlands in Dudhwa will disappear. The unchecked growth of the pernicious weed *Sesbania aculiata* in many of the wetlands causes great concern. Erratic rainfall and siltation in the wetlands have compounded the already beleaguered situation. Apart from these, illegal thatch grass and fuelwood collection by locals from the buffer areas have now extended into the core areas of the reserve, especially near the Rheta block in Belrayan range and Satiana range bordering Nepal.

Despite its many troubles, the Dudhwa National Park often surprises researchers like me. My camera trap sessions over the past year have revealed interesting interactions between wild denizens – rhinos and crocodiles sharing a close association with species such as the Indian pangolin, and fishing cats sharing their space in many of the wetlands with smooth-coated otters. This only proves that the park still holds significantly healthy populations of a variety of species and authorities have to work to conserve these unique wetlands to secure the future of their wild residents.

COURTESY: GOPINATHAN MAHESWARAN

ANURADHA MARWAH

TOP RIGHT *There is enough food for carnivores such as tigers in Dudhwa, but the predators face pressure from habitat loss and retaliatory poisoning by cattle herders.*
BOTTOM RIGHT *Five species of deer are found in Dudhwa – chital, sambar, barking deer, hog deer and the swamp deer we see in the image.*



# BORN TO THE SEA

Text and Photographs by
Ganesh Nakhawa

As a child growing up in Mumbai, I would often accompany my father on his fishing trips. I distinctly remember my excitement every time I would spot a whale. Marine mammals are considered divine by my *Koli* community, so we would crack a coconut and mutter a small prayer to show our respect. I consider myself extremely fortunate to have witnessed these gentle giants frolic in our waters, as the situation is quite grim now. A lot has changed since those early trips in 2001 and I can almost graph the decline in the fish population over the years.

In 2011, when I returned from Scotland to take over my father's fishing boats – I started to notice the subtle changes in the sea and that the *Kolis* were responding by changing their fishing practices too. For instance, between 2011 and 2015, the sharks, hammerheads and rays that were

*The fish stocks are dwindling, predatory fish species are on a rise and we cannot ignore these drastic changes any longer. They're not warning signs anymore; it's a full-fledged catastrophe.*

landing at the docks were almost always accidental by-catch. I first felt the need to start a conversation around sustainability when the accidental landings of these species transformed into intentional targeting to meet increasing global demands. The ecosystem in the oceans and seas is very fragile, and oxygen deprived pockets in the Arabian Sea are increasing at an alarming rate. Almost every human action has an impact on this once thriving biodiversity. The fish stocks are dwindling, predatory fish species are on a rise and we cannot ignore these drastic changes any longer. They're not warning signs anymore; it's a full-fledged catastrophe.

The dwindling shark numbers have now resulted in an explosion in squid population – as sharks were the primary squid hunters. With the sharks gone, there's no other species to keep in check the squid population.

One needs to understand the global pressures on fishing communities to understand and appreciate the pressures that communities like the *Kolis* are dealing with. Over centuries of living alongside the sea, we – the *Kolis* – have never known any conflict with the sea. But things are not the same for us as climate change is making our tropical waters warmer, leading to changes in fish migration patterns. Fishing communities are struggling both financially and socially. In my

ABOVE *While trawling off the coast of Guhagar in Ratnagiri, Maharashtra, fishing nets targeting prawns in the monsoons unintentionally bring in juvenile marine species like ribbon fish, Indian mackarel, and crab.*

FACING PAGE *A bottom trawler off Sassoon Docks in Colaba, Mumbai. Trawlers that once came back with bountiful catch in three days in the 2000s now average over 10 days.*

ABOVE *A major threat to marine life is the unintended killing of juveniles such as these tiny, bottom-trawled pomfret. This happens when massive nets are weighed down and dragged across the sea floor, killing virtually all marine creatures.*

TOP *An awareness-building event organised by the Mangrove Foundation and the Wildlife Trust of India highlighted unsustainable fishing practices and their impact on both common and endangered species.*

observation, fishing practices like ghost nets and drifting gill nets are leading to large scale destruction, but the fishing communities have to resort to these for their own survival.

The *Koli* fishing community has traditionally followed varied fishing practices. Our tropical waters were once a haven for different species of fish – leading to diverse fishing methods like purse seine, trawling, gill nets and bag nets. All these methods are unique, seasonal and meant for specific fish species only. The fishermen, now more than ever, need to be mindful of their methods and the impact that they have on fish stocks and ocean-bottom health.

However, there's only so much that the fishermen can do as the weather patterns have become erratic. Certain species like sole fish, groupers and sand lobsters have been driven to extinction, and if I were to compare certain current fish stocks with those in the 1980s, the fish landings of certain species, driven by consumer demand, has negatively impacted those populations. The consumer also needs to start taking the onus for their consumption patterns. Just as cod is important to Europeans, salmon for the Alaskans, and blue-fin tuna for the Japanese – fish such as pomfret and Bombay duck are important for our coastal waters. The increased demand for these fish species is dangerously depleting their populations and putting further pressure on the sea and its biodiversity.

One can also not ignore the role of illegal fishing vessels present in India's Exclusive Economic Zone – we've seen Chinese, Sri Lankan and Mauritian industrial fishing vessels in our waters. These vessels are illegally targeting commercially valuable fish species and driving their populations towards extinction.

Sustainable fishing methods cannot be practiced in social isolation or without consumer participation. Global food fads are leading to en-mass destruction of fish species and ocean health. The consumer needs to be educated about the pressures that these food choices are putting the sea and the fisherfolk under. I've been undertaking sustainability drives to sensitise fishermen about endangered species and the need for conserving marine mammals and turtles, but the consumer cannot wash their hands off the unsustainable, illegal and aggressive industrial fishing that their food choices are resulting in. ↶

*Ganesh Nakhawa is the Director of Karanja Fisheries Cooperative Society Ltd. He is on a mission to change consumer habits to aid an ocean-friendly lifestyle by bringing the fishing community together to promote sustainable fishing practices.*

ABOVE *As our oceans are emptied of marine life, sustainable marine fishing practices become all the more imperative. This is in the interests of the fishing community, which must lead and be umbilically involved in strategies to prevent the unintended killing of marine species, including this shark.*
TOP *Some of the bycatch in nets during* dol *net fishing – one of the most commonly practiced methods used in strong currents in the creeks and coastal waters around Mumbai.*

# The Gardeners of Eden

Dung beetles, Superfamily Scarabaeoidea, are the unseen heroes of the forests, performing a most important task – cleaning. As evident from their names, dung beetles are coprophagous, primarily feeding on the dung of other animals.

Aided with a sensitive sense of smell, dung beetles shadow other animals and as soon as fresh dung is available, they dive in for food. They are categorised into three types based on how they use dung – rollers, tunnellers and dwellers. Rollers, like this one, form a ball of dung, and roll it straight to use as food, or as a safe place for a female to lay her egg, so that the larvae can feed on the dung once it hatches. Tunnellers, usually a 'male-female' pair form a tunnel right beneath the dung. Dwellers just stay inside the pile! Female dwellers lay their eggs in it, which hatch and feed on the dung.

As dung beetles may only lay five eggs in their short lives, they take great pains to ensure that their hatchlings are well provisioned and safe from predators.

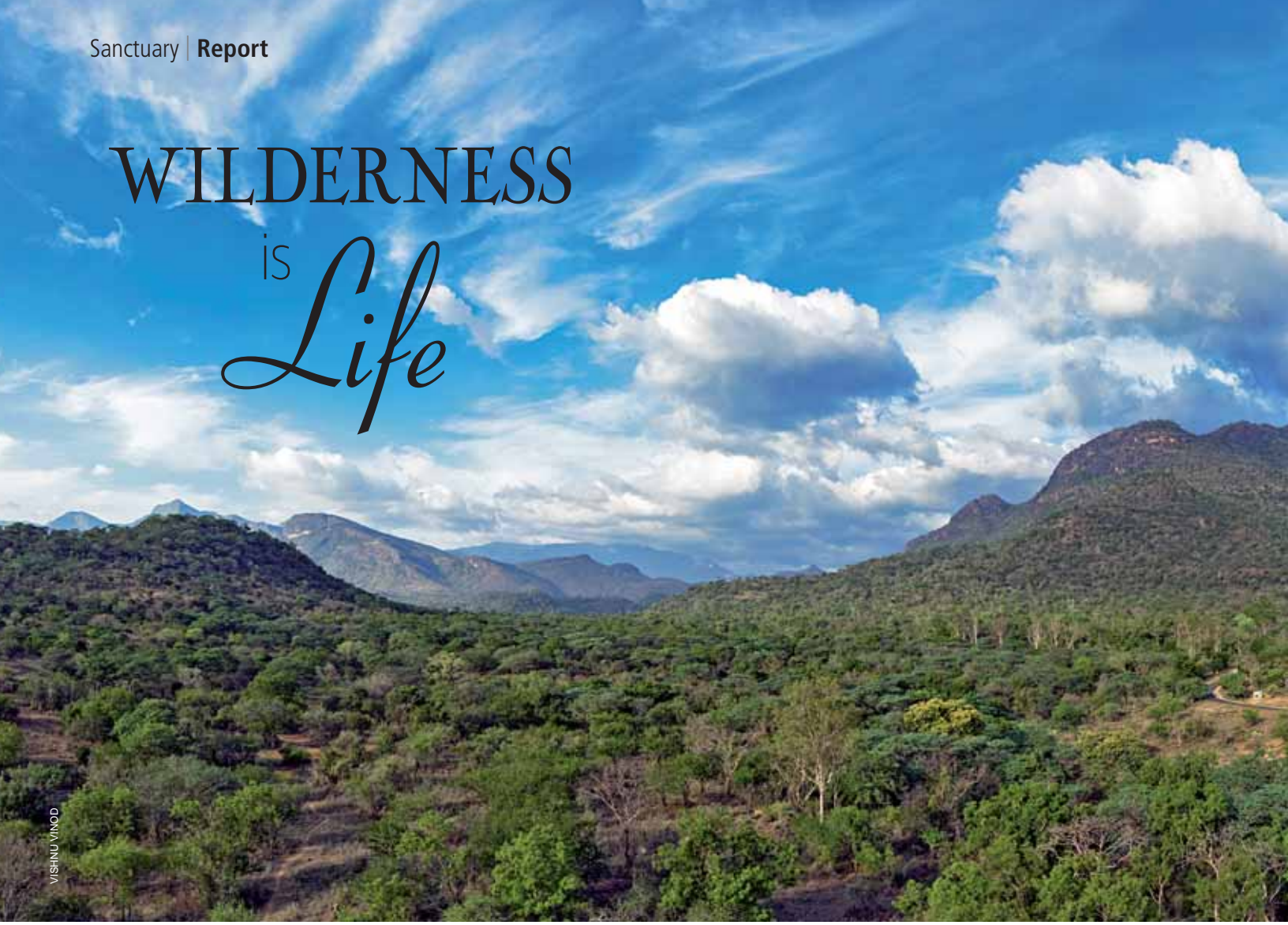
The dung of herbivorous animals often has partly undigested food, as tough fibres are harder to digest. It is these bits of undigested food that dung beetles love. While young larvae eat solid dung, adult beetles enjoy the nutritious moisture.

Hardy insects, dung beetles are far stronger than they appear to be. A roller beetle can pull or push about 1,141 times its own weight! They can survive in almost any climate except extreme cold and are found on all continents except Antarctica. They thrive in a variety of habitats – farmlands, forests, grasslands, and deserts.

Vital to the health of ecosystems, they recycle nutrients and improve soil structure in tropical forests and agricultural fields. They also help disperse seeds!

Photographer: Asela Karunaratne
Location: Yala National Park, Sri Lanka.
Details: Camera: Nikon D4S, Lens: Nikor 105 mm. f/2.8,
Aperture: f/7.1, Shutter speed: 1/1600, ISO 1250, Focal length: 105 mm.
Date: January 15, 2015; 09.31 a.m.

# WILDERNESS is *Life*



VISHNU VINOD

*Between rumination, abstraction and analysis, **Vance Martin** and **Bittu Sahgal** share their world view and solutions to the great challenges that lie ahead for our biosphere. On the eve of the 11th World Wilderness Congress convening in Jaipur, India, both writers affirm that love, reverence and concern for our astonishing planet fashioned the vision, purpose and wilderness mission of the WILD Foundation and the Sanctuary Nature Foundation.*

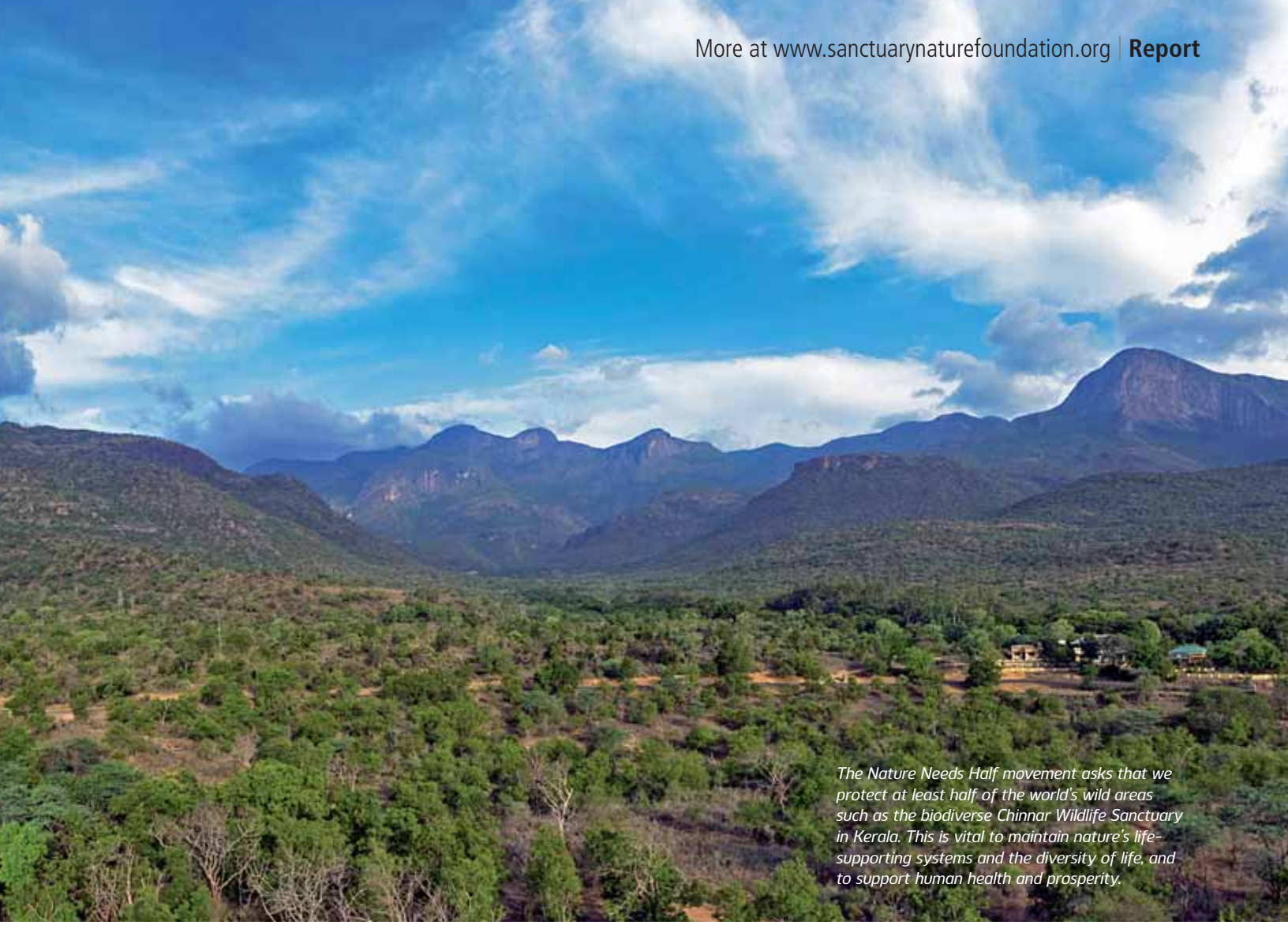
The birth of the Himalaya 65 million years ago coincided with the most dramatic mass extinction ever to have taken place on earth – the death of the dinosaurs. Every twisted rock stratum, terraced valley or craggy cliff advertises the evolution of these, the highest mountain ranges in the world. Fish fossils, gneisses and schists speak of a landmass that was once under the great Tethys Sea and which, when it surfaced, was sculpted by Earth's agents of change – ice, wind, rain and temperature. Slowly, life forms adapted and adjusted, and occupied every available niche with astounding diversity that we have not yet fully catalogued.

The dinosaurs died, but life cycled on. Around two million years ago, a new agent of geologic change made a dramatic appearance – ancestors of *Homo sapiens*. With an enthusiasm born of new discovery, humans instigated change at a speed and scale to which millions of species were unable to adapt. River courses were altered, massive lakes created, oceans tainted, hills levelled, coastlines remodeled and soil biology modified. All in the span of a geological wink. A new epoch emerged... the Anthropocene.

## NATURE NEEDS HALF

Our technological advances are nothing to deride. The pioneers of yesterday had managed to carve a niche for humankind from an environment that was far from hospitable. That said, the biosphere is signaling that it's time to curb our enthusiasm and give the plants and animals that comprise the wilderness half a chance to adjust to life in our "fast lane".

