



EARTH SUFFERING FROM FEVER

By Manoj Sharma

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Manoj Sharma worked for the Indian Statistical Service for 10 years and then immigrated to the USA to pursue graduate studies in statistics. Currently he is the Director of Biostatistics at Grail Inc., supporting the company vision of “Detect cancer early, when it can be cured”.

The environment with many living and non-living beings is like human body with multiple organs and control systems that regulate it. In the environment, humans, other living beings, non-living beings are to be considered as a system like human body. Cancer is a control system issue in humans when responsible cell growth is challenged, and control systems get corrupted. This is like cell growth proliferation has no stopping. The cancer detection and treatment are challenging often for not being detected in time.

Similar phenomenon is happening in nature and our environment, where control system regulation is disturbed by human needs and wants. Population growth is one aspect. However, greed for more is a much daunting issue. It causes eventual imbalance in the ecosystem. Hence status of several species gets endangered and some are pushed on brink of extinction. It is owing to the control system getting degenerated.

Control system: Many initiatives for appropriate conservation of endangered species, through government and voluntary organizations, bring forth no significant gains. It is because we fail in detecting and treating this cancerous growth. Responsible control systems can only be maintained if we humans employ



our creativity holistically. Life becomes convenient and easy with innovations as new products/solutions generate economic development.

The capitalism also promotes innovations which foster faster rate of economic development. Individuals, who innovate for profit, impact this more to achieve greater degree of unique personal status and comfort. It leads to a slow degeneration, where people want more and more with less and less effort or consideration for holistic objectives.

The control systems for the environment, as a result, are highly compromised in the current situation worldwide. Credit availability has also facilitated acquisition of things of safety and comfort like home, car, etc., at a very early age for young people with less and less appreciation of effort and responsibility.

We the cause: I like to describe it as cancer of want. On one side is

awareness of the right approach for own betterment. On the other side is choice of doing right (understanding own responsibility). Human beings will take longer time to acknowledge the decline in own values and living conditions. However, the impact of new trends is too visible over wild species, getting endangered.

Humans are the cause but remain unsympathetic to environmental catastrophes, seasons' untimely changes, global warming, and related ills. Such unheard and unfelt nuances have assumed the shapes of different types of cancers for humans.

It is a new found malaise which does not get diagnosed at early stages. By the time it is detected, it is too late as, by then, the effects would already have turned into catastrophes and would not be corrected.

Duty vs right: The two Indian epics (Ramayana and Mahabharata) outline such a contrast lucidly and throw new

light over the two key aspects of living and resultant consequences. The Ramayana highlights that everyone should think first about ones' duty than what one should have as his/her right. Such a life cycle shall lead to Ram-Rajya (ideal state of living), where the three types of doshas (evils) -- physical, spiritual, and environmental – shall not occur.

Mahabharata presents a contrasting scenario where characters remain passionate for their own right, attain own ego, and undermine discharging their duty. They care the least for their environment and the result is a war among cousins! It lasted for eighteen days to annihilate not only all clans but also cause indescribable loss to environment!

A leader like John F. Kennedy inspired the people through his inaugural address with the use of his historic words, “Ask not what your country can do for you – ask what you can do for your country.” It was a clarion call given to promote the idea of contributing for public good.

Thy necessity: Lal Bahadur Shastri as the Prime Minister of India asked the citizens of the country for fasting once a week as the nation was reeling under severe food crisis in aftermath of a war with neighbouring country during mid-sixties. He and his family members observed the weekly fast as an example. What a pity: present day world leaders are inclined to offer free benefits to people, like stimulus checks, free electricity/water etc., to gain popularity and inculcating a sense of public non-accountability. Control system regulation for the environment requires careful use of resources according to minimal safety and comfort needs rather than exponential

conversion of needs into wants. Do recall the irresponsible cell growth is usually observed much later. It ultimately becomes cancer. Its treatment becomes almost impossible.