After years of struggling to keep our biosphere functional in the face of its steady decline, a decade ago, the



*The Nature Needs Half movement asks that we protect at least half of the world's wild areas such as the biodiverse Chinnar Wildlife Sanctuary in Kerala. This is vital to maintain nature's life-supporting systems and the diversity of life, and to support human health and prosperity.*

WILD Foundation helped set in motion a series of events that culminated in world leaders asking for the very first time, "How much wilderness do people need to survive?".

Earth is a planetary green engine that supports all life. Each time we remove a landscape or species from that engine, we tamper with a sophisticated set of relationships responsible for the foundation of human well-being and livelihoods. The scientific consensus informs us that destroying more than 50 per cent of Earth's wildlands and seas will result in a tipping point with catastrophic effects on climate, biodiversity loss, and human livelihoods.

Imagine a planet shared equally and equitably by people and nature, a world in which nature has ample space to exist and evolve, and people enjoy a healthy lifestyle that allows such a world to thrive.

The values in this society are based on reciprocity, or partnership, between humankind and nature, rather than a world based on a one-way system from natural storehouse to human well-being to the landfill.

Nature Needs Half (NNH) is both a vision and a common sense, a practical approach to living on an increasingly crowded planet, based on state-of-the-art scientific analysis and time-tested traditional knowledge and wisdom. The goal of NNH is to ensure that enough wild areas of land and water are protected and interconnected (usually at least about half of any given eco-region, depending on the type) to maintain nature's life-supporting systems and the diversity of life, to support human health and prosperity, and to secure a bountiful legacy of resilient, wild nature. NNH requires a shift in our thinking – to recognise that we humans are part of nature, not separate from it.

Nothing less than a bold vision and committed action at all levels is the formula to turn around the juggernaut of human development.

We can live with the Earth much better than we can live on it.

## THE SURVIVAL REVOLUTION

That understanding is what gave rise to the Survival Revolution, which is not an issue concerning morality alone. It's not that a tiger or a giraffe have some special sanction to life, denied to the chicken or lamb that winds up on some human tables. It's a numbers game. When there are too few representatives of any particular species left, then people get together to "nurse" the populations back to safe numbers. The process is expensive, time consuming and fraught with difficulty. Prevention would be infinitely simpler. But this requires many, many more aware and concerned people to join what has become the most important resistance movement ever.

*The biosphere is signalling that it's time to curb our enthusiasm and give the plants and animals that comprise the wilderness half a chance to adjust to life in our "fast lane".*

ANOOP RONALD

*Every creature on earth, including this majestic Indian gaur, is involved in a sophisticated set of relationships responsible for the foundation of human well-being and livelihoods. To protect this sanctity, we need to imbibe the values of traditional cultures, based on the ethic of giving back to the our biosphere.*

That we are at a crossroads for life on earth is obvious... the litany only increases, of glaciers melting, wildfires, mega storms, rising seas, and so on. This is not a secret... all of us reading *Sanctuary* know this. So, what is lacking? First... political will. For most "leaders", argument, self-interest, and political calculus are the order of the day. Second... the entrenched status quo. Powerful elites are caught in the self-created web of self-emolument and are afraid to change the structure. This severely impacts the vast numbers of underserved humankind caught in a web of disempowerment, inequity and lack of opportunity, with no real ability to carve their way out.

But this we know: all of us depend on wild nature and the resources of Earth. There is no Planet B. Most of us have children or grandchildren and realise we need a movement as wide as it is deep; as committed as it is informed and in love with the wilderness. Scientific data alone will not "move the needle" to get the results we need. It is our hearts and our passion to act now for change. Our imperative is to give our politicians the message they can't ignore; to push businessmen to understand that saving the earth creates jobs, sustains profits, and makes people happy. This is the Survival Revolution. This is what engages the young today. It is the greatest adventure of all times and a great time to be alive.

That said, wilderness areas – intact and high-functioning ecosystems – are essential for the health of all life on earth. Wilderness attributes and benefits are also some of the key elements in a newly emerging, spatial approach to understanding how much of nature to protect, in the form of "global Protected Area targets." Nature Needs Half (launched in 2009) is based on the best contemporary and traditional science, and in 2016 it was joined by Half Earth, an initiative of Professor E.O. Wilson of Harvard. These initiatives present a new global paradigm for Protected Areas – vastly expanding the amount of protected nature based on both modern and traditional scientific knowledge, rather than being based on political possibility and outmoded thinking. This new paradigm is now being debated as part of the United Nations Convention on Biodiversity's (CBD) Protected Area targets (both terrestrial and marine) that will be reset (and increased) in 2020 when the national "Parties" to the CBD convene in Beijing for COP15.

*Imagine our planet shared equally and equitably by people and nature, a world in which nature has ample space to exist and evolve, and people enjoy a healthy lifestyle that allows such a world to thrive.*

These and more issues, driven by hard science, will be discussed and debated at WILD11 in Jaipur between March 19-26, 2020. But it's not all and only about science, as important as that may be. Other values will help frame our thoughts and inform our actions. Traditional cultures around the world are based on an ethic of reciprocity, of respecting and giving back to the Earth that supports us. We will listen to their wisdom and their stories and learn from them how to make peace with the rest of life on Earth.

## BACK TO THE FUTURE

And peace there will be! There is exquisite beauty in the functionality built into virtually every living creature by evolution. Some can form thermal images of the warm-bodied prey they hunt. Others migrate thousands of miles using compasses in their heads, tuned to Earth's magnetic fields. Camouflage enables some lifeforms to hunt and others to hide from hunters.

Humans have survived this long by studying nature and emulating its strategies. Everything in nature has a purpose. And because nature is self-repairing, fortunately, we have solutions to all the vexing problems we face, including our climate crisis. The solutions often lie hidden in the dark and sodden leaves of untrammelled wildernesses. Such emerald carpets jealously hold back precious water... slow the rain and feed it to cavernous subterranean aquifers engineered by nature over billions of years. Wise people in bygone days worshipped and protected the forest sources of streams and rivers. For all our engineering skills, humility, awe and worship of wild nature is probably the ingredient we most need to imbibe today when polar vortexes in America, fires in Australia, droughts in Syria and floods in India hint at lessons to follow.

Nature never went wrong... we wronged nature.

The bottom line? The best habitat for tigers and all the living wonders of the world lies snugly in the human heart. Those who have no place for tigers, turtles, or termites in their hearts will leave them no jungles in which to endure either. Fortunately, with nature on our side, we don't really need to roll up our sleeves to actively repair past damage. All we need do is stop causing further damage and nature's built-in, automatic repair procedures will take over. Unless they have already been pushed over the brink, dwindled species will multiply. Forests too, will regenerate. Nature's plan will unfold as it was meant to. Outside our comprehension perhaps, but within our life spans, the damaged regions of our world could, once again, become sanctuaries for life.

## STORIES MOVE PEOPLE

Too often when developing communication plans, we become fixated on the technology, forgetting that without a good story, no amount of technological support will move an audience. Before we consider anything, we must consider the heart of our message and its impact on our audience. We must find the story.

What then are the component parts of stories with the potential to transform the public and change the way society relates to the wildness surrounding them? Experienced storytellers will tell you that a good story has only two requirements: a hero or heroine with deeply ingrained desires and objectives, and the obstacles they confronted as he or she attempts to achieve his or her heart's desire.

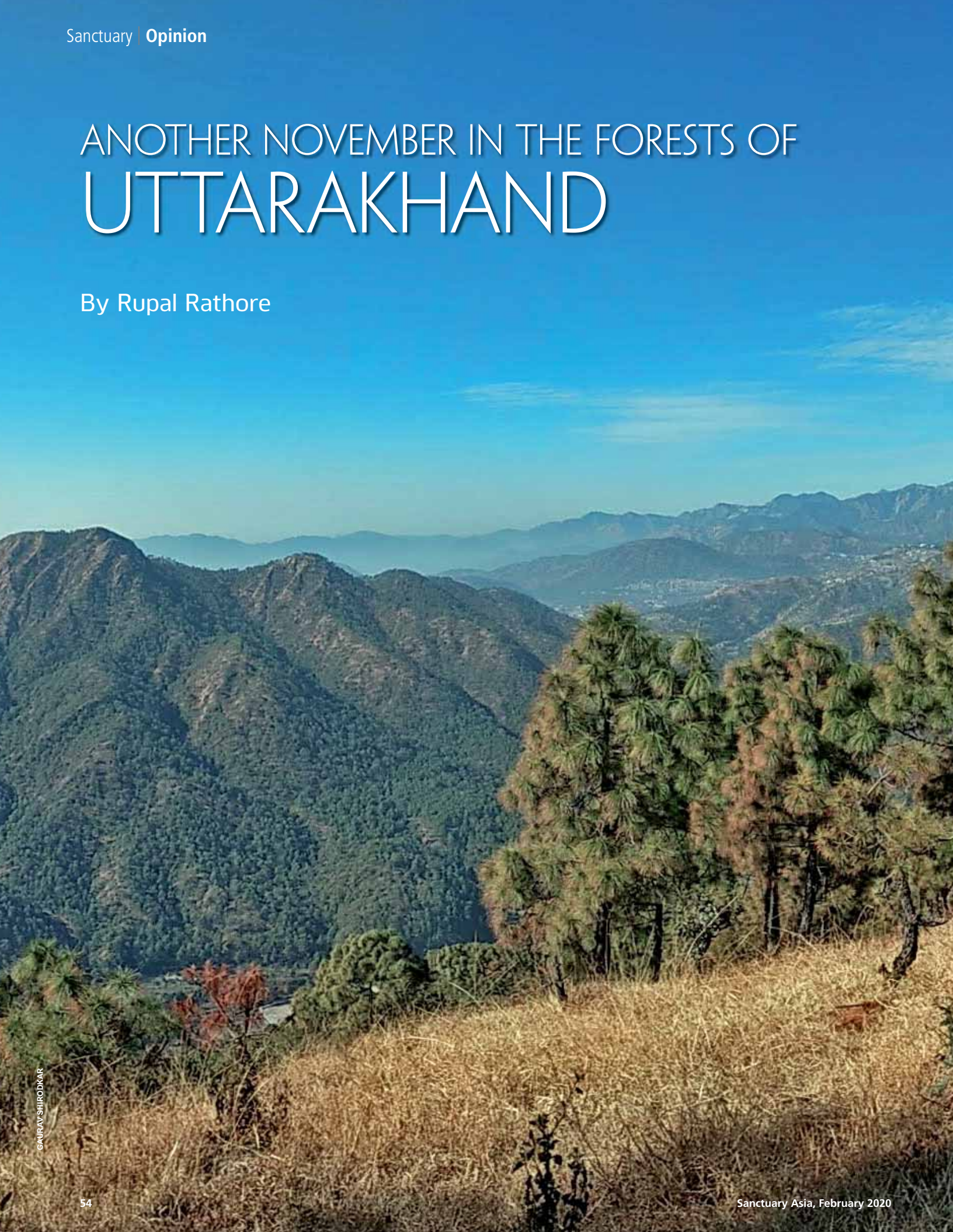
If this is the way to move the public, then the implications for committed conservationists are clear: we need to change the way we talk about nature. That doesn't mean abandoning science, far from it. We need science where science has the most impact – in planning for better land management. But getting to that point requires leaders to first prioritise nature, and there are few incentives leaders appreciate more than a public unified in support of right decisions.

Talking about nature effectively must include talking about nature's heroes, the people on the ground who are taking responsibility for their desire to defend our wild world, and confronting the obstacles between them and their goal. These heroes can be experts, scientists, and adventurers – everyone enjoys tales of risky enterprises in exotic locales – but, more often than not, communications that are engaging (and therefore effective) talk about the everyday man, the business leaders, office workers, moms, and dads using their time and energy to change the world, one small action at a time.

ABHIJIT NANDI

# ANOTHER NOVEMBER IN THE FORESTS OF UTTARAKHAND

By Rupal Rathore



GAURAV SHIRODKAR

*The people of Garhwal and Kumaon once shared an intimate relationship with their mountains, but many are now in search of more modern lifestyles and have started moving to urban areas. Could a new ruralism movement – a hybrid adaptation of the best of both worlds – save their future?*

*Instead of trying to situate back to pre-colonial times, here we make way for a new hybrid system of adaptation – working with nature without losing touch with the global, where hill agriculture, animal husbandry and local crafts become part of the cycle of economic exchange.*

It was our third month in Garhwal and we were still, like most people from the plains, very much in awe of the mountains – the terraced contours, rhododendron blooms, lazy streams, furry dogs and distant snow-capped peaks that only appeared on a clear day. However, a sense of derangement persists, which is more pronounced in empty villages than in bustling towns.

Falswadi (see box on page 58) is a compact settlement of old stone houses arranged in an organic cluster. The semi-agrarian lifestyle led here is all that remains of traditional mountain living. While there is a daily interaction with the forest – to cut grass, graze cattle, pick fruits and flowers, locked doors and barren fields suggest a prevailing dissatisfaction. Broken is a pattern of self-sufficiency as the village is now perpetually dependent on the government to provide water supply, transport, education and a livelihood.

Most architects, gripped by the discourse on sustainability, would prefer to use local stone and timber in the enchanting Himalayan landscape. But why are the natives shifting to brick and concrete? Why are the people, who have since ages built their own homes with *chir* logs and slate *patthar* (for important reasons of thermal insulation and fire resistance), accepting of a flat RCC roof and tiled walls? In Falswadi, they now rely on *Bihari mistris* to build them a 'modern house'. It would be ignorant to dismiss this as their way of keeping pace with the advancing world and a result of exposure to the 'outside'. We can only begin to answer this by tracing back to the times when the indigenous people of Garhwal and Kumaon had shared a deeply sacred and intelligent relationship with their surroundings. I say this in the past tense for that relationship has been mocked and exploited in irreversible ways by those in power. It makes us appreciate the slow and instinctive process of exchange with nature that simultaneously helped develop a bank of knowledge of what to take, when and how much. At the same time, it also fills us with rage on realising how insensitively an ancient symbiosis was disrupted.


RUPAL RATHORE

*A semi-agrarian lifestyle is all that remains of a once-traditional way of life in much of the Garhwal Himalaya. As self-sufficiency disappears, people increasingly rely on outside sources for education, transport, construction and livelihoods.*

## LEGACY OF THE HILLS

Following the lead of a local (just ask for Bijendra *ji*!) through the dense *banj* trees in Khirsu (see box on page 58), we could hear our own prying feet crunching loudly on a bed of dry leaves. The forest seemed to silently absorb the footsteps of the native who offered us an assortment of brightly coloured berries on the way. Further in, the forest echoed folk stories so ancient that they could only be passed on in grass clearings and tree groves. They are the legacy of the hills.

Lamenting the loss of oak tree groves that were cared for with a reverential attitude and often associated with a deity, the hillman from Garhwal earnestly relates to us their significance in an agrarian livelihood. With the capacity of holding water in the soil, these groves facilitated a natural cycle of aquatic replenishment. Now the people, who have given up on full-fledged farming, find themselves unable to rely upon the erratic water supply from pipelines or handpumps, which is insufficient for irrigation. Joining the dots, we realise that most villages responded to nature's cycle by situating themselves 'halfway up the spur' with tree cover on top and terraced fields along a river below. This setting helped contain and channel water flows from the jungle for cultivation, as well as hold the ridge soil to prevent landslides. An integral part of what was considered 'homeland' by the natives, the forest also had specified boundaries for each village.

## CRY FROM THE JUNGLE

The Uttarakhand hills, protected by the rising Himalaya in the North and

separated from the plains by a swamp-like buffer, have never been a major target for territorial expansion. Garhwal and Kumaon, ruled by the Panwars and Chands respectively, were the two royal kingdoms that commanded the region almost unchallenged after the Katyuris. They were briefly captured by the Gurkhas of Nepal prior to the formal constitution of the British Raj in India. Eventually, with the prospect of commanding mountain passes to conduct trade with Tibet, the British overthrew the Gurkhas to restore administrative rule back in the hands of the royal line. Thus began a strategic endeavour to commercially exploit the 'endless' pool of natural resources in the mountains.

The string of British buildings in Khirsu all along a central football field are the crumbing remains of a rigid governance in the past. The State had declared the forests to be under their control, disrupting the established pattern of resource utilisation and making way for closely monitored timber production. The hillfolk, for whom no part of the jungle had been out of bounds, were alienated from their own land and branded as threats to the new system of 'scientific management'. They had to now 'legally' prove their rights-of-access to the Forest Department created in 1864 with the help of German experts. As trees were being turned into tennis rackets, train bogies, turpentine and paper pulp by government-appointed contractors, villagers were denied their fair share of firewood and lumber. Natives were further oppressed by the system of *begar*, or forced labour, that demanded coolie services among other things to be given to the officials free of cost. Besides ecological damage, this resulted in the disintegration of the collective and incapacitation of the community. Individual struggle, both social and economic, translated into a unified cry from the jungle.

## PROTESTING PEASANT

***Disobedience, in the eyes of anyone who has read history, is man's original virtue. It is through disobedience that progress has been made, through disobedience and through rebellion.***

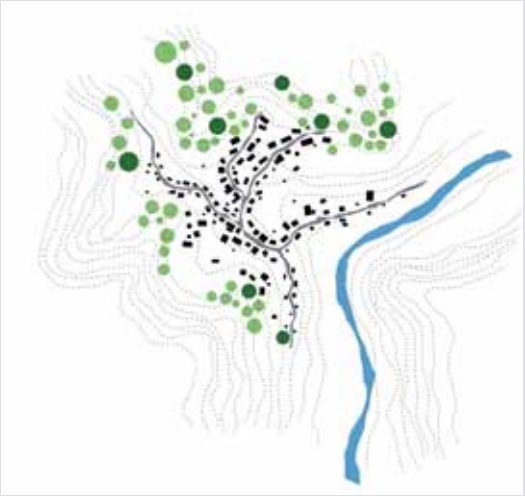
***– Oscar Wilde***

Spending a month in Falswadi makes the disproportionate division of work between men and women very apparent. Lack of economic opportunities and disengagement with the village for able-bodied Garhwalis has shifted the burden of domestic chores, small-scale farming and earning a living to the womenfolk. Many youngsters from the village have migrated to Pauri, Dehradun and Delhi, or have enrolled in the army. The men that have either stayed behind or returned home after a work tenure spend their day at *chai tapris* or omelet stalls. To understand the initial trigger for migration of youth from the village, let us follow the social thread back in time.