Earth's illness: My editorial colleague, Amit Patil suggests in wry humour: the earth now a days behaves like a human body. It appears it has developed an illness due to strange known/unknown reasons. Like the human body temperature rises in illness, the earth may be feeling rise in its temperature. Is it not owing to heightened threats caused by human-impacted imbalances? How to remedy earth's sickness before it develops into cancerous growth?

Scientists have been observing Earth for a long time. They use NASA satellites and other instruments to collect many types of information about Earth's land, atmosphere, ocean and ice. This information tells us that Earth's climate is getting warmer. We cannot take Earth's temperature directly, but we do have a lot of information from weather stations, ocean buoys and remote sensing instruments. The information lets us see changes in climate.

When the world leaders gathered at the U.N. Summit in Copenhagen to brainstorm ways to quash increasing temperatures and hold back rising seas over the earth, they took at the state of Earth's ecosystems and its inhabitants. From polar bears to people, they found following glaring signs of how well (and not-so-well) our planet is doing:

Arctic Meltdown, Collapsing Antarctic Ice, Ozone Hole Recovery, Ocean Dead Zone Expansion, Corals in Crisis, Vanishing Forests, Water Stress, Atmospheric Buildup, Animals in Peril, and Humans Impact.

EXTINCTION THY NAME IS CRIME

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Do you, and how many know a species becomes extinct in the wild when it only survives in cultivation (plants), in captivity (animals), or as a

population well outside its established range. Dodo is an example of flight less bird becoming extinct in Mauritius. Himalayan Quail is another example of a bird that has not been observed for decades, and presumed to be extinct.

Loss of habitat, genetic variation, inbreeding in reproduction, etc., are some of the main reasons for a species getting extinct. Genetics cause human beings becoming blonde, red, brown, etc. Usually, the greater the population of a species, the greater its genetic variation. Inbred species do not have the genetic variation to develop resistance to the disease. For this reason, fewer offspring of inbred groups survive to maturity.

Experts at global level have created an organization: IUCN (International Union for Conservation of Nature) to study, survey and estimate status of as many wild species as possible. It is based at Glenn in Switzerland. It is a coordinated effort on behalf of different national governments, private societies, individuals. They work to further its goals which are meant to offer better future to all, wild and not wild.

The IUCN keeps a “Red List of Threatened Species.” The Red List defines the severity and specific causes of a species' threat of extinction.

The Red List has seven levels of conservation: least concern, near threatened, vulnerable, endangered, critically endangered, extinct in the wild, and extinct. This issue of Conservation Times outlines issues that endanger or threaten a flora fauna and habitats, in a hope to educate the readers. Extinction is akin to a crime and we should make efforts to avoid committing it.

THEME FOR THE NEXT ISSUE



The theme for the next issue of Conservation Times celebrates the 50th anniversary of Project Tiger. The issue will look at the historic early days of Project Tiger and look at the successes in recent times. As usual, we welcome good articles on any wildlife or environmental topic in addition to those on the theme for the upcoming issue. If you would like to write an article, please request a style sheet for Conservation Times from

emccrea@eecg.org. The deadline for submitting articles for the next edition is 15 November, 2022.

A NATIONAL PARK IN DANGER

By Mamta Vardhan

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Wood Buffalo National Park , this beauty in 'danger', reason, Google

Mamta holds a PhD in Environmental Science and Policy. She has several years of experience working with rural communities in India and East Africa on issues that lie on the intersection of rural livelihoods and natural resources management. Mamta is currently based in Edmonton, Canada where she works as a Research Officer with the provincial Government. -Editor

The Wood Buffalo National Park in Canada is at risk of losing its UNESCO world heritage status! When I read this news I could not believe it. For, how can a national park in a developed country be threatened? I was intrigued and wanted to know what brought the park to its current state? I did some online research and here is what I found:

2nd largest: Wood Buffalo National park is Canada's largest national park and the world's second largest park. At

44,000 square kilometers the park is bigger than the entire country of Switzerland! Wood Buffalo is one of the world's largest freshwater deltas, the Peace-Athabasca delta formed by the Peace, Athabasca and Birch rivers. The area is a maze of wetlands, rivers, lakes and prairie habitats rich in biodiversity.

The park is home to the largest free-roaming wood bison herds in the world. It is also the last remaining nesting ground of the endangered whooping crane. In addition, the park is a breeding ground for millions of migratory birds from four continental flyways. This area was designated in 1983 as a UNESCO World Heritage site for the biological diversity of the Peace-Athabasca Delta, and for the population of wild bison. It is the most ecologically complete and largest example of the Great Plains-Boreal grassland ecosystem of North

America. A number of First Nation groups also depend on the park.

The park, which straddles Alberta and the Northwest Territories, is deteriorating for decades. The wetlands in the area are slowly drying up through a combination of climate change and upstream activities such as hydro development in British Columbia. As well, research has found increasing evidence of seepage from oil sands tailings ponds in Alberta into upstream ground and surface water.

A research study released to The Canadian Press concludes "The (Peace-Athabasca Delta) depends on recharge of its lakes and basins in order to retain its world heritage value.

Currently, the hydrologic discharge is decreasing. Without immediate intervention, this trend will likely continue and the world heritage values of the (delta) will be lost."

WOOD BUFFALO NATIONAL PARK



Wood Buffalo Park, Google

Petition: In 2014, a petition from the Mikisew Cree First Nations community asked UNESCO to examine the park and assess if it still merited its world heritage site designation. UNESCO reviewed the park conditions and raised concerns that if no measures are undertaken to revive environmental conditions the park's world heritage status could be at risk. In its recommendations to Parks Canada, UNESCO requested urgent assessments of the risk to the Peace-Athabasca Delta and the environmental and social impacts of industry and climate change on the park and its peoples. If those actions were not carried out with sufficient speed, the park would be placed on a list of world heritage sites in danger.

UNESCO's comments prompted the federal government of Canada to commission a survey of the ecological health of the park. The exhaustive 561-page report from this survey concluded that 15 out of 17 measures of ecological health were indeed declining. The study noted that these effects stem from the changes to the park's river flows and water chemistry caused by climate change, hydro development in British

Columbia and oil sands industry in Alberta.

Missing ice-jams: For instance, the flows in Peace River have fallen 9% since the Bennet dam was built in British Columbia. Similarly, flows from Athabasca have fallen by 26%. Ice jams that once flooded the wetlands and lakes no longer occur. Lower water levels are concentrating chemical contaminants from oil sands. As a result, bison habitat is shrinking. Invasive species are replacing native vegetation and migratory birds are starting to avoid certain areas. Indigenous people who trap muskrats every season are observing a fall in their muskrat catch.

As a result of these findings, Parks Canada has set aside \$27 million for ecological revival of the park. Some of the proposed solutions to revive the park include, artificially inducing spring floods, and careful review of the impact of oil sands and hydro development in the nearby areas, as well as better consultation with indigenous groups. Parks Canada has established buffer areas around the park and created a water management plan. Both federal and provincial

government are working on preparing regulations on the release of tailings in the waterways.

While all these measures are praiseworthy, independent reports commissioned on behalf of the Mikisew Cree point that risk assessment of tailings ponds from oil sands has not yet begun. It will be a long time until there is an agreement on what measures should be taken to address the deterioration, still more time until the agreed upon measures are implemented fully and yet some more years until one can observe visible positive changes to park health. Meanwhile, UNESCO representatives concluded their inspection of the Park in August 2022, and a verdict on the fate of the park is expected in a few weeks time.

Source:

<https://www.cbc.ca/news/canada>

<https://cabinradio.ca>

Readers are welcome to share their experiences at various National Parks if they could assess threats to the parks' ecosystem? Wild mammals receive priority. We need to pay more attention to the very habitats that support them. All of us coinhabit such areas. So our survival is closely linked.

WHAT MAKES THE GIANT KANGAROO RAT ENDANGERED?