Once the *devbhoomi* of Uttarakhand had been introduced to the world market and its rich landscape corrupted with profit-driven agendas, the peasant could only but resist. Resist against the settlement operations and oppressive taxes levied by the State. *Dhandak*, the traditional form of protest in the hills, was an accepted practice in the *raja-praja* scheme to expose unjust law enforcers and bring to the king's notice local grievances. However, the methods of resistance that had worked before now seemed mild and insufficient. Deprived of forest resources, farmers were vulnerable to economic fluctuations. Since no developed notion of private property had existed in the community based-lifestyle, conflicts with regard to ownership and distribution of land considerably weakened social bonds. As a response, some chose early migration while others elevated their *dhandak* against an uncompromising regime, the most effective tactic being intentional forest fires. In the year 1916, 64 per cent of the fires that burnt 625 sq. km. of forest in the Gaula range of Nainital were termed as 'deliberate and organised incendiarism'.

Even though general discontentment hung in the air due to lack of sympathy by the authorities post-Independence, it was the 1970 floods that announced a deep ecological imbalance created by a century-old trend of commercial forestry. As villagers correctly linked this devastation with deforestation, many cooperatives were organised and meetings held that ultimately culminated in the Chipko Movement. Its significance in history, apart from it being drawn from a strong tradition of peasant resistance, can also be attributed to its development as a technique of protest that was adopted in several instances by the villagers of Uttarakhand. It was a means of expression of their grave solidarity for the cause that was both social and environmental. The perceived non-violent 'Gandhian' approach in Chipko's popular image of a woman hugging a tree to save it from the feller's axe has been one of the reasons


*As the state took complete control of the forests, locals were alienated from their lands and their traditional forest-dependent lifestyles. A few resisted, but many had little choice but to migrate.*



Falswadi, the first of the two sites for our architectural intervention, is a small village that falls under the block administration of Kot. It is 13 km. from Pauri and can be reached by a share taxi. It has an *anganwadi*, a panchayat *ghar* and hosts the famous Sita Mata Mela every November. Look out for the only hipped-roof house of the village, the owners of which have now migrated to New Delhi.

Khirsu is a bigger agglomeration of village settlements with its own Block Development Office. It is 21 km. from Pauri and attracts a fair number of tourists. It has some interesting British buildings around a football field, a newly constructed tourist centre, and some homegrown turmeric, mushrooms and vegetables.

Families have shifted out of their older homes that are further up the hill (occasionally visited by the *baagh*) into 'newer' cement houses built closer to the access road. Situated on stepped terraces, old stone houses have the ground floor carved out of the hill, which is used for keeping domestic animals and storing grains, haystacks and water. The living spaces on the first floor have a wooden projection that overlooks the *aangan* and often opens into the winding pedestrian pathway.

Surveys tell us that the sparse bits of forest that had been allotted to *van panchayats* for access to locals were uniformly better maintained than forests under the jurisdiction of the civil administration. A particular incident in 1973 at Mandal sparked off a chain of protests against commercial felling and denial of customary rights. Villagers had requested an allotment of ash trees to make agricultural implements but were asked to use *chir* instead, which was completely unsuitable for the purpose. However, an Allahabad-based sports manufacturer, Symonds Co., had been assigned a contract of ash trees in Gopeshwar around the same time.

A State monopoly had been established (on the basis of an *All India Act* of 1878) that 'reserved' land with the best quality *sal*, teak and deodar for its use as railway sleepers. Later, by the tapping of *chir* pine for oleo-resin, experiments were being conducted to enable the making of products that could compete with American and French varieties in the international market.

RUPAL RATHORE

RUPAL RATHORE

ABOVE LEFT *Traditional homes used to be built using chir logs and slate patthar... much better suited to the mountain climate.*
ABOVE RIGHT *Now,* mistris *from Bihar are largely hired to build RCC and brick dwellings.*
TOP *Illustrated contoured map of Falswadi village settlement. ABOVE RIGHT A 3D-sectional view of a traditional Garhwal house.*

*Since no developed notion of private property had existed in the community based-lifestyle, conflicts with regard to ownership and distribution of land considerably weakened social bonds.*

## UNDERSTANDING SOCIAL ISSUES OF THE REGION

For readers interested in understanding more about the region's socio-ecological and political influences, I recommend reading *The Unquiet Woods* by Ramachandra Guha. The book not only describes the timeline of social, ecological and political events in Uttarakhand ranging from the pre-British era to post-Independence, but also draws inferences through the narrative of their triggers and effects. Most importantly, it does not lose touch with the human – the farmer, the herder, the community. In fact, it prepares ground to tell the story of the *dhandaki*, the *kisaan* and the women of *Chipko*. Other references used in the essay are from *The New Ruralism, An Epistemology of Transformed Space* by Joan Ramon Resina and the *Sociological Analysis of a Regional Movement: the Case of Uttarakhand* by Surender Singh Ahlawat (2001, JNU).

for its widespread approval. Its relevance in peninsular India can be associated with the fact that Himalayan forests have large agricultural implications since the Indo-Gangetic plains are fed by rivers that originate here.

In the coming decades, a number of issues pertaining to development, poverty, unemployment and ecological degradation merged into a common dream of the 'Great Himalayan State'. Burdened with a 27 per cent reservation for OBCs and its neglected status in Uttar Pradesh, a series of rallies, *bandh*s, marches *(Delhi Chalo!)* and boycotts *(Uttarakhand Nahin Toh Chunav Nahin!)* preceded its separation. A demand for region specific planning had been raised in the parliament in 1967 (by Mahendra Shah, the former king of Tehri), but it was only in November, 2000, that Uttarakhand emerged as an independent state.

## NEW RURALISM

It is yet another November in the forests of Uttarakhand marking the beginning of the 20th year of 'freedom'. Some efforts to decentralise the control on natural resources and restore forest-based livelihoods have been made by the state government. But here, we address the situation where over 700 villages in Uttarakhand have been deserted and more than 3.83 lakh people have left their villages in the last 10 years. The automatic link between cities and modernity has contributed to the conscious rejection of a rural lifestyle. With its architectural fabric also changing along with the social, villages are at the brink of being functionally urban, where they rely on an outside market for supplements and trade. This must also be associated with generic development strategies formulated with an urban vision that fail to respond to the ground reality of rural settings.

We are in a time where the reversal of the notion that cities make privileged spaces has begun. This is not a neo-romantic suggestion of returning to the ways of the 'countryside' but an urgent calling for the preservation of cultures threatened by urban spill-out. One is not being nostalgic while invoking the traditional but merely using it to compare with the present state of villages, which is both inert and exhaustive. As the quality of city life is slowing degrading, people are choosing to not necessarily return but recourse their lives towards the non-city, sometimes living in small communes to practice farming and crafts inherent to a region and occupying abandoned village houses.

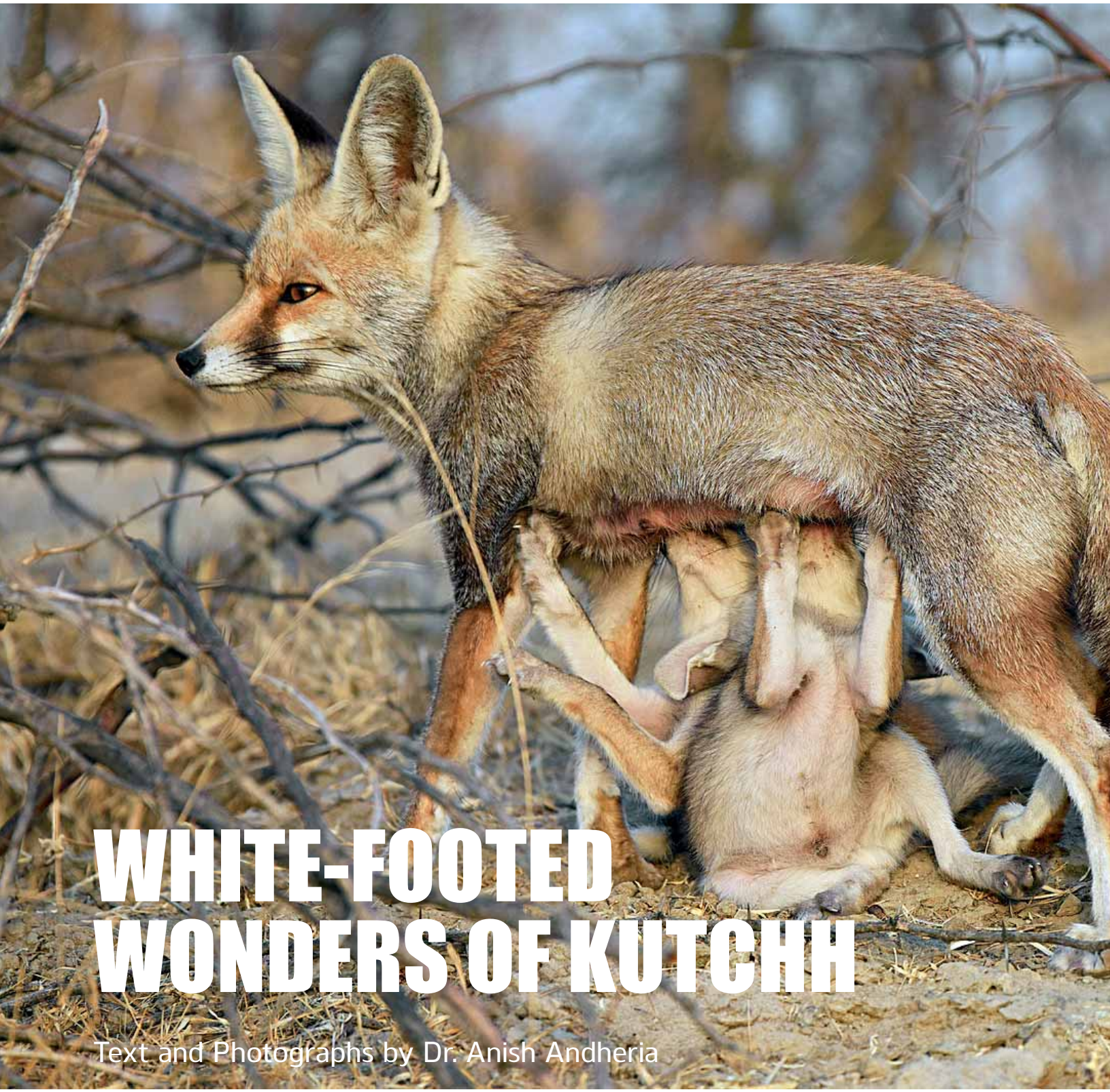
This is the birth of a New Ruralism in India, a phenomenon that had set into motion in the 1960s in America and Western Europe. It does not resist departure from the village but strives to restore the importance of local wisdom. Instead of trying to situate back to pre-colonial times, here we make way for a new hybrid system of adaptation – working with nature without losing touch with the global, where hill agriculture, animal husbandry and local crafts become part of the cycle of economic exchange. A redefining of the relationship with ecology, restructuring of the social fabric and innovating traditional architecture.

RUPAL RATHORE

RUPAL RATHORE

**ABOVE** *The region was once ruled by the Panwars and Chand kingdoms, and later the Gurkhas from Nepal. Of course, during the British Raj, Garhwal and Kumaon were ruthlessly exploited. The string of British buildings in Khirsu, all along a central football field, are crumbling reminders of a bygone era.*

**TOP** *In the last decade, over 700 villages in Uttarakhand have been deserted and more than 3.83 lakh people have migrated. It is now vital to redefine the relationship between ecology, restructuring of the social fabric and innovating traditional architecture to save these places.*



# WHITE-FOOTED WONDERS OF KUTCHH

Text and Photographs by Dr. Anish Andheria

Deserts are living, throbbing ecosystems, but they are little understood. Through his observations in the arid Kutchh region of India, **Dr. Anish Andheria**, one of India's most experienced naturalists, shares a slice of the life of a very shy, and very likeable canid... the desert fox.

FACING PAGE *The desert fox kits begin venturing outside their dens when they are only a month old. This is when they are extremely vulnerable to predation from birds of prey, jackals, hyenas and domestic dogs.*

ABOVE *The desert fox or white-footed fox is perfectly adapted to live in dry conditions. The best time to spot them is during their breeding season, which extends from mid-January to end-March.*

I watched the kits gamboling and play fighting under the watchful eye of their mother. The interplay of the desert fox, *Vulpes vulpes pusilla* kits, was an evolutionary strategy that would prepare them for later life away from the protection of their parents. I was in the Rann of Kutchh, an amazing semi-desert habitat that bled to the north into the dunes of the Thar, one of the most densely human-populated deserts in the world.

I felt lucky to be alive and quietly observing animals that few people ever get to see in their lives.

I have always been fascinated by canids. One of them was even an integral part of my master's dissertation thesis that looked at the coexistence of tigers, leopards and dhole (Indian wild dog) in the Bandipur Tiger Reserve, Karnataka. I have spent hundreds of hours observing dhole behaviour and they occupy a special place in my heart due to their guile, tenacity and ability to act as one team, both in pleasure and pain.

## A NEW CANID LOVE

Dhole pack behaviour is used skillfully to thrive in forested landscapes that also support far larger carnivores such as tigers, leopards and bears. However, as I started tracking and observing the desert fox, also known as the white-footed fox, a smaller subspecies of the famous red fox, my belief that size and numbers matter began fading away. The

*By early January, fox pairs either begin cleaning an old den or building a new one and by early February, one will start seeing kits around their dens.*

ABOVE *The lack of floral diversity in its arid habitat makes the desert fox more of a carnivore than the other foxes – it is commonly seen feeding on small birds, mice and reptiles like this lizard.*

desert fox is an extremely timid species, adapted to live in dry, near desert-like conditions. The best time to spot them is during their breeding season, which extends from mid-January to end-March, especially in the Little Rann of Kutchh (LRK). Outside of these few months, one can only hope to get a fleeting glimpse of this enigmatic, pocket-sized dynamite.

I have been visiting LRK over the past three years to follow and study this impressive carnivore that, in a short period of time, has filled me with awe. I present here some excerpts from my notes taken during hours of observations in the breeding season.

By early January, fox pairs either begin cleaning an old den or building a new one and by early February, one will start seeing kits around their dens. However, this may get delayed if climatic conditions are not conducive in a particular year. The average litter size consists of three to four kits, though litters with even six babies have been recorded in LRK, albeit rarely. Like in other canids, kits are born blind, deaf and toothless. They are very tiny at birth, weighing less than 200 grams. The motherly instinct of the vixen kicks in as soon as the kits are born and she spends an extended period of time with them, as they are not capable of thermoregulation during the first 15 days. During this period, the male brings in food for the vixen. Like all mammalian mothers, vixens are extremely protective of their kits, and have been known to take on much larger animals such as jackals, pythons and feral dogs, which are a big threat across the desert fox's range in India. It has been seen that in cases where the mother dies before the kits are independent, the father takes on the role of the provider.

In less than one month, the kits begin to venture outside the den, which has at least two, but at times even four to five openings. They are still wobbly at this time and dart straight back inside or toward their mother at the smallest hint of danger. In LRK, danger lurks both in the sky (in the form of birds of prey such as eagles and owls,) and on land, in the form of jackals, wolves, hyenas and above all, domestic dogs. This is the phase when the kits are extremely vulnerable to predation. In several dens that are being monitored by tourists and tour operators, there are regular reports of high to moderate rate of infant mortality, mostly due to constant pressure from domestic dogs, which can be often sighted sniffing at the den openings.

## READY TO TAKE ON LIFE

At three to four months, the kits are pretty much equipped to fend for themselves and are often seen searching for prey – lizards, beetles, grasshoppers, mice, small birds, bird eggs, etc. Desert foxes are much more carnivorous than other species of foxes, as they live in desert-like conditions, with scarce plant biomass. They have an extremely sharp

sense of hearing. In fact, their hearing and olfactory senses seem to play a much bigger role than their eyes when searching for food. They are known to detect insect grubs lodged more than 15 cm. under the ground.

Kits are almost adult-size at six to seven months. From research conducted on red foxes, it is known that vixens reach sexual maturity within 10 months, thus bearing their first litters at one year of age. This explains why foxes have outlived such high predatory pressure from domestic dogs and other anthropogenic factors such as intensive farming practices, high rates of urbanisation, heavy mortality due to road accidents and shift from traditional crops to cash crops. In captivity, red foxes are known to live for 12-14 years. However, studies on red foxes in natural habitats have shown that they seldom live beyond five years in the wild. This could be true for the desert foxes as well.

While I am convinced that the desert fox is an evolutionary masterpiece capable of surviving in extremely harsh habitats, fighting scanty rainfall, combating temperatures that oscillate between 48-50°C in summers to sub-zero during winters, I worry about their ability to cope with rapidly expanding urbanisation.

The Rann is being increasingly opened to a largely unorganised and damaging salt industry. Solar powerplants too are being set up across this unique 5,000 sq. km. habitat (after calling it a wasteland). Dogs that accompany salt pan workers turn feral and hunt anything they can overcome.