By *Nandita Bhatnagar*

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Nandita Bhatnagar is a Bay Area, USA based Clinical Biochemist with a passion for writing. --Editors

Living where I live in the East Bay Hills of San Francisco area as a lover of outdoors hiking trails, I will often come upon signs and notifications cautioning about protecting endangered species in that area. Most responsible citizens take these signs seriously, and in this article, I will bring the same conscientious to the readers.

Habitat loss and fragmentation are the primary causes of biodiversity loss, including loss of genetic diversity. Small populations can lead to inbreeding depression, which threatens the survival of the species. There are many Regulatory Mechanisms and Management Actions State and Federal Laws, which are referenced as a source of warning, which tell me how serious the Conservation Movement is. Some of the lists of these laws are:

California Endangered Species Act (CESA)

California Environmental Quality Act (CEQA)

Natural Community Conservation Planning Act

Federal Laws and Regulations National Environmental Policy Act (NEPA)

Clean Water Act

Endangered Species Act

3 principals: To assess the species' viability, Species Status Assessment (SSA) is used which relies on the three conservation biology principles of resiliency, redundancy, and representation (together, the 3Rs). These principles rely on assessing the species at an individual, population, and species level to determine whether the species can persist into the future and avoid extinction by having multiple resilient populations distributed widely across its range.

Resiliency is the populations' ability to tolerate natural, annual variation (stochasticity) in their environment and recover from periodic disturbance.



Giant Kangaroo Rat, Mammalian Ecology and Conservation Unit

Redundancy is the ability of a species to withstand catastrophic events. Redundancy is the duplication and distribution of populations across the range of the species

Representation is the ability of a species to adapt to catastrophic events, or to changing physical (climate, habitat) and biological (diseases, predators) conditions.

A species' representation is measured by assessing the genetic, morphological, behavioral, and ecological diversity within and among populations across its range. The more representation, or diversity, a species has, the more likely it is to persist in changing environments.

Human actions: It got me thinking if human footprint on the trails is the only contributor to the endangerment? Well not really...or maybe yes because humans have indeed been the main culprit. Habitat degradation and destruction caused by anthropogenic sources is at the top of the list. Habitat modification and destruction via residential or commercial development, followed by agriculture, urban development, transportation infrastructure, road construction and maintenance, increases the likelihood of mortality from vehicle strikes.

Today, globally, a large portion of habitat has been converted from

agriculture to urban areas. Solar installations are also on the rise and sadly they alter landscape topography, vegetation communities, and soil drainage. Oil and gas exploration and related activities include hydraulic fracturing and other enhanced extraction techniques, can not be ignored... specially in the Central Valley area of California.

There is also the consensus that increases in greenhouse gas (GHG) emissions during the 20th century have resulted in global climate change characterized by: warming atmospheric and ocean temperatures, diminishing snow and ice, and rising sea levels. Climate changes affect through changes in precipitation and temperature, which can drive associated changes to plant productivity, vegetative communities, and the longevity of seed caches. Living in California one cannot ever overlook climate change is also associated with increased risk of catastrophic events, including floods and wildfires.

Seed collectors: Many of the endangered animal species gather scattered seeds that blow to the ground and mix in the upper layer of soil which modify the surface topography of the landscape and change the mineral composition of the soil. Each species serves as the foundation for an entire

ecosystem with ripple effects on the entire food chain. When anyone ponders on the hard work and thoughts put into eco-conservation, one has no choice but to stop being mindless and instead thoughtfully contribute to the conservation efforts of the endangered species and know that one is also contributing to the wellbeing of the Mother Earth.

I was so intrigued to see the name of the Giant Kangaroo Rat as one of the endangered species on the trail....and I immediately thought, man, this rat sounds like it is big!! In general, I have always thought rats are a nuisance, pests to be precise and it made me wonder why and how they are important from a conservation point of view.

The giant kangaroo rat (*Dipodomys ingens*) is an endangered species, endemic to California. It is the largest of over 20 species of kangaroo rats, measuring about 15 cm in length. It was declared endangered on both the federal and California state levels in the 1980s. It inhabits less than a mere 2% of its original range and can now be found only in isolated areas. Agricultural development has severely impacted its habitats. As a result, it is at risk for genetic drift and in breeding within smaller populations. It lives in meta-population structures due to their habitats being taken over by humans.

How interesting: These rodents can promote the growth of native plants and reduce the spread of invasive

ones. They do this through their diet of seeds and burrowing which increase soil fertility and water infiltration. These rodents also tend to store seeds in their burrow. Not all of these seeds will be eaten, leading to more native plant growth. And of course, support an entire food chain (animals and plants). They are rather quite interesting:

They hop around to move and can jump up to six feet.

They are more closely related to beavers than rats or kangaroos.

They can get all the water they need from the seeds they eat.

The seeds they collect and store in their burrows gain moisture from the soil and swell up with the absorbed water.

THE ROAD THAT KILLS WILDLIFE

By Dipanjan Sinha

A big cat killed in a road accident makes news; one never hears about the slain frogs, snakes, birds or lizards. Yet all these are vital pixels in the picture of how dangerous a road can be, when it goes where a road has no business going.

A recent study (published in the journal *Nature Conservation* in March 2022) set out to count just how many animals end up as roadkill when a highway cuts through a forest, and emerged with an astounding number. By their estimate, just one 64-km stretch in Assam saw 6,036 deaths in one year (October 2016 to September 2017).

This highway, NH715, is particularly invasive, cutting through the Kaziranga National Park on one side and the North Karbi-Anglong Wildlife Sanctuary on the other. Over 12 months, the

researchers set out to tally every life lost, no matter how small. They started their count where forest departments typically end theirs.

“Forest departments usually do not keep any record of deaths of smaller groups of animals,” says doctoral fellow Somoyita Sur, who carried out the study with zoology professors Prasanta Kumar Saikia and Malabika Kakati Saikia of Gauhati University. “Their focus has to be on the larger, more spectacular animals like rhinos, elephants and tigers.”

So the research team made 144 trips along the 64-km stretch over 12 months, to count all the bodies. They found that amphibians accounted for nearly 60% of the 6,036 roadkill deaths, followed by reptiles, at 21.22%. Birds made up a fairly sizeable 9% of

fatalities. (Birds are typically killed while feeding on roadkill carcasses.)

Among amphibians, the common Indian toad was found to be the most-affected, accounting for 54% of all amphibians fatalities. Among reptiles, the oriental garden lizard and striped keelback snake accounted for the highest fatalities (a combined 16%).

“There are multiple factors that make reptiles and amphibians more vulnerable. They are slower and they’re smaller, which makes it difficult for drivers to see them. Amphibians also tend to go towards light, chasing insects. This can be street lights or vehicle headlights,” says Sur.

The research team noted seasonal variations in roadkill. Nearly 63% of deaths occurred during the pre-monsoon and monsoon months of April to September. “In these months, animals typically move from the low-lying floodplains of Kaziranga to the higher elevations of the Karbi Anglong hills, and the highway runs right across their path,” Sur says.

A simple first-step solution, of course, is to build wildlife bridges and tunnels so that animals can avoid the highway altogether. Until then, one way to make things better is to drive with more caution in or near a reserve or national park. “Just slow down a bit. It could save lives,” Sur says.



The road that kills, Google

AN ABUSE CALLED ENDANGERED

By Editors of Conservation Times

On a daily walk, how many times do you come across insects? Do you watch them with curiosity or stamp your feet over them? Birds, reptiles, likewise may be observed by you? Nearer a pond, amphibians may catch your attention? Mouse, squirrel, etc are usual appearances.

How many of you ever thought to find out if the numbers of any of such wild species were on decline. Or was increasing. But why have such a thought in a busy life indulging in own business, work or leisure.