If we don't tackle these threats urgently, LRK and other such habitats will lose this charismatic carnivore.

With an increasing understanding of its consequences, it is vital that fragile ecosystems such as those that make up the Little Rann of Kutchh are protected for posterity.

*President of the Wildlife Conservation Trust (WCT), which is involved in projects across India, Dr. Anish Andheria's focus research area has been predator-prey relationships. An accomplished naturalist and wildlife photographer, he has authored several scientific papers and books.*

ABOVE *Kits reach near-adult size at six months of age, and attain sexual maturity within ten months. This explains why foxes have outlived high predatory pressure and anthropogenic factors.*

The Canidae is probably the most ancient living caniform family, originating over 40 million years ago in North America, where they proliferated until around six million years ago, when the formation of the Bering land bridge connected Asia to Alaska, allowing them to spread into Eurasia. Canids colonised South America with the emergence of the Isthmus of Panama about three million years ago. All present day canids belong to the subfamily Caninae, which is further divided into two distinct lineages that split five to nine million years ago – large, wolf-like species such as wolves, jackals, coyotes, dhole, African wild dogs, etc. (nine species in all) and small, fox-like species, comprising as many as 26 species (foxes, bush dogs, raccoons, etc.).

# CONSERVATION HERBS

DR. ANISH ANDHERIA

By Rizwan Mithawala

"The wounds reappear every winter," said Sabulal Kasdekar, and pulled up his pants to his thighs. His legs, discoloured by burn scars, were painful to look at. The story behind the scars was equally painful. Kasdekar lived in the Mangia village in the core zone of the Melghat Tiger Reserve. At the peak of winter, when temperatures dropped to 4°C, and his wheat crop was ready to be harvested, he spent the nights awake, guarding his crop from chital and wild pigs, by a bonfire. The fire kept him warm, but also burnt his legs.

For villagers whose agricultural lands abut forests, crop raiding by wild herbivores is an agony they have to live with. Guarding the crop manually has its own risks; in Kasdekar's case, it resulted in burns over his legs. Other methods to deter wild herbivores, like trenches and different kinds of fences, come with their own cost and risk, and none of the methods are foolproof.

## AN UNDERREPORTED PROBLEM

Human-carnivore conflict attracts attention and creates headlines, but it is crop depredation by wild herbivores that impacts poor farmers in a more widespread, frequent and damaging manner. While the former happens sporadically and creates chaos, the latter occurs at a larger scale and is regular and constant. "As there is no bloodshed when crops are raided by wild herbivores and the damages are not quantifiable on a daily basis, the problem is not perceived as a serious one, and is underreported. The cumulative effect of losses on poor farmers and the village economy is more significant than assumed," says Dr. Anish Andheria, President of the Wildlife Conservation Trust.

While compensations are promptly doled out when a tiger injures or kills cattle, there is much ambiguity regarding compensation for losses caused by herbivores. This happens because it's difficult to ascertain whether the damage is caused by wild herbivores, cattle, or humans. Authenticating claims is a major challenge for a short-staffed Forest Department. In addition, the amounts given are not as significant as in the case of carnivore conflict. All these factors discourage farmers from lodging complaints and claiming compensation from the Forest Department.

## RESENTMENT LEADS TO RETALIATION

The build-up of resentment, anger and frustration leads to two negative outcomes. One, it develops in the minds of villagers an outlook of indignation towards the Forest Department; and second, it develops a mindset of retaliation for the unfair treatment, which can take the form of poisoning and electrocution of wild animals, laying snares and traps, and collecting excess wood and other forest produce.

Among all of these, electrocution has the worst impact on wildlife populations. Overhead wires are illegally tapped to fence agricultural fields, and also laid out in the open with the intention to kill wild animals. Only if a tiger or a leopard is killed by such wires, is when news about the incident spreads. If a herbivore is electrocuted, it is slaughtered and the meat distributed among families of the village, leaving

COURTESY: POORVA JOSHI

COURTESY: POORVA JOSHI

**ABOVE** Justicia adhatoda, *commonly known as adulsa (left), and* Aloe vera *(right) are among the 20 species of high-value medicinal plants that are unpalatable to wild herbivores, and can be successfully grown around Protected Areas in Central India.*
**FACING PAGE** *Agricultural fields on the fringes of forests are frequently raided by wild herbivores.*

no trace of the animal's existence. On a yearly basis, the number of small and big wild animals electrocuted in Central India may run in the thousands.

## ENDING A VICIOUS CYCLE

The retaliatory killing of wild herbivores kicks off a vicious cycle. As herbivores are killed by electrocution, wild prey populations tumble. This, in turn, increases attacks by wild carnivores on livestock, escalating conflict, and driving more retaliation.

In an attempt to find solutions to end this vicious cycle that drives the killing of wildlife and threatens the livelihood of subsistence farmers, Poorva Joshi, a botanist and biodiversity and conflict management consultant, has been working on medicinal-plant-based alternative livelihoods around Protected Areas in Central India. Her focus is on medicinal plants that are not only unpalatable to wild herbivores, but also fetch good market value. Over the last four years, working in villages along the western boundary of the Tadoba-Andhari Tiger Reserve (TATR), she has identified medicinal plant species based on growth, minimum care, commercial value and unpalatability to herbivores, and conducted trial plantations to test how well they grow in the soil and climatic conditions around the tiger reserve.

COURTESY: POORVA JOSHI

*Pune-based botanist Poorva Joshi promotes medicinal-plant-based alternative livelihoods as a means to mitigate human-herbivore conflict.*

During 2018-19, with support from the Wildlife Conservation Trust's Small Grants (WCT-SG), she developed pictorial manuals for the propagation of 20 species of unpalatable medicinal crop plants that have good economic value, and can be incorporated into current agricultural systems around Protected Areas in Central India. The manuals cover all aspects of the species' life cycle, and the conditions and efforts required to propagate them – flowering and fruiting seasons; suitable weather and soil conditions; high-yield varieties; organic fertilisers needed; cultivation methods; nursery preparation methods; plantation processes; manure and compost application suggestions; irrigation methods; species-specific pests and diseases, and organic solutions to those; harvesting methods and cycles; post-harvest management; value addition processes; medicinal uses and budgets.

As part of her efforts to develop a working model for the successful and sustainable cultivation of these alternative crops, Joshi conducts awareness programmes and trains farmers in adopting these crops. Next on the anvil is the development of a nursery of these plants in the buffer zone of TATR, and the formation of farmer's associations to synergise their efforts in successfully cultivating and profitably marketing their harvests.

Communities living on the fringes of forests depend on agriculture for their subsistence, and are on the frontline of climate change, facing its adverse effects in the form of erratic and untimely rains, hailstorms and other extreme weather conditions. If the efforts in promoting wild-herbivore-unpalatable medicinal plants are successful, one can hope for a better future for both wildlife and communities.

*Rizwan Mithawala is a Conservation Writer with the Wildlife Conservation Trust and a Fellow of the International League of Conservation Writers.*

ASHOK THAMPI

# IN SEARCH OF THE 33 ENDEMICS OF SERENDIB

By Dr. Ram Gopalakrishnan

*Of course, finding the Sri Lanka Frogmouth is impossible, unless you can locate its roosting site, which our guide did. Even then, its perfect camouflage makes it a difficult sighting.*

The birds looked similar to those in India, but not quite. The Malabar Grey Hornbill had whitened its belly and shed its supercilium and the Vernal Hanging Parrot sported a bright red crown. Was it all just a dream with colour hallucinations?

Not quite. We were in Sri Lanka (formerly Ceylon and even earlier Serendib – the most apt origin of the word serendipity or pleasant surprise) on a birding and wildlife tour. Unfolding before us was living proof of Darwin's Theory of Evolution: separated by just a few miles from the mainland, fauna had evolved enough to create 33 endemic bird species. Throw in an amazing variety of habitats from undisturbed rainforest to semi-desert scrubland and all the subcontinental floral species, and this pocket-sized island boasts a bird list of 450, a third of the number seen in India.

## OUR BIRD-CUP RUNNETH OVER

We drove due east from Colombo along the Kelani river to Kitulgala, famous as the location of the film 'Bridge on the River Kwai'. The Kelani river is one of the country's numerous lifelines that flows out from the central highlands. Located on the edge of the Makaranda rainforest, the buffer zone is home to several colourful endemics. The green and lilac Layard's Parakeets were easily differentiated from the huge Alexandrine ones. Other endemics included the Sri Lanka Green Pigeon (formerly the Pompadour Green Pigeon), Sri Lankan Swallows with their lovely rufous belly and brown cheeks, majestic male Junglefowls with their characteristic bright yellow crest patches and the Crimson-backed Goldenback, a cousin of the Greater Goldenback. Apart from these, we were lucky to find Orange-billed Babblers that eclipse their drab yellow-billed cousins. We found a Chestnut-backed Owlet just before it escaped into its nest to avoid being mobbed by a flock of sunbirds. A Spot-winged Thrush made up for its earlier elusiveness by posing for a long time for our cameras. The Sri Lanka Drongo we spotted looked like a cross between the Racket-tailed and the Spangled. Yellow-fronted Barbets and Black-capped Bulbuls swelled our list of lifers. This being March, many of the birds were mating or nesting in preparation for the upcoming monsoon. It wasn't all about the home team (the endemics) though. Typical Western Ghats species were the bread and butter between which the home boys were literally jammed in. The Oriental Dwarf Kingfisher and Brown-breasted Flycatcher were personal lifers.

In search of the very rare Serendib Scops Owl rediscovered a few years ago after half a century, we embarked on the Makaranda rainforest trek. A closed canopy, 100 per cent humidity, a light drizzle and of course, a million leeches were our constant company. We couldn't even sit for fear of allowing leeches in above our extensive guard! Although a lovely habitat, it is not for the faint hearted. Rainforest birding certainly teaches you patience, and doubled our appreciation for the delicious Sri Lankan cuisine after an exhaustive but adventurous experience!

## HILL COUNTRY BIRDS

The next day, we set off on the climb to Nuwara Eliya (1,868 m.), winding our way through the extensive patchwork of tea gardens. Tea is a major industry but I wondered how the hillsides would have looked had the native forests been allowed to stand; whatever remains is in very high or inaccessible areas. Nuwara Eliya was similar to Indian hill stations, reminding us of our common British colonial pasts: pleasant climate, a lake with boating activities,

ASHOK THAMPI

**ABOVE** *The endemic Sri Lankan Grey Hornbill* Ocyceros gingalensis *is differentiated from the Malabar Grey Hornbill, also found in India, by its white underbelly. It is an important seed disperser in the forest ecosystem.*

**FACING PAGE** *Known to be extremely shy and elusive, the Green-billed Coucal* Centropus chlororhynchos, *also an endemic species to Sri Lanka, is declining in numbers on account of loss of its forest habitat. It is listed as vulnerable in the IUCN Red List.*

*We drove due east from Colombo along the Kelani river to Kitulgala, famous as the location of the film 'Bridge on the River Kwai'.*

quaint cottages, a golf course and many tea rooms. Victoria Park (how could it be named anything else!) was our first destination; sure enough, we soon spotted the Sri Lankan Whiteye (thicker eye ring and darker green) and the photogenic Yellow-eared Bulbul. That Sri Lanka remains a preferred destination for migratory species from far and wide was reiterated when we saw the Kashmir Flycatcher, its lovely orange throat illuminating an otherwise drab, brown appearance. The shy Pied Thrush titillated us from one tree to the other, affording only brief glimpses from angles that left our craning necks in spasm.

The next morning at daybreak, we headed to Horton Plains National Park, a unique montane forest and grassland habitat, and a World Heritage Site. The purple-faced leaf monkeys, so furry here that they are called bear monkeys, glowered at us as we entered. A sambar stag munched on grass by the road, unconcerned. Here the extensive grassy patana is interspersed with patches of montane forest where drainage of water is more effective, much like the *shola* forests of the Western Ghats. Despite having a very heavy footfall from general tourists and trekkers, the maintenance is outstanding. Have you ever had all plastic bags confiscated and bottle top seals and stickers removed while entering an Indian national park?

ASHOK THAMPI

ASHOK THAMPI

ABOVE *The national bird of the island country, the Sri Lankan Junglefowl* Gallus lafayettii *male is significantly larger than the female and displays a more vibrant plumage.*
TOP *Despite its size, the Sri Lanka Spurfowl is a very secretive bird, slipping into dense undergrowth swiftly. Its characteristic ringing call is often the only indication of its presence.*

*Kok...kok-kok-kok...* went the Sri Lanka Scimitar Babbler, followed by the rapid *click-click-click* of long lenses once we sighted the bird. Then followed the gorgeous Tickell's Blue Flycatcher and the Sri Lanka Bush Warbler with its orange-buff throat. Sightings of three main target species in this habitat done and dusted, we languorously admired and photographed the numerous blue flycatchers, whiteyes and Yellow-eared Bulbuls. Whistling Thrushes are generally easily found along roads and around waterbodies in the Himalaya and Western Ghats but the globally threatened, shy and small Sri Lanka Whistling Thrush failed to reveal itself despite calling from close at hand.

## BIRDING IN LEOPARD TERRITORY

As we left the hill country, a couple of waterbodies close to Yala quenched our thirst for water dwellers. The Yellow Bittern, Pheasant-tailed Jacana and Grey-headed Fish-eagle allowed us to approach closer for photos than I have ever experienced elsewhere. A most confusing tern class followed: the rare White-winged Tern banked and dived amidst the commoner Little, Gull-billed and Whiskered varieties. I had never before seen either the Indian or the Oriental Scops Owls; when we encountered the two species sitting next to each other in the verandah of a cottage, my eyes nearly

popped out in amazement! A perfect sundowner for the day was another endemic, the Sri Lanka Woodshrike.

Yala. A name synonymous with leopards, and its popularity with tourists was obvious from the 200 odd vehicles queued up patiently half an hour before park entry at dawn. Located in the dry zone on the south eastern coast of the country, the habitat we were entering was quite different from the ones we had spent time in so far, with many of the same bird species encountered in India, rather than any endemics. In the absence of tigers whose entry into the subcontinent from Asia was too late to make it across the Palk Straits, leopards rule here as the apex predators.

The morning sun was beating down. We were having a wonderfully relaxing time admiring handsome citizens such as the Brown Fish Owl, the White-bellied Sea-eagle, White-rumped Shama and the Great Thicknee. Our birding list had swollen steadily. A tree full of a dozen squabbling Malabar Pied Hornbills kept us enthralled as did spotted deer, wild pigs, monitor lizards, elephants and mongooses. A stop on the coast inside the national park for breakfast gave us time to gaze in admiration at the bright blue sea adjoining the huge crops of rock and ponds quintessential of Yala.

Breakfast, early wakening and heat had induced a certain torpor in us. And then, a spotted gentleman strolled across the road in front of us! Adrenaline pumping, cameras were grabbed as the young leopard languidly crossed a grassy patch and came into full view. Ah, people come from across continents (and certainly from the adjoining subcontinent) for just that one moment. It's always special to spot your 'own' leopard and watch in condescending fashion as the news spreads like wildfire and you're surrounded by a dozen jeeps in no time! Think that's all? Not quite. A sloth bear ambled towards a phalanx of vehicles gawking at it and nonchalantly crossed the road just behind our jeep. That's the magic of Yala for you. One of the best days of my life!

DR. MOLINA KHANNA

DR. RAM GOPALAKRISHNAN

ABOVE & TOP *Spread across 1,30,000 ha., the spectacular Yala National Park is the kingdom of the Sri Lankan leopard, where these rosetted cats rule as the apex predator. The most visited park in the country, the park's terrain consists of light forests, scrubs, grasslands, tanks and lagoons, hosting a variety of flora and fauna.*

*Breakfast, early wakening and heat had induced a certain torpor in us. And then, a spotted gentleman strolled across the road in front of us! Adrenaline pumping, cameras were grabbed as the young leopard crossed a grassy patch in full view.*

NIKHIL BHOPALE

ASHOK THAMPI

ABOVE *The Kashmir Flycatcher is a winter visitor to the forests of Central Sri Lanka and is classified as a vulnerable species, with a decreasing population and breeding range.*

TOP *The endemic Chestnut-backed Owlet with its wide yellow eyes may seem timid, but is an adept hunter, preying on insects, small birds and reptiles..*

## NO REST FOR THE BIRDING AFICIONADO

We headed on, resisting the temptation to ask for blessings in our birding endeavours at the famous Hindu temple at Kataragama. This temple is popular with Buddhists, Christians and Muslims as well. As our guide Thushara put it, Buddhism does not permit you to ask for any material benefits, so if you want to obtain blessings or favours from the Almighty, just ask at the Kataragama temple instead! Next up was Udawalawe, which could be summarised as elephants here, there and everywhere. This national park was created as a catchment area when the Walawe river was dammed and it teems with elephants, who seemed remarkably tolerant of our jeeps as they bathed in the numerous waterbodies. Crested Serpent-eagles dotted the landscape and we had clear sightings of the majestic White-bellied Sea-eagle in its nest, the Changeable Hawk-eagle with the wind ruffling its crest, the Grey-bellied Cuckoo and the Indian Thicknee.

On to Sinharaja, a World Heritage Site and one of the richest rainforests in the planet in terms of biodiversity and endemic avifauna. We started with a walk just outside the rainforest where a pair of mating Crimson-fronted Barbets and a Legge's Flowerpecker with its yellow belly and white throat kicked off the 'endemics' endgame. Next morning, we entered the rainforest again, taking care not just to wear leech socks but to tuck our shirts in (making this school-boy like error in Kitulgala had left me with several leeches above my belt line!). The bullfrogs kept up a continuous din and their calls had to be sorted out from bird calls. Sunlight slowly dissipated the thin tendril of mist that cloaked the valley across which we waited. The Sri Lanka Hill Myna with a single wattle and a different call had to be carefully separated from the Southern Hill Myna also seen in India. How do you spot a bird that doesn't call or move after it sits? The

DR. RAM GOPALAKRISHNAN

*Located in the central highlands of Sri Lanka, the stunning Horton Plains landscape of wetlands, grasslands and montane forests, provides sustenance to several endemic species.*

Sri Lanka Woodpigeon is one such, but well worth the search when you see its speckled neck and rose-on-grey head and neck. And of course, finding the Sri Lanka Frogmouth is impossible, unless you know its roosting site, which our guide did; even then its perfect camouflage still makes it a difficult sighting. The elusive Sri Lanka Scaly Thrush, perfectly camouflaged in the litter of leaves by the path, was seen next and photographed. We then gatecrashed a party: a mixed flock of White-faced Starlings, a Malabar Trogon, Sri Lanka Drongos and a Red-faced Malkoha, whose stunning white and red face makes it perhaps the only rival to the Blue Magpie in terms of sheer charisma.

If you thought the heat, humidity and leeches were not enough, try crawling through the undergrowth in the slush; that's what I had to do to get a view of a pair of rare, endemic Ashy-headed Laughingthrushes mating. Ah, a kingdom for a camera at that moment and well worth the scratches and mud. We needed a refreshing dip in the rainforest-fed rivulet near our resort to cool off. Good thing we saw the 1.5 m.-long water monitor lizard gliding through our bathing spot only the following day!

The Sri Lanka Blue Magpie is the USP of not just Sinharaja but Sri Lanka's birding in general; its blue and chestnut markings, red bill and long blue tail adorn many a poster and brochure. So when we heard its shrill ascending whistle and then photographed a pair, it was a moment that matched our leopard rendezvous at Yala.

On the last day, we headed to a homestead on the outskirts of the forest. A puddle in their backyard was the stage for a steady pageant of ground dwellers, much like models walking the ramp: Spot-winged Thrush, Indian Pitta, Slaty-legged Rail, Indian Blue Robin, Sri Lankan Junglefowl, Emerald Dove. Finally, the queen of the pageant appeared: a female Sri Lanka Spurfowl! And when the extremely shy Green-billed Coucal was sighted and photographed in the open in the adjoining undergrowth, our cup of joy (and list of endemics) overflowed!

Centuries of colonialism with attendant timber exploitation and the tea industry have wiped out much of Sri Lanka's wild habitats. However, the country does a remarkable job in protecting what is left, and smartly uses its natural wealth to promote a tourism industry that is booming, especially after the end of the civil war a decade ago. One hopes that the natural treasures of places such as Horton Plains and Sinharaja will be preserved and enhanced for generations to come.

Time to say goodbye to Serendib; 30 of 33 endemics, several more personal lifers and memories to last a lifetime!

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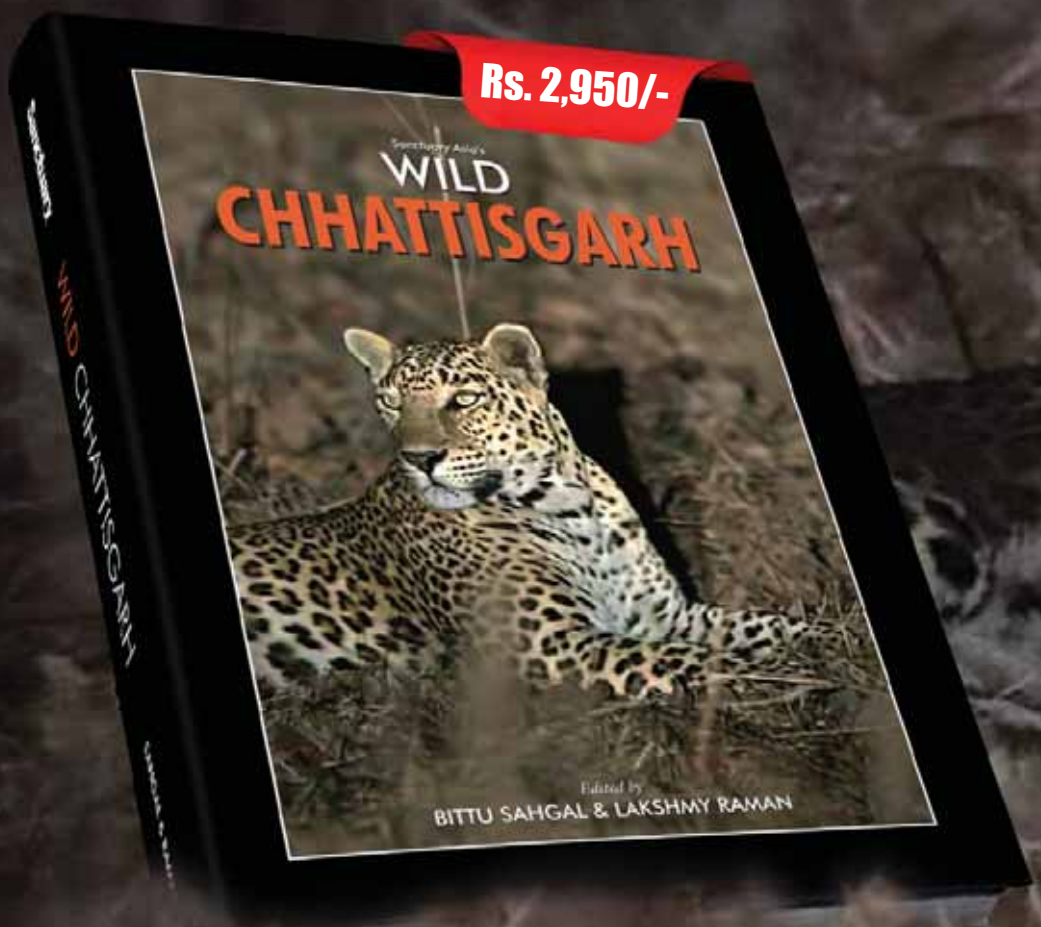


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PRADIP KRISHEN

# MANGAR'S BANI AND OTHER FORESTS

## PAST, PRESENT AND FUTURE?

One may not associate wildlife with huge megalopolises, but nature does not recognise human boundaries and species will occupy the niches they can. **Chetan Agarwal** writes here about one such wilderness that exists surprisingly close to India's bustling capital... New Delhi.

The village of Mangar nestles in a valley in the Aravalli hills at Faridabad. Bounded by the Asola Bhatti Wildlife Sanctuary (ABWLS) to the north and Gurugram to the west, Mangar is a vital wildlife habitat. Of its 4,262 acres, 3,810 acres are located in the Aravallis, and are classified as '*gair mumkin pahar*' – which literally translates to 'hills on which cultivation is not possible'.

These hills are forested and home to diverse wildlife. To the west is a ridgeline with Gurugram that forms a chicken neck, a crucial corridor for wildlife movement. The area is revered as the Mangar Bani sacred grove. Mangar is a central part of a continuous north-south stretch of Aravalli forests from Asola and Surajkund to the Damdama lake. Understandably, birdlife abounds here.

SUNIL HARSANA

ABOVE *The nilgai* Boselaphus tragocamelus, *India's largest antelope, is one of the most commonly spotted ungulates in the Mangar forests, which provide ample food for the herbivorous mammals.*
FACING PAGE *An hour's drive from India's bustling capital, Delhi, a 4,262 acre valley in the Aravallis, harbours the Mangar forest, a vital wildlife habitat, and yet, only a mere fraction of it is protected by law.*

## FORESTS BY THE BOOK?

Despite this rich wildlife presence, the Indian government has not listed the region as a forest, which has to be nurtured and protected. A mere 1,132 acres are notified under the *Punjab Land Preservation Act, 1900* (PLPA), which the Supreme Court in 2002 and 2004 said must continue being afforded forest status, even if notifications had lapsed. The proposal to notify the entire 3,810 acres under the PLPA has been shelved.

Instead, in February 2019, the PLPA itself was sought to be amended, to remove the forest tag from 1,132 acres of Mangar and 60,000 acres of Aravallis. It is such 'regularisation' of wrong-doings that is at the root of official deforestation across India.

Meanwhile, the remaining 2,678 acres of hill forests including Mangar Bani continue to await declaration of their forest status. *Sanctuary* readers may remember that the Honourable Supreme Court, in the Godavarman case of 1996, had tasked states with the job of identifying areas recorded as forests in government records in each district by early 1997. The revenue records of the Mangar hills mention the type of land (as *gair mumkin pahar*) but are conspicuously silent on what is present on the land –

SUNIL HARSANA

SUNIL HARSANA

ABOVE LEFT *The Indian crested porcupine* Hystrix indica *is a rare sighting but has been spotted in the Mangar forests. It is a large rodent found in various habitats no higher than 2,500 m., almost all across Western Asia from Turkey to India. Though their populations are stable, they are frequently hunted for their meat.*

ABOVE RIGHT *In 2016, researchers traced the presence of wildlife species like leopards, small Indian civets and golden jackals in Mangar Bani. A small canid, the golden jackal's habitat in India is spread across Haryana, Rajasthan, Gujarat and Maharashtra.*

*The ownership of the Mangar hills is disputed. Until the 1960s, these were village commons, owned by the Panchayat. Then they got sold to outsiders.*

MISHA BANSAL

ABOVE *Mangar Bani is a sacred temple grove. Years of forbearance prevented the cutting of trees, branches or even the removal of leaves and has helped safeguard this old-growth forest.*
BELOW *Possibly the most intact stretch of native tropical dry forest remaining in the National Capital Region, the Mangar forests are today threatened by encroachment and illegal deforestation at the hands of real-estate operators.*

extensive forest. This gap is still pending and the 'system' has conspired not to record an obvious forest as a forest, till date.

The third option for a forest tag, also following the 1996 Godavarman order, is for an area to be identified as a 'forest as per dictionary meaning' – or simply a 'deemed forest'. Roughly two decades later, Haryana has finally acknowledged that the forest status of its deemed forests (about 50,000 acres) had to be decided, but no steps have been taken, including in Mangar.

## WHOSE LAND IS IT ANYWAY?

The ownership of the Mangar hills is disputed. Until the 1960s, these were village commons owned by the Panchayat. Then they were sold to outsiders. Common lands in the neighbouring villages of Bandwari and Kot too were sold, and for them, the local government is contesting the sale in courts to restore Panchayat/

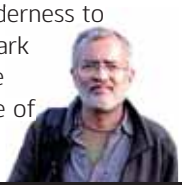
MISHA BANSAL

*The Mangar Eco Club is performing a vital task, that of encouraging the children living closest to its wilderness to learn about and love the rich biodiversity of their sacred grove.*

municipal ownership, but not in Mangar. What's more, Mangar forests are further threatened by illegal clearing and fragmentation by fencing and wall construction.

In this scenario, the notification of the Mangar Bani core and buffer as 'no construction zones' in 2016 was a welcome first step in protecting the forests. The state now needs to legally restore ownership of the Mangar hills to the Panchayat and confirm the deemed forest status.

This is all very fine, but leave a few knowledgeable naturalists in the area for even a week and they would probably ask for this remnant wilderness to be declared a national park or sanctuary. Such is the diversity and importance of this region.



*Chetan Agarwal is an independent forest analyst and a senior fellow with the Centre for Ecology Development and Research.*

## DELHI'S WILD HEART

The Mangar landscape (Mangar Bani and its surroundings) possibly represents the most extensive and intact stretch of native tropical dry forest remaining in the National Capital Region. Despite proliferation of the invasive vilayati kikar *Prosopis juliflora,* there still exist sizeable stands of thorn scrub and dry deciduous forests typical of the Aravalli hills. Dhok *Anogeissus pendula* stands cover the rocky slopes, and scrub forest species such as heens *Capparis sepiaria*, wild ber *Zizyphus mauritiana* and palash *Butea monosperma* occur in the flatter areas. The Mangar landscape may not be pristine, but natural forest stands do occur in a mosaic of degraded *vilayati kikar* stands, small villages, cultivated areas, abandoned quarries and in some regenerated forest patches.

Nevertheless, Mangar is astonishingly rich in bird, mammal, reptile and other faunal life. Leopards, hyenas, porcupines, four-horned antelope, civets, ratels, jungle cats, nilgai and jackals have been seen and recorded frequently by Sanctuary Nature Foundation's Mud on Boots Project Leader Sunil Harsana (see page 80). Intensive bird surveys by Misha Bansal and the online database e-Bird lists as many as 207 species in just 17 sq. km. Possibly, 20 per cent of these bird species are tropical dry forest specialists (as defined by BNHS), including the Yellow-crowned Woodpecker, Common Woodshrike, Black-headed Cuckoo-shrike, White-bellied Drongo and White-browed Fantail Flycatcher, all relatively rare in Delhi. Other forest-preferring species that are typical of the Aravallis forest include the Jungle Prinia, Cinereous Tit, Yellow-eyed Babbler, Chestnut-shouldered Petronia, Small Minivet and Tickell's Blue Flycatcher.

The star is undoubtedly the rare Indian Pitta, which breeds in the Bani, where birdwatchers flock each monsoon to watch and photograph it! Along with the Asola-Bhatti Wildlife Sanctuary and the connecting forests of Haryana in Gurgaon and Faridabad districts, Mangar forms the largest contiguous stretch of forest of biological value in Delhi NCR. There is no explicable reason for it not to be conserved for posterity.

**By Dr. Ghazala Shahabuddin**

## THE KIDS ARE ALRIGHT

The Mangar Eco Club is an informal initiative for children that was set up in 2015, supported by several individuals including teachers from the Mangar Government School, Delhi's birdwatchers and organisations such as the BNHS, Laksh Foundation and CEDAR. Every weekend, the members of the club, mostly children, are led by Sunil on a nature walk; a hands-on, in-depth exploration of Mangar Bani and the surrounding Aravalli area.Originally a birdwatching exercise, the club now actively works to conserve the forest and document the biodiversity of this sacred forest.

Five years post its inception, the Eco Club meets each weekend in Mangar Bani. Members and participants collect and sow seeds of native flora, document birds and butterflies, build check dams, and conduct clean-up drives. Often, they just sit beneath a canopy of branches and paint– the forest being their muse. They take great pride and pleasure in protecting and guiding interested visitors through their green haven.

Clearly, this is working. A former local schoolteacher, Vinod Ahlawat said, for instance, that participation in the Eco Club brought about a change in the outlook of the children he brought to experience the wilderness. The Mangar Eco Club is performing a vital task; that of encouraging the children living closest to its wilderness to learn about and love the rich biodiversity of their sacred grove.

**By Misha Bansal**

1

2

# *Calligraphy* ON SAND

During harsh summers, wildlife spotting in the United Arab Emirates is quite uneventful during the day. But as dusk descends, deep in the desert, the kingdom of night dwellers – reptiles and critters – comes alive.

A few friends and I decided to go on a nightly exploration of the Umm al-Quwain desert, and try our luck in spotting the elusive snakes, particularly the vipers found in these sandy habitats – the Arabian horned viper *Cerastes gasperettii* and the Sindh saw-scaled viper *Echis carinatus sochureki*. At 45°C, sweating profusely, we carefully treaded along the sandy dunes, looking out for signs of these camouflage experts. And sure enough, we soon spotted a "J"-shaped sinuous track on the sand, a tell-tale sign of a viper nearby.

Now more careful than ever, treading with soft steps, we finally caught a glimpse of a silhouette in the sand. I approached carefully, and got as close as I dared. I recognised the characteristic triangular head and broad, flattened neck, of the Arabian horned viper. Standing almost right over him, my legs on either side, I held my breath while I focussed my camera on his form, very careful not to make any sudden movement or noise.

Highly efficient predators, Arabian horned vipers bury themselves under sand using rapid side-to-side wriggling, until only their eyes and snout are exposed. They then lay in wait for unassuming prey - lizards, small birds, rodents - to approach, before striking with lightning speed and injecting them with their powerful venom.

This particular viper was especially photogenic, posing for my camera as he waited for his dinner. Usually, I find these vipers moving across the dunes, not friendly and unapproachable, in which case I leave them alone. A sense of fear is always prevalent in my mind when photographing these desert predators, and respecting their boundaries is paramount.

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Photographer: Vipin Sharma
Location: Umm al-Quwain, United Arab Emirates

**Image 1:** Details: Camera: Canon EOS 7D Mark II, Lens: Canon EF 100 mm. f/2.8 Macro USM, Aperture: f/5.6, Shutter speed: 1/200 sec., ISO 1000, Focal length: 100 mm.
Date: July 15, 2017, 08:56 p.m.

**Image 2:** Details: Camera: Canon EOS 7D Mark II, Lens: Canon EF 100 mm. f/2.8 Macro USM, Aperture: f/5.0, Shutter speed: 1/500 sec., ISO 800, Focal length: 100 mm.
Date: September 28, 2017, 08:17 p.m.

# THE MUD ON BOOTS PROJECT

BY CARA TEJPAL

**Sanctuary Nature Foundation's Mud on Boots Project was formally established in January 2017 as a natural extension of our effort to support grassroots level wildlife conservationists in India. The Project is effectively a booster programme that empowers conservationists who go unrecognised because of a lack of affiliations, educational qualifications, mainstream opportunities and language barriers. Those selected, known as Project Leaders, receive a monetary grant and customised support from Sanctuary over a period of two years. Thus far, 23 inspiring conservationists, working in diverse regions of the country, have benefitted from the programme and broadened the impact of their work.**

**We at the Sanctuary Nature Foundation have huge respect for those whose boots are muddy from the hardwork and toil that wildlife conservation in the field demands. The Mud on Boots Project is our ongoing salute to such men and women. Here are a few updates, as shared by our current Project Leaders.**

GAURAV SHIRODKAR

SHIV KUMAR/LAHAUL FOREST DEPARTMENT

## KIDS AND CAMERA TRAPS

Brown bears and snow leopards have been on our mind, with Project Leader Shiv Kumar's camera traps revealing glorious snow-dusted footage of these charismatic animals. Shiv has been documenting the biodiversity around the village of Udaipur in Lahaul district, while he goes about his work as a forest guard. Interestingly, Shiv's cameras captured a rare leopard cat last month.