Any rise or decline in number of wild species around you, is in fact the indicator of your own environment which should mean your own health! If not realized so far, it is time you should care for wild species. They are like barometer-readings for your health. Need to know why species become 'endangered' which leads to their 'extinction'? Both words are like abuse for human beings. The Conservation Times' editors have provided an over view of how species are dealt with by IUCN – International Union for Conservation of Nature.

What is IUCN: IUCN is a membership Union composed of both government and civil society organisations. It harnesses the experience, resources and reach of its more than 1,400 member organisations and the input of more than 17,000 experts to provide public, private, and non-governmental organisations with the knowledge and tools that enable human progress, economic development and nature conservation to take place together.

IUCN is the global authority on the status of the natural world and the measures needed to safeguard it. Its experts are organised into six Commissions dedicated to species survival, environmental law, protected areas, social and economic policy, ecosystem management, and education and communication. Created in 1948, IUCN has evolved into the world's largest and most diverse environmental network.

Threatened: More than 41,000 species are threatened with extinction. That is 28% of all assessed species. What are reasons



Lion hunt

for their becoming threatened or endangered? They become endangered for two main reasons: loss of habitat and loss of genetic variation.

Loss of habitat can happen naturally. Dinosaurs, for instance, lost their habitat about 65 million years ago. Human activity can also contribute to a loss of habitat.

Barometer: In much the same way as a barometer measures atmospheric pressure to help us prepare for adverse weather conditions, The IUCN Red List measures the pressures acting on species, which guides and informs conservation actions to help prevent extinctions. This is why The IUCN Red List is often referred to as a Barometer of Life.

To date, more than 147,500 species have been assessed for the Red List. This is an incredible achievement. However, the work is not complete. The IUCN needs to increase the number of assessments for animal, fungi and plant species to ensure that the Red List continues to serve as a powerful conservation tool.

The Goal: The IUCN's goal is to assess at least 160,000 species. Achieving this will further improve the ability of the IUCN Red List to provide the most up-to-date information on the health of the world's biodiversity, and thereby guide critical conservation actions.

What to do to reach 160,000 species?

- (i) Increase the number of experts trained to carry out IUCN Red List assessments and
- (ii) Significantly increase the number of species being assessed each year.

Progress so far: Currently, the IUCN

Global Species Programme is managing data for over 147,500 species, and this number is set to increase substantially in the next few



years. Over 139,600 species are well documented, with supporting information on ecology, population size, threats, conservation actions and utilization.

There are also over 120,800 species with distribution maps. The data held on the IUCN Red List includes non-threatened as well as threatened species, and some taxonomic groups have been completely, or almost completely assessed, including mammals, birds, amphibians, freshwater crabs, warm-water reef-building corals, sharks and rays, groupers, wrasses, lobsters, conifers and cycads.

Solid base: The IUCN Red List grows larger with each update as newly described species and species from less well-known groups are assessed for the first time. IUCN and its partners are working to expand the number of taxonomic groups that have full and complete Red List assessments in order to improve our knowledge of the status of the world's biodiversity.

As more species are included on the Red List and the biases in the data are reduced, the List will provide a more solid basis for conducting global and regional analyses. In addition, these data will provide the basis for the indicators needed to measure progress towards the achievement of the 20 specific biodiversity targets of the 2020 Convention on Biological Diversity (CBD) as well as the United Nation's Sustainable Development Goals (SDGs), particularly Goal 15.

Contact: Institutions that are potentially interested in joining the Red List Partnership should look very carefully at the Partnership Agreement of IUCN at its web site to understand all the rights and obligations. Institutions are welcome to become a Red List Partner and contact:

<https://www.iucn.org>.

CHEETAH or LION or TIGER WHAT DO YOU WANT in INDIA?

By Editors of Conservation Times



(left) Tigers now second fiddle in India, Google. (right) Eight Namibian Cheetahs released in Kuno Palpur National Park on 17 Sept. 22, PIB

Asiatic lions and tigers are listed as endangered animals on the IUCN Red List of species status. Cheetahs are listed as vulnerable on the same list. Thus, experts think that cheetahs are less likely to become extinct than Asiatic lions and tigers.