Over the last two months, Shiv has also been extending his community outreach work by conducting workshops for students and teachers from three schools. He uses these events to introduce children to the biodiversity of the region, and to discuss relevant conservation issues, such as the poaching of male Himalayan Monals for their beautiful crests.

Shiv always has a camera in hand, and has created an amateur documentary on the wildlife of Lahaul from the footage he has gathered over the years. This documentary was screened at all three schools, where posters produced by the Sanctuary Nature Foundation and books shared by SECURE Himalaya were also distributed.

## CRIME PATROL, MOVIE NIGHT AND MORNING WALKS

The vigilance of Project Leader Ashwin Gurusrikar's volunteers and informants revealed the electrocution of a tusker near the Halaguru range of the Cauvery Wildlife Sanctuary. Upon visiting the spot and confirming the tip-off, the team informed the Karnataka Forest Department of the death. The volunteers and the forest staff discerned that the elephant came in contact with an electrified fence that was erected for killing wild animals and not just protecting

ASHWIN GURUSRIKAR

crops, as the fields in the area were fallow. An FIR was filed against the land owner and they have been booked under various sections of the *Wildlife Protection Act,* 1972. Ashwin and his team, who together form the Vanodaya Wildlife Trust, have been providing invaluable support to the Cauvery Forest Department for over a decade.

November 2019 was also busy with outreach and education activities conducted in different fringe villages of the sanctuary. Wildlife filmmaker Shekar Dattatri's 'The Truth About Tigers' was screened on two separate occasions – once for 125 children from Honiganahalli High School, and a second time for 250 residents of Doddaelchikere. The movie screenings were followed by interactive sessions on conservation and the importance of protecting the Cauvery Wildlife Sanctuary. In December 2019, Vanodaya's volunteers also organised birding trails for 75 students from two schools. The kids were taught the basics of bird identification, and were able to spot over 27 species on their trails.

## SEASON WATCH

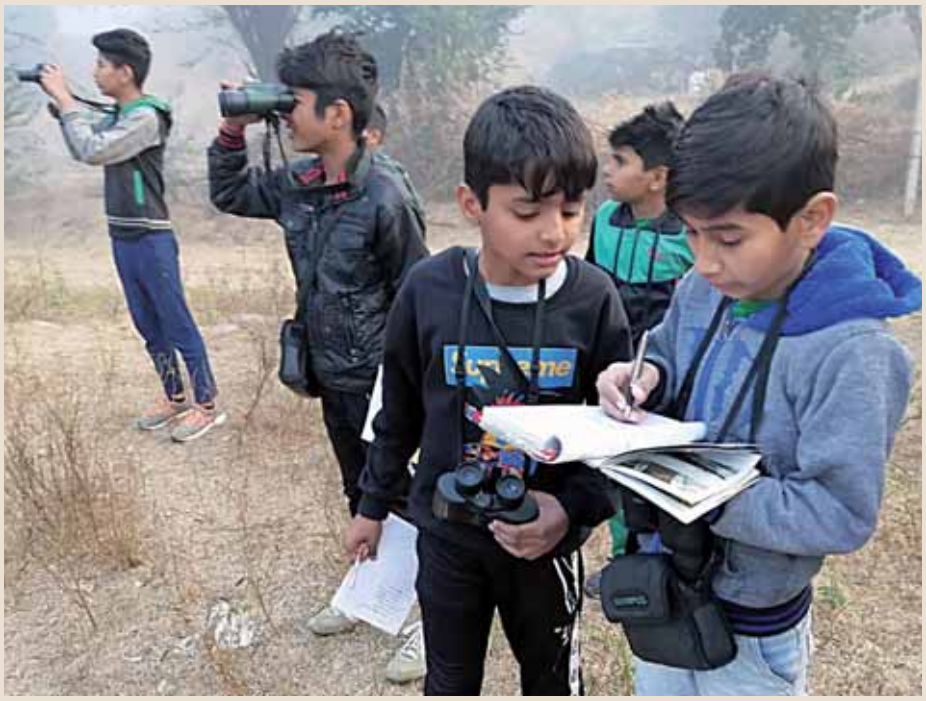
In Haryana's beleaguered Mangar Bani forest, Project Leader Sunil Harsana's Eco Club keeps hope alive. The Eco Club members spent December 2019 observing changes in their environment as Mangar took on its winter avatar. Sunil organised a field trip to the Sultanpur National Park with help from the Laksh Foundation and members of the Delhi Birders group, for club members, and a forest walk to introduce residents from Faridabad and Gurgaon to the biodiversity in their city.

Mangar Bani faces grave threat from landgrab and encroachments. Sunil Harsana has been working with experts and citizens to confront these. Turn to page 74 for a detailed report on the issue.

## PRELIMINARY SURVEYS

As Project Leader Bhuvan H.C. slowly but surely expands the scope of his work, his need for data has also increased. Over the past few weeks, Bhuvan has conducted preliminary

SUNIL HARSANA



surveys to identify habitats used by lion-tailed macaques and otters. Both are threatened, charismatics species, and icons for diverse forests and clean streams respectively. Bhuvan visited sites in Kaginahare, Kempuhole, and Bisle on the basis of anecdotal reports of sightings. His findings will lay the foundation for future conservation interventions.

Those who regularly read our updates are aware that Bhuvan, in coordination with the Forest Department has also been overseeing the maintenance of native tree seedlings. The saplings are doing well and will be ready to be planted as part of a research and habitat restoration initiative in March 2020.

As with many of our Project Leaders, Bhuvan lays great emphasis on conservation awareness and education. He conducts workshops, leads nature trails, and engages with local communities through the year. Notably, in December, he took up the issue of garbage disposal along the trail to Pushpagiri Peak. Subsequently, the Range Forest Officer took the decision to employ two more people to the Village Forest Committee to keep the trail clean and enforce a plastic ban.

BHUVANESHWAR H C

As the Mud on Boots Project enters its fourth year, we whisper a word of thanks to the late Tina Abraham, a friend of Sanctuary and a lover of all things wild. Our project evolved from the TINA grant for grassroots conservationists, an initiative set up by Paul Abraham in memory of his late wife, who lived to protect wild nature.

# HOLI TREES AND ELUSIVE OTTERS

Project Leader Malhar Indulkar's efforts to protect a rare and enigmatic *Myristica* swamp moved up a gear this winter. It is tradition for the local community to cut an old tree from the swamp on this occasion. Given the ecological value of this sacred grove, Malhar and another grassroots conservationist, Narayan *kaka*, are now rallying their community through a concerted pride campaign. To this end, they have approached the local temple committee to discuss the matter of conservation of the grove, initiated a survey to count the trees in the swamp, engaged with the Forest Department, coordinated organic farming workshops for farmers who live near the grove, and triggered media coverage on its value. Malhar and Narayan *kaka* have also been nurturing a nursery of 37 *Myristica* saplings with the intention to transplant these at degraded sites.

Malhar's quest to document and protect the otters of the region is ongoing, and over the past two months he welcomed several volunteers to help him with his surveys. Point surveys conducted through November and December yielded no direct sightings but plenty of evidence, including spraint and claw marks, of otter presence. His outreach work also intensified in December, with workshops conducted for children from two high schools. Amongst the nature walks, camera trapping and plaster casting activities, Malhar also encouraged students to write their own fictional works on the otters of the Terekhol river. Twenty such stories were produced by the young writers.

**The Mud on Boots Project is kept afloat by generous contributions from wildlife enthusiasts in India. To support our work through a monetary donation and meet our Project Leaders, log on to www.sanctuarynaturefoundation.org**

MALHAR INDULKAR


COURTESY: OUTLOOK RESPONSIBLE TOURISM AWARDS

*FROM LEFT TO RIGHT: Indranil Roy, CEO, Outlook Group, Meenakshi Sharma, Director General, Ministry of Tourism, Government of India and Jose Dominic, Co-founder & Director, CGH Earth.*

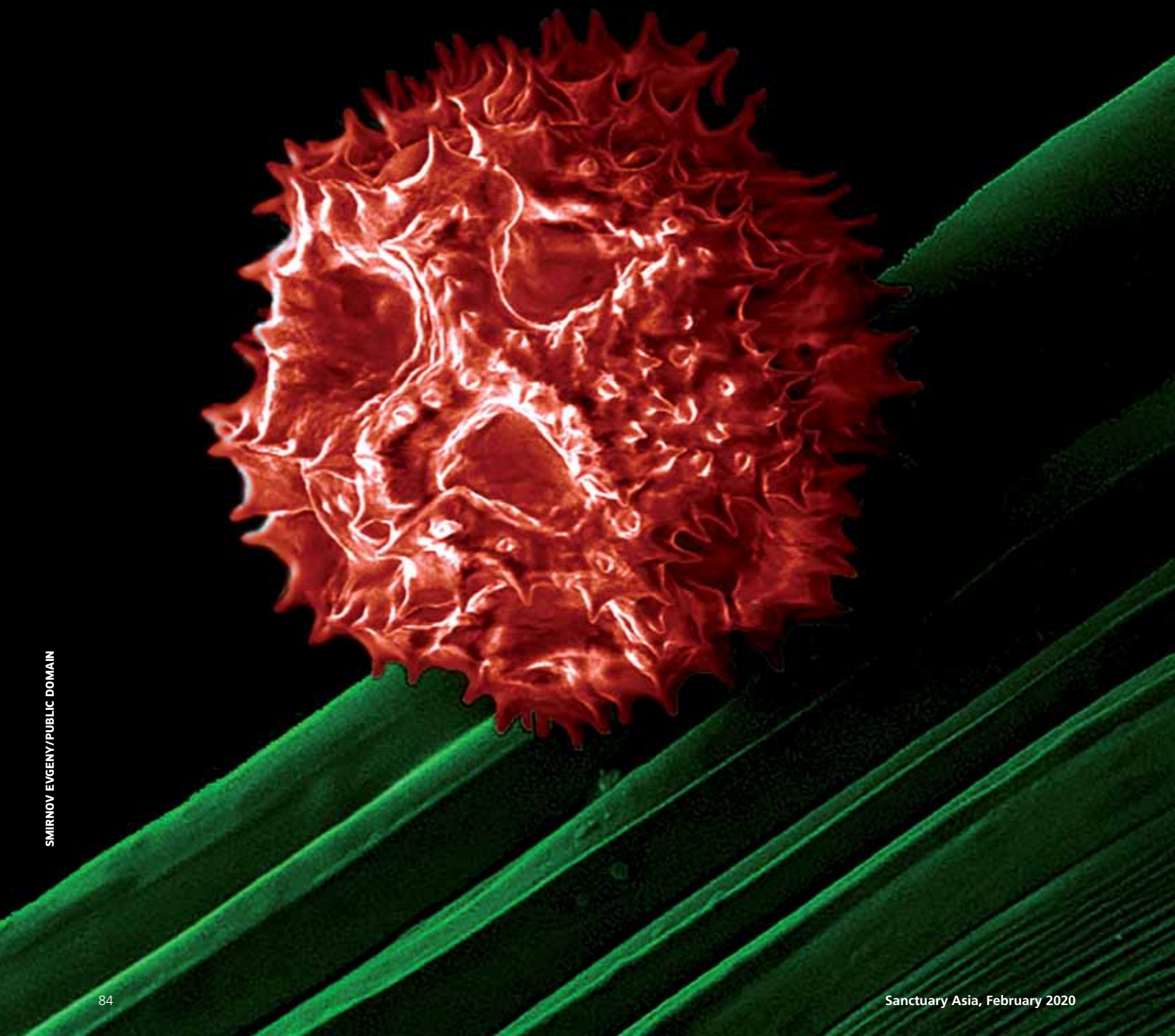
On January 17, 2020, Sanctuary Nature Foundation's Mud on Boots Project won the Gold Award for Best Wildlife Project at the Outlook Responsible Tourism Awards held in New Delhi.

The selection was based on a rigorous, two-stage application process, and the jury included conservationists Belinda Wright, Prerna Singh Bindra, and Ranjit Lal, amongst several other eminent personalities. Ten wildlife conservation projects were long-listed for the award, from which three were then short-listed. These included projects by our friends from The Corbett Foundation, and the Devalsari Environment Protection and Technology Development Society (see page 88), both of which are also doing invaluable work for communities and wildlife.

Cara Tejpal, Director of the Mud on Boots Project, accepted the award on behalf of the Sanctuary Nature Foundation and all the Mud on Boots Project Leaders. At Sanctuary Nature Foundation, we recognise that conservation is driven by communities, and only by recognising and empowering community champions can we hope to protect the biodiversity that sustains us all.

For more details go to www.sanctuarynaturefoundation.org/projects/mud-on-boots

***A colourised Scanning Electron Microscopic (SEM) image of a grain of pollen on the surface of a dandelion flower, magnified 2,500 times its actual size. The head of a dandelion is a puffball consisting of many tiny flowers, called composites, tightly packed together. When exposed to sunlight, the flowers on top will open to let tiny pistils (female organs comprising stigma, style and ovary) emerge from the anthers (part of the stamen that contains pollen). As they emerge, the pistils push the pollen out to be carried away by the wind or wildlife to cross-pollinate other dandelion plants. Once pollinated, the dandelion closes to develop new seeds and reopens with its head containing hundreds of tiny feathery parachutes, each attached to a seed.***



SMIRNOV EVGENY/PUBLIC DOMAIN

# The Sanctuary Papers

Text By Purva Variyar
Illustrations by Vinay Salvi

## HOPEFUL MONSTERS

Big leaps or baby steps? Evolutionists have long debated, rather heatedly, the scale and pace at which organisms evolve and new species arise. Charles Darwin swore by the dictum *Natura non facit saltum* (nature does not take leaps). He believed that gradual, almost imperceptible modifications eventually bring about substantial physiological changes, which, if of adaptive value, could set the organism on a path of a new evolutionary lineage. But some scientists also insisted on the possibility of adaptations occurring in sudden and big leaps. Geneticist Richard Goldschmidt had suggested, in the early 20th century, that certain genetic mutations could bring about large-scale changes in the biological makeup of organisms, accelerating developmental processes. In most cases, such dramatic variations prove detrimental, though in rare cases, they could be beneficial. Any such large change could be the beginning of the parental form branching out into a new species, rapidly and suddenly. Goldschmidt romanticised these individuals undergoing large effect mutations as 'hopeful monsters'. The discussion continues to swing both ways, establishing that both sudden and big leaps as well as small, gradual changes have their own role to play in the grand scheme of evolution.

## FLASHING IN THE DARK

There is a lot going on under the cloak of darkness. Some species of the night moth have managed to use the absence of light to their advantage. The nocturnal dot-underwing moth *Eudocima materna* in particular has managed to do the unexpected – communicate using visual cues even in the dark! A recent study published in *Current Biology* has revealed the secrets of the dot-underwing moth's night time communication between males and females, which can put the covert communication strategies of our intelligence agencies to shame. The upperwings of males are made up of specially arranged iridescent, nano-sized scales which when viewed at specific angles reveal 'hidden' black spots. These spots become invisible when looked at straight. The arrangement of the scales is such that at a particular angle, more light is allowed to pass through revealing a hidden layer of scales, which are of a darker hue. When it is time to signal to a female, the male smartly positions itself at an angle while in flight, and beats its wings such that the 'secret' black dots are flashed on and off, only in the direction of the target female. But from any other direction, the signal goes unnoticed in the dark, thus avoiding the attention of eager predators. Ingenious!

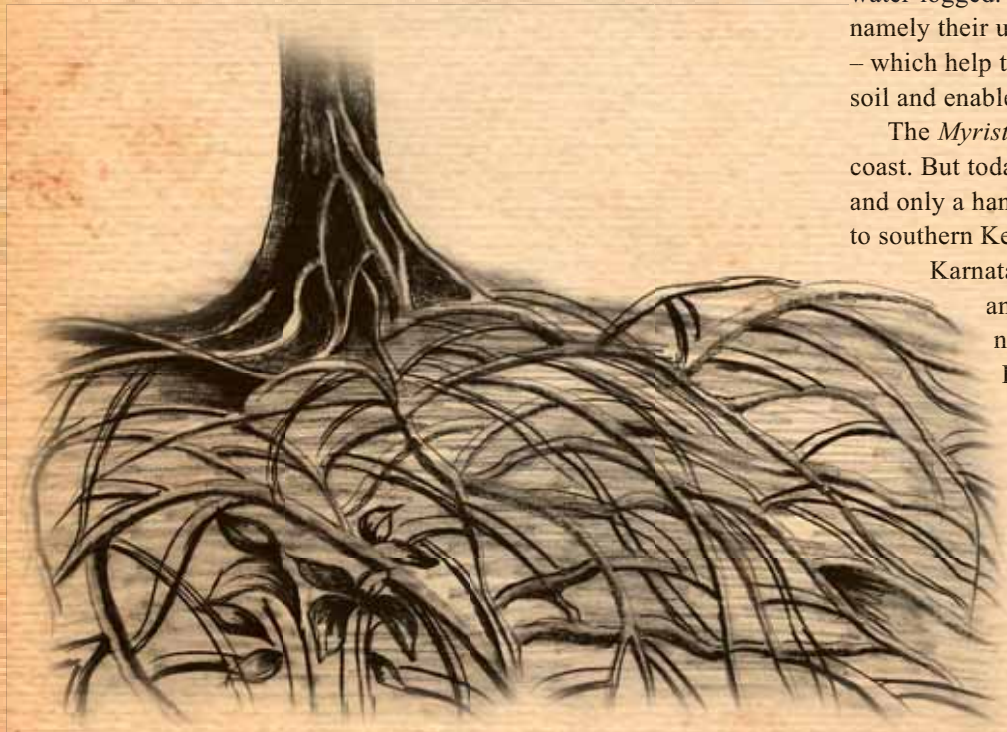
**Did You Know?**

*In 2014, researchers found the first sign of seabirds using tools. An Atlantic Puffin was spotted floating in the sea in Wales, scratching its back with a twig! In 2018, another was observed in Iceland, attempting to remove a tick with a stick.*

# CURIOUS CASE OF HORSESHOE CRABS

Some mysteries, even after being solved, continue to raise new questions. That is the case of determining the true lineage of the living fossil – the horseshoe crab. The species has been around for nearly 450 million years, way before dinosaurs existed. These ocean dwellers were considered to be a sister group to the class Arachnida that contains spiders, scorpions, and mites. However, a closer look at the genetic material and a thorough reassessment of these branches of the family tree, whose lineage has been a constant source of ambiguity and confusion, finally revealed that the horseshoe crabs are indeed arachnids themselves! But this information gives rise to even more fundamental questions – how did only this tiny branch of arachnids in the family tree wind up in the sea? Did the horseshoe crabs split from a terrestrial ancestor and make its way back to the sea? Interestingly, a small portion of the sequenced genes still points to the possibility of horseshoe crabs as being non-arachnids. Only four species of horseshoe crabs survive today, and this allows for very little material to study. "This particular part of the tree of life has always been quite challenging to solve," said researcher Jesús Ballestros of University of Wisconsisn-Madison, who led the study.

# THE VANISHING SWAMPS



One of the most endangered ecosystems in India is also one that few are aware of. The unique *Myristica* swamps were first scientifically acknowledged only as recently as 1960 in the Travancore region of Kerala. These freshwater swamps harbour endemic and one of the most primitive flowering plants of the Myristicaceae family. Two species of trees exclusively found here are *Gymnacranthera canarica* and *Myristica fatua*, both highly vulnerable to human threats and changing climate. Extreme specialists, the species are found only in the evergreen forests of the Western Ghats, and prefer the low-lying valleys that remain perpetually water-logged. They sport highly specialised adaptations, namely their unmistakable roots – knee roots and stilt roots – which help to support them in the extremely soft, marshy soil and enable exchange of gases above water.

The *Myristica* swamps once stretched across the Konkan coast. But today, this primeval ecosystem is fast vanishing and only a handful of fragmented patches remain restricted to southern Kerala, Goa and Uttara Kannada district of Karnataka. Only recently did the researchers discover another patch of *Myristica* swamps further up north in the Western Ghats, in Maharashtra. Highly rich in biodiversity, the *Myristica* swamps' incredible potential to recharge and maintain groundwater levels and streams, and absorb large quantities of atmospheric carbon cannot be underestimated, especially in this era of climate change. Newer species of flora and fauna continue to be discovered in these disappearing, yet rich swamps, which call for their increased protection and restoration efforts.

**Did You Know?**

*Brittle stars, which are relatives of starfishes, can recognise patterns despite having no eyes. This ability comes from the presence of photoreceptors, which receive light through the red colouration on their bodies.*

# MILK THIEVES OF LORE

In the early 20th century in Britain, a strange string of 'robberies' were recorded. People would wake up to find their milk bottles left on the doorsteps with tops pried open and the topmost layer of milk cream compromised. The first recorded instances of these 'cold' acts of 'crime' were traced back to 1921 in Swaythling, Southampton. Small birds of the tit family, it was found, were the culprits! The story only gets more interesting. Not only did these birds figure out that there was potential food in those sealed bottles, but they also figured out a way to undo the wax-board tops, or in some cases, metal foil caps, on those bottles. As years went by, these weren't limited to being isolated incidents anymore. Researchers James Fisher and R.A. Hinde studied and mapped the progressive spread of this habit among the birds across the U.K. between 1921 and 1947. And voila, the readings showed that the tits involved; namely the Eurasian Great Tit *Parus major newtoni*, the Eurasian Blue Tit *Cyanistes caeruleus obscurus* and the British Coal Tit *Parus ater britannicus*, were actually learning and imitating each other. There was clearly a cultural transmission of learned behaviour among these birds. There were other birds like robins too, which learnt to open the bottles, but the behaviour didn't spread as widely as in the more social tit populations. The birds were very quick to adapt to different kinds of bottle caps and also to overcome different preventive measures implemented by people to stop the birds from getting to the milk, such as placing stones or tin lids on the bottles. The birds simply removed the hindrances and resumed their thievery!

# THE LAST OF INDIA'S SEA CAMELS

In the Kutchh region on the northwest coastal border of India, there is a special breed of camels that can swim in the sea to reach an unlikely food source – the mangrove islands. Known as Kharai camels, these indigenous animals have been reared by traditional herding communities, the *Rabari* and the *Jat*, for centuries. The Kharai camels are the only camels in the world that are known to swim and to have adapted well to saline environments. When monsoons arrive, these camels swim through the Arabian Sea waters with their human herders in tow, to reach their feeding grounds in the mangroves. Today, this unique coexistence between the indigenous Kharai camels and the nomadic herding communities is gravely threatened. Industrialisation in the form of mining, saltpans, windmill and cement industries and jetties are sprouting up, leaving a trail of destruction of mangroves in their wake. Due to a shrinking food source, their population is dwindling and the traditional communities, whose livelihoods and culture depend on these camels, are facing the brunt. Only approximately 2,000 Kharai camels now remain.

KAUSTAV PATEL

# IT ALL COMES BACK TO THE HONEYBEES

By Divya Kilikar

"When people migrate, so do the honeybees," says Arun Prasad, Sanctuary's 2019 Wildlife Service Award Winner. *Palaayen*, he explains, is a major problem in his scenic Himalayan village – the word used when rural people abandon their villages, and hence their traditional practices, in search of jobs, opportunities or a more 'progressive' lifestyle in urban areas. It was to mitigate the crisis of able youth leaving the pristine Devalsari village in large numbers that Arun founded the *Devalsari Paryavaran Sanrakshan Awam Tekniki Vikas Samiti* (Devalsari Environment Protection and Technology Development Society).

Devalsari is a 'butterfly paradise' tucked away in the Aglar valley of the Tehri Garhwal district in Uttarakhand and is abundantly rich in biodiversity, with nearly a hundred commonly seen butterfly species, barking deer, leopards, black bears, otters, red giant flying squirrels and more. Despite being surrounded by such beauty, local communities have been driven to turn away from their traditional ways of life, in the quest for a different kind of prosperity. Homes that had unquestionably been constructed with local weather-friendly material like *mitti* and *pathar* for centuries were suddenly being built out of cement and corrugated aluminium roofs.

And with the traditional practices also began disappearing the honeybees, whose hives had been created inside the *mitti* and *pathar* walls. Arun knew that saving the honeybees was key to saving his people. Having practiced beekeeping since the age of eight, Arun understood that it was vital to directly connect conservation with employment, and bring traditional homes and jobs back, and so he created the Bee Conservation and Livelihoods programme.

Arun strongly believes that employment opportunities are linked to forest protection rather than destruction. When the region began facing mindless deforestation, he decided to expand the Society beyond beekeeping to conduct a multitude of programmes to provide incentives to youth to stay, and to empower local livelihoods while protecting biodiversity. He understood the scope of ecotourism in Devalsari with its rich biodiversity (the landscape has a recorded checklist of over 180 bird species) and began helping villagers set up homestays. Today, four locally-owned and run homestays and guided treks are a successful, strong start to promoting ecotourism within the region.

Over the last few years, the Society has worked on various other initiatives. Twelve schools in and around Devalsari have academically and practically stimulating eco-clubs, through which the Society conducts nature trails and classroom sessions to introduce students to wild nature and raise awareness about the global significance of the wildlife in their backyard. Together with the students, the Society also conducts regular plantation drives encouraging the planting of native species. It also manages a six square kilometre butterfly park, a natural space frequented by black bears, leopards and countless butterfly species. "I have come to Devalsari twice – the second time, I brought my students with me. We experienced the local culture, hospitality and cuisine, and the villagers have taught us things about observing and being in the presence of wildlife; things my students couldn't learn in a classroom," says Reema Pant, a teacher at the Welhams Girls' School, Dehradun.

Under Arun's leadership, the Society works to mitigate human-wildlife conflict and crises. In the Yamuna river, one destructive practice that had become popular was the infiltration of a natural chemical in the waters by fishermen to kill fish in large numbers. This adversely affected all aquatic flora and fauna, and the Society plays a key role in raising awareness about the ecological impact left behind.

The Society is essentially a one-man-show, through which around 200 villagers in Devalsari have found employment. "Tourists flock to our villages, attracted by the peaceful atmosphere and the flourishing wildlife." says Keshar Singh, a nature guide with the Society, and a native of Moldhar village. "I have been leading treks and trails here since 2015 and there is still so much to learn every day, about the rich biodiversity you can find here."

Arun turns to various resources like the Dehradun-based citizen's collective 'Been There Doon That', nature conservation nonprofit Titli Trust, and volunteers from across the country to help raise funds and improve marketing strategy. "Some people, both locals and from cities far away, understand our rationale and are willing to help. But we need more awareness and more talent to help us grow. It's a beautiful, but harsh place to work. Landslides are frequent. Roads are often closed, and the telecommunication network can fluctuate. But you won't see hills like these anywhere else," says Arun.

Lack of education and reduced agricultural returns drive people to neighbouring cities in search of better opportunities. The mission of the Society is to change this, to give people an incentive to stay in their ancestral hometown and do better. Arun believes that the honeybees, and his people's traditional beekeeping skills are key to preserving both his community and wildlife. Crops and livestock flourish only when pollinators flourish. And when crops flourish, so will the Devalsari community and the biodiversity that feeds it.

KAUSTAV PATEL

ABOVE *Having practised beekeeping since the age of eight, Arun knew that saving honeybees was key to saving the forests, and therefore also his community.*

FACING PAGE *With its rich biodiversity and spectacular mountainscapes, Devalsari is now a model village for sustainable ecotourism.*

**To support the Devalsari Paryavaran Sanrakshan Awam Tekniki Vikas Samiti and Arun's work, please contact:**

**Arun Prasad**

**Call: +91 8650645385, 9557613851**
**Email: arunapis1@gmail.com, develsari@gmail.com**
**Website: www.devalsari.org**

# The Disappearing Wetlands of Vasai-Virar

AMOL LOPES

Located 40 km. north of bustling Mumbai, there was once a sprawling coastal wetland region – a clean creek, lush mangroves abounding the banks, salt marshes, floodplains, and numerous small lakes and traditional water ponds, locally known as *bavkhals*. Native birds such as the Ashy Prinia would flit between trees across paddy fields all year round, while migratory visitors arrived each monsoon to breed. The Vasai-Virar belt was an ecological haven. Where once-clear lake waters reflected tree canopies and birds, murky ponds now reflect concrete buildings and debris. The urbanisation parasite has taken over, gloom and destruction in tow.

## AN ECOLOGICAL HAVEN

Close to the sea and creek, Vasai-Virar's ecological diversity is unparalleled. Despite the concrete invasion, an astounding plant and animal diversity, most visibly the birds, still survive in the mangroves, paddy fields, and 86 extant lakes. Over 250 rare and common avians can be seen here, including Oriental Skylarks, Greater Short-toed Larks, Rufous-tailed Larks, Paddyfield and Tawny Pipits... even the very rare Tytler's Leaf Warbler and Crab Plover. And there are butterflies everywhere; over 50 species!

## THE BEGINNING OF THE FALL

Until the 1970s, the region, governed by the Vasai-Virar City Municipal Corporation (VVMC), comprised predominantly agricultural villages with banana plantations, paddy and vegetable farms that supplied to the suburbs of Mumbai. Community-owned water ponds irrigated farms. At the dawn of the 1980s, land prices rose in Greater Mumbai and low and middle-income households began shifting to the outer fringes. This real estate boom combined with exponential population growth (in the 1970s, the Vasai region had a population of under two lakh residents; by 2011 the numbers rose to over one million). That set off a series of catastrophic declines. "People are looking at ponds as land, not as a waterbody," says Sachin Marti, from the Bhuigaon village in Vasai, who is a part of the Yuva Vikas Sanstha (YVS). Ironically, while the buildings grow taller, the quantity and quality of water fall drastically. Water tankers have become the order of the day.

The Bombay High Court has now ordered a complete ban on reclamation of wetlands. But, says Stalin Dayanand of Vanashakti, "Vasai is going down the same path as Uran, which is now a dustbowl." What was once a life-support system is a dumping ground, with no waste-management system in sight. And land laws continue to be broken with impunity.

Adding to the woes of the region, illegal prawn farms have spread like

AMOL LOPES

ABOVE *Vasai-Virar's mangroves, paddy fields and 86 extant lakes support a wide diversity of plants and animals, most visibly the birds, such as these Brahminy Ducks and Black-winged Stilts.*
FACING PAGE *Once an ecological haven, this region is now facing severe threats due to unchecked land reclamation, illegal prawn farming and dumping of garbage and construction debris.*

a mange. The toxic chemicals they release pollute what pure water remains, which people so desperately need. Belatedly, a court order to demolish the prawn farms was implemented just last year in response to a hunger strike staged by residents and environmentalists. Yet the recalcitrant prawn farms still manage to keep their poisonous business going.

With water channels blocked, flooding brings a halt to all activity in the monsoon. Often, children cannot go to school. Their parents cannot get to work. In 2019, as many as 2,000 passengers had to be rescued from trains stranded due to the flooding.

The Draft MMR plan 2016-2036 shortsightedly proposes large-scale industrial development on 1,560 acres of this green zone it designates as a 'growth centre'. Previously a salt-pan, this was originally marked as a no-development zone, in the face of opposition from 63,000 residents, who are fighting for their lives.

Since 2011, YVS has revived eight traditional water ponds across five villages and this has raised the water table in surrounding wells. A total of 479 more ponds await similar resurrection.

Earlier this year, the Ministry of Environment asked all states and Union Territories to set up an authority to oversee strategies for conservation and the wise use of wetlands within their jurisdiction. The *Wetland Conservation Rules* were notified. But the unholy combination of toxic chemicals and even more toxic corruption continues to tatter the complex web of life.

*Sanctuary* urges its readers to help local residents untangle the web of corruption and ignorance so that the birds can sing again and children can live as children should.

**WHAT YOU CAN DO:**
Write to the Chief Minister of Maharashtra, asking him to prioritise the setting up of a State Wetland Authority, as stipulated in the *Wetland Conservation Rules* notified by the Ministry of Environment, Forests and Climate Change. And to take instant action to monitor and demolish illegal structures.

Ask him also to order the accurate and systematic mapping of all small and large waterbodies, including traditional ponds and lakes.

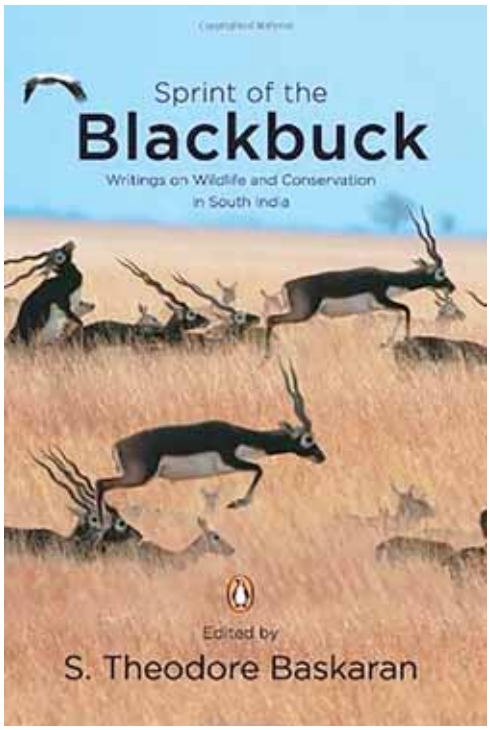
Write to the BNHS and the Maharashtra Forest Department requesting them to help by documenting the flora and fauna of the region and to highlight its biodiversity value within the next three months.

**Address your letters to:**
**Uddhav Thackeray,**
Honourable Chief Minister of Maharashtra <cm@maharashtra.gov.in> and **Deepak Apte**, Director, BNHS <da.apte@bnhs.org>

# BOOK REVIEW

## SPRINT OF THE BLACKBUCK

**By S. Theodore Baskaran**
**Published by Penguin Books**
**Hardcover, 223 pages,**
**Price: Rs. 299/-**




It's the late 1970s. The first sporadic signs of an environmental awakening are cropping up across the country. Though it may not be as widespread and evident in the city of Chennai, it nevertheless stirs action here too. A few lone conservationists and wildlife enthusiasts quietly come together, united in their concern and passion, to start the Madras Naturalists' Society in 1978. Devoted to the appreciation, education and conservation of wild nature, Romulus Whitaker, the late M. Krishnan, and many others set the tone for a wildlife conservation movement that continues to this day.