Lone reserve: Gir forest in Gujarat in India happens to be the only habitat for Asiatic Lions.

All confined to single habitat means the entire population, pride to India, can vanish if an unprecedented happening would occur. Experts, therefore, chalked out a plan to translocate some Lions from Gir to Kuno Palpur sanctuary in Madhya Pradesh.

Gujarat authorities have not let this plan make progress. Pride of Gujarat only? The case has been heard by the Supreme Court of India stating that translocation of Lions be undertaken for the better future of the species. No progress made so far.

Now Cheetah: As the legal proceedings continue, Cheetah has jumped in to the fray. The Government of India has given green signals to settle this predator at the forest reserve that had been designated for Lions: Kuno Palpur. The animals are being fetched from South Africa and Namibia. The wild life experts there have agreed to give the species free of cost.

Why Cheetah in India? Several experts

agree that Sanskrit language provides a name for Cheetah. However, other experts have demanded a scientific study to ascertain if Cheetah was ever found living wild in India. Whatever documents about Cheetah's living in India were from the captive bred Cheetahs as managed by some princely states. The experts argue that Cheetahs should not be introduced in India at a time when Indian wild species face precarious status and the authorities are found unable to conserve them well.

And Tiger: The largest of all wild cats, the Tiger once occurred throughout central, eastern, and southern Asia. However, in the past 100 years, the Tiger has lost more than 93% of its

historic range and now only survives in scattered populations in 13 countries, from India to Southeast Asia, and in Sumatra, China, and the Russian Far East.

Over the past century, tiger populations have fallen from around 100,000 individuals to an estimated 3,500 individuals in 2014. Populations in Southeast Asia have crashed dramatically. India has 53 specially designated Project Tiger reserves where this 'national animal' is breeding well despite numerous challenges. Kuno Palpur used to be a Tiger habitat until a few decades ago. It was designated for Lions which were not parceled out by Gujarat authorities. Cheetahs have finally reached India.



Lauri Marker checking health of a Cheetah on way from Namibia to India, CCF

THE MEDITERRANEAN'S WHALES

By Martin Goodman

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Sperm Whale, Google.com

The writer is a novelist and ardent wildlife supporter known for his ecological advocacy. He is based in Britain. - Editors

The choice of fossil fuels over nature: it's a last gasp action without excuse in the 21st century for which countries should be shamed. Hands up Greece.

The Hellenic Trench curves around Greece from West to East, from south of Crete and up past Corfu. Its steep slope reaches depths of up to 5km—prime area for deep diving mammals. The champion divers among these are Cuvier's beaked whales, with a large tail fluke but small flippers with pockets in which they can tuck them away for streamlined descents. Males have two teeth with which they fight each other for female attention, but these whales don't bite but suck in their food, mostly choice specimens from among 47 species of squid.

In 1998 fishermen off Crete reported seeing an unusual 'large whale'; bigger still than the mighty Cuvier's beaked. This was indeed large: after blue and fin whales, the third largest ever to inhabit our planet. The whale belonged to a previously unknown population of sperm whales, famed in world literature as Moby Dick, that found home in these deep waters. Observations over a decade showed a resident population of males, who live individually, and also females who group with their young. The Hellenic Trench is a whale breeding and birthing ground and the nursery for their calves. This population is genetically different to sperm whales elsewhere and precious; fewer than two hundred of this sub-population survives.

Sperm Whale: Sperm whales are the largest toothed whale. At the top of the food chain, they are a vital final link that

helps keep their ecosphere in balance. These waters are dark. They navigate them, find each other and their squid prey, through echolocation.

As Greek researchers studied these new wonders of their ocean, the Greek economy tanked. Greece has rich capacity for solar fields and wind farms, but while other western nations developed their renewable capacity, Greece sold rights to its fossil fuels. Since 2012 it has sold oil and gas exploration rights to 72% of its territorial waters, over 60,000 square kilometres, to six companies, including the oil majors Total, Exxon Mobil, and Repsol.

For oil and gas