A few years in, the need for a periodical was addressed. *Blackbuck* began publishing in 1985, every quarter, a record of the society's explorations of wildernesses in the south, which were (and still very much continue to be) threatened by relentless urbanisation. Celebrating 25 years of the publication, *Sprint of the Blackbuck* is a delightful compilation of various writings from the *Blackbuck*. Edited by Tamil film historian, nature writer and a trustee of WWF-India, S. Theodore Baskaran, the book looks at scientific analyses of various landscapes, that in turn feed life lessons the authors garnered from their work. The book is divided into four significant parts that highlight the *Blackbuck*'s key focusses: observations on wildlife, their habitats, conservation and documentation.

Various known names from conservation in South India detail their fascination of wildlife and retell stories of their expeditions, findings and learnings. R.K.G. Menon shares a thought-provoking anecdote on tracking a panther that preyed on children; M.V. Rajendran clears misconceptions on the banded racer, a misunderstood snake; T.R. Sridhar throws light on surveys of biodiversity in the Northeast, following the country's only ape, the hoolock gibbon, in the Dampa Wildlife Sanctuary. M. Krishnan's encounter with a sloth bear in a forest clearing was one I couldn't resist smiling at: "*He stood with his back to us and his legs slightly splayed out, and bent low down, so low that his crown was touching the ground, and stood peering at us from between his legs. He stood like that for a full minute, inspecting us, and then made off… I remember Masthi asking me, in all seriousness, if he would have seen us upside down in his inverted scrutiny!*"

T. Koneri Rao provides deep insight into the mating rituals and subsequent parenting behaviours of Black Kites, throwing in tidbits on their interactions with fellow urban wild denizens. His observations of the relationship between a pair of Black Kites, which mate for life, was a moving one that was difficult not to empathise with. The female incubated her eggs as her faithful mate brought her food regularly for nearly a month. When the eggs hatched, the female continued to stay in the nest to guard her hatchlings, while the male, unexpectedly, became indifferent, forgoing his duties to his family and venturing further away. The female desperately shrieked at him, unable to leave her babies. Driven by starvation, she finally came out of the nest and chased him, forcibly blocking him repeatedly as he circled casually in the sky. The male came to his senses at last, and as if suddenly remembering his responsibilities, fetched a rat and brought it hurriedly to the hatchlings.

In the third part, following stories of conservation, a particular essay that stood out to me was *On Setting Priorities for the Conservation Effort*, in which the founder of the Centre for Ecological Sciences, Madhav Gadgil makes a scholarly effort into building a perception of conservation in the reader. Not only does he give a sound rationale, but further encourages us to wonder how conservation decisions must be taken in different landscapes and the many lenses we need to wear to understand what is right in each context.

In its numbered pages, part four has given a platform to photography, poetry and regional prose, calling attention to M. Krishnan's underrated writings in Tamil. One essay conveys the spirit of documentation briefly, but sharply – *Heroic Stuff* by Kumaran Sathasivam asks the uncomfortable question of whether some wildlife is more worthy of being documented than others. I found myself sagely agreeing to T.N.A. Perumal in his essay *Photographing Wildlife in India,* as it is true for all forms of art that seek to express a passion for the wild: *"Wildlife photography has a universal appeal because the caveman's instinct of sketching the animals feared by him, hunted by him and loved by him is in all of us."*

**Reviewed by Divya Kilikar**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# NETWORKING

**The Sanctuary Nature Foundation's print, on-ground and online network has grown to over a million caring individuals in India and across the globe. We would be delighted if you were to invite your family and friends to join this purposeful group to celebrate and protect our planet and its utterly miraculous biosphere.**

*A post about captive elephants often paraded in temples in Kerala.*

## COMMENTS

In the name of religion, why do we torture these innocent animals? Wake up, Kerala – and try to understand that this will not make God happy.

Nabanita Chowdhury, Siliguri

Temple authorities should be taken to task and should pay for the treatment of these ailing elephants. Where is Maneka Gandhi? She will do the needful.

Ravi Shankar, Bengaluru

No animal should be abused. However, banning temple elephants is unnecessary. Human beings have tamed and employed animals since the Stone Age. The argument could be that elephants are wild animals, but so were dogs, horses, and cattle, until human beings domesticated these.

Nandini Pai, Mumbai

*A post about the Supreme Court's suggestion that it is time to calculate the value of a tree by the volume of oxygen it gives.*

Courts go by evidence. They don't have to weigh themselves down by the burden of scientific evidence, and so, such a compliance-oriented discussion is the only discussion that will ever happen if all were to be left to the courts. Science, however, tells us that trees are carbon sinks. Meaning, they capture carbon in their lifetime (much like glaciers) and release a bulk of it back into the atmosphere when they die. And the rest of the (low calorific) carbon is used as firewood. Thus, oxygen released in a lifetime is part of the story and a cradle to grave and beyond estimate will be vastly different. So, in a nutshell, trees are unique in the sense that they should be left alone. Numerical juggling to suit so-called developmental ideas is our chagrin.

Harshad S. Phadnis, Pune

## TWITTER

*On the performance by Shriya Rao at the Sanctuary Wildlife Awards 2019. The song was an original composition by the True School of Music, and its lyrics reiterated that if left untouched, nature is resilient and wildlife can flourish once again.*

Here is some happiness to brighten your day. *Rehne bhi do na.* #LeaveItBe by a magical 13-year-old girl, Shriya.

Dia Mirza @deespeak

A simple message for us about our environment. Please listen to this beautiful song and share.

Sahil Sangha @sahil_sangha

Children know best. Leave it be, and #nature will bounce back.

@vivek4wild, Wildlife Trust of India @wti_org_india

*On the Sanctuary Wildlife Awards 2019 that strives to find and bring India's unsung earth heroes to the limelight.*

So much inspiration to meet #EarthHeroes (or as @BittuSahgal says, freedom fighters for saving the world for future generations). Proud to receive the prestigious Sanctuary Wildlife Service Award. Thank you, @SanctuaryAsia @dspmf @MyIndusIndBank

Debadityo Sinha @debadityo

Very proud of my dad, Vinod Rishi, on receiving the acclaimed Lifetime Award from @SanctuaryAsia at the 2019 Awards.

Vibhu Rishi @vibhurishi

Laxmi Maravi, Forest Guard at the Kanha Tiger Reserve, received the Green Teacher Award for her exemplary contribution to 'Anubhuti' and the Nature Education programmes held in the #KanhaTigerReserve. Great gesture. Great encouragement.

Ramesh Pandey, IFS @rameshpandeyifs

Congratulations to our Academic Coordinator of the M.Sc. programme in Wildlife Biology and Conservation, Chandni Gurusrikar, for receiving @SanctuaryAsia's Wildlife Service Award 2019!

National Centre for Biological Sciences @NCBS_Bangalore

*Regarding the battle to stop the Coastal Road Project, a 15,000-crore construction project that threatens to destroy Mumbai's intertidal marine life.*

This was a year where protests for the environment broke ceilings, led to heated arguments in courtrooms and brought out children desperate to just breathe. This was the year when the environment was not a footnote for citizens. People from different walks of life came together – voluntarily – to document Mumbai's marine life @MLOMumbai. Citizens went to court against the Coastal Road Project. They said the road was for a few, the coast was for many. Read @SejalMehta06 in @SanctuaryAsia's June 2019 issue.

Neha Sinha @nehaa_sinha

In an important decision, the SC stayed the Bombay HC judgment disallowing the Coastal Road Project that seeks to connect north and south Mumbai. This means the Project can start forthwith.

Dhananjay Mahapatra @toi_dhananjayM

An April date for the next #CoastalRoad hearing means there will be irreparable damage to the environment! Disappointing orders indeed.

Save Our Coast Mumbai @saveourcoastMUM

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# READERS' FORUM

SANCTUARY NATURE FOUNDATION


## SANCTUARY WILDLIFE AWARDS 2019

As always, the award winners were outstanding and well deserving of the honour. Naseeruddin Shah compered well. I was happy that Stalin and his team received recognition and Bittu Sahgal's words of encouragement – "You have lost a battle with a temporary setback but the war is still on and has to be won. Continue the good work," – were motivating. We who are trying to preserve our heritage for future generations, have to keep going despite occasional setbacks.

Sudha and Vinod Punshi,
Mumbai

## OUR RELATIVES

I was thrilled – just thrilled – to be a "distantly related ape" to the Bornean orangutan *Pongo pygmaues* as will my grandson, Henry Day, who will be in Borneo, shortly, on a camping holiday. Every issue of *Sanctuary Asia* makes me conscious of how our "distantly related" are far more intelligent and sensitive than we are.

Nawshir Khurodyr,
Mumbai

## VOTE NO FOR THE ZOO

A zoo is to be established near Mumbai, how inappropriate! At the end of the 19th century, animals of which we had no knowledge (keeping, feeding and breeding) were brought from their home habitat and placed in small concrete enclosures surrounded by bars. This was for the entertainment of the general public. At the end of the 20th century, we realised what a disgraceful mistake we had made and we began closing them. Some were renamed, 'Centres for Captive Breeding' and the animals were provided with some grass, bushes and ponds. They were still zoos, however, because most of the animals cannot and will not be re-introduced, as their original habitat is gone forever, or greatly reduced. I have read with dismay of the fate of 32 young elephants, ones that should never have been taken from their herds in Zimbabwe, languishing alone in small enclosures for over a year now, waiting to be shipped to zoos in China and Pakistan! When will human beings start to behave in a respectful and educated manner and stop exploiting wild fauna so intolerably! My vote is no for the zoo, let's go forward and not backward.

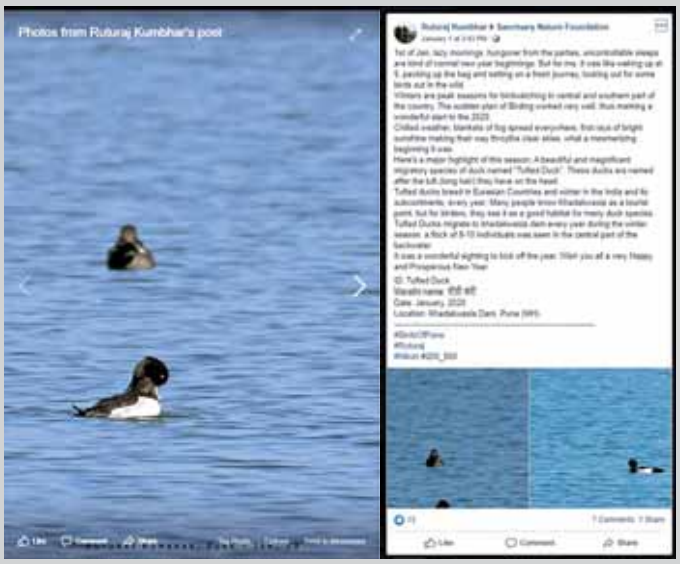
Peter Thomas
Tourrettes sur Loup, France

## A MEMORABLE SIGHTING

A blanket of fog, the first rays of bright sunshine making their way through the clear skies – what a mesmerising beginning it was! For me, a major highlight of the season – was the beautiful and magnificent migratory Tufted Duck, named after the tuft (long hair) on its head. The species breeds in Eurasian countries and winters in the Indian subcontinent. Tufted Ducks migrate to Khadakwasla Dam every year during the winter season. I saw a flock of 8-10 individuals in the central part of the backwater. It was a wonderful sighting to kick off the year.

Ruturaj Kumbhar,
Pune

RUTURAJ KUMBHAR



## UNDERPASSES ARE TEMPORARY SOLUTIONS

Roads should never be built in ecologically sensitive areas or any forests. Building an underpass and portraying it as a solution is not a solution in its true sense. Solutions should address the problem permanently. I personally feel the NH-7-44 should have been closed once and for all, if humans really cared about animals. Human greed has no limits, and every so called 'solution' that we suggest becomes a problem in the near future, and the cycle repeats.

Prashant Kirsur,
Bengaluru

## LETTER TO THE CM

*In response to the December 2019 Campaign – Avian Apocalypse, our reader wrote to Ashok Gehlot, the Chief Minister of Rajasthan*

Thousands of migratory birds, including some rare species have died due to avian botulism, the result of poor ecological conditions, which could have been monitored and controlled. I appeal to you to set up a Wetland Authority immediately. Rajasthan is the first entry point in India for migratory birds. Conservation Management measures here could not only save birds but help other states to emulate. Those investigating this tragedy and others concerned may be directed to post their findings and authentic information online to help learn and prevent their occurrence elsewhere. We are witnessing the imminent extinction of the Great Indian Bustard. Do not let more species of our planet perish due to our negligence.

Ravi V.,
Navi Mumbai

*Note: A wetland authority has been notified.*

## HEAR, SMELL, FEEL, TOUCH THE FOREST

On a chilly winter morning in the Bandhavgarh Tiger Reserve, on a safari, the jeep fully covered to protect us from the heavy rains, a random thought popped up – how would a visually impaired person experience this? I pulled my winter cap down to cover my eyes. The safari started with only one dominant sense – sound! I struggled initially... confused between different sounds, but gradually, I began to differentiate. After about half an hour, a second sense was triggered, just as the gypsy passed through a patch of soft sandy soil – the smell of soil drenched by the rain.

As we progressed, I listened closely to the calls of more than 35 birds and mammals, the sound of raindrops, water streams and the cracking of tree branches and experienced the different fragrances of the forest – grasses, shrubs, herbs, tree patches, soil, stones, rotten leaves, dead flesh, animal dung and more. When the gypsy hood was opened, the sense of touch, of mother nature on my face in the form of tiny droplets dripping from leaves atop, and the tenderness of a tiny leaf falling on my face, was overwhelming.

This was one of the best safaris among the many I have done in my life. I had the self-realisation that we usually become 'mentally' blind in safaris – all we focus on is the joy of a "sighting".

Saurabh Thakekar,
Mumbai

### THE SURVIVAL REVOLUTION

**Vance Martin** and **Bittu Sahgal** celebrate, revere and exhort us all to unite across the globe to protect Earth's biosphere, while underscoring the reality that we have the time and that practical solutions are on hand.

### LOSS AND HOPE

In an age of staggering losses – of species, populations, biological diversity, habitat – it's essential we help one another think through such losses in ways that do not induce fatalistic paralysis, writes **David Quammen**. The globally celebrated thinker and author of *The Song of the Dodo* narrates, with visceral imagination, the heartbreaking reality of species extinction, while reminding us that with courage we must also hold on to that most precious fuel for our purpose – hope.


SAMSUL HUDA PATGIRI

### RURAL FUTURES: FROM SNOWLINE TO SEALINE

The biodiversity-rich Eastern Himalayan region is home to over 200 distinct ethnic groups. **Ranjit Barthakur, Joanna Dawson** and **Saurav Malhotra** of the Balipara Foundation write on how communities are playing an active role in conserving their life-support system through visceral relationships born of generations of interdependence and the wise use of wild nature.

### #WILD11 WHERE THE PEN IS MIGHTIER THAN THE BUZZ SAW

The Writers' Seminars at #WILD11, to be held in March 2020, will bring together writers inspired by the natural world to discuss how to create awareness and spread the love of nature to the global community. **Bob Baron** and **Patty Maher** break down the purpose of the *International League of Conservation Writers* (ILCW) and invite Indian writers to add their genius to the global move to highlight the beauty and fragility of our beleagured planet.

### #ILCP WHERE CONSERVATION PHOTOGRAPHY IS KING

*Sanctuary* showcases some of the finest images in the archives of the *International League of Conservation Photographers* and asks its vast network to join and strengthen this vital initiative to turn art and imagery into a bulwark of defence for our planet.


STEVE WINTER

# END OF THE ROAD

by Bittu Sahgal

The earliest evidence of a fossil tiger, *Panthera zdanskyi*, discovered in China, is dated some two million years ago, during the Pleistocene. One of the world's most charismatic big cats, *Panthera tigris* has since adapted to occupy vastly different habitats and has in the process survived a host of incredibly difficult trials of life. Little wonder then that scientists say that this, the world's largest felid, is at the prime of its evolution.

That said, nothing in the tiger's experience prepared it to deal with the most dangerous primate in the world – *Homo sapiens*. Ever since we arrived on planet Earth, we have virtually made it the purpose of our life to eliminate the tiger. Our arsenal has been diverse. Pits, clubs, knives, spears, poisons, bullets, bombs, jaw traps, nooses, electrocution and now roads. Yes... roads!

In India, we nonchalantly run roads through wildernesses and flatten not just tigers, but thousands of other species daily. Ditto with railway lines, canals, high voltage transmission lines and a retinue of obstacles, including towns and cities.

So. While one set of young Indians from Kashmir to Kanyakumari are being taught through programmes such as Kids for Tigers to SAVE THE TIGER, their elders are tramping the same turf, making life so impossibly tough for the big cat that is, literally, at the end of its road.

Photographer: Haseeb Badar
Location: Katni, Madhya Pradesh, India
Details: Camera: Canon EOS-1D X Mark II, Lens: Canon EF 200 - 400 mm. f/4 L IS USM, Shutter speed: 1/125 sec., Aperture: f/5.6, ISO 10,000, Focal length: 258 mm.
Image taken: April 27, 2019, 00:33 a.m.

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Image by: DR. ANISH ANDHERIA

# FOREVER STRIPES

The survival of the tiger and all the creatures that share its habitat, including leopards, wild dogs, elephants, rhinos and uncounted plants, insects, birds, reptiles and herbivores, depends on whether humans can set aside vast parcels of land for nature.

The wildlife conservation movement needs the support of us all. For more information on how you can help, or to pledge your support for those who work 24x7 to protect our wildlife, write to Dr. Anish Andheria (President, Wildlife Conservation Trust) at **anish@wctindia.org** or visit **www.wildlifeconservationtrust.org**

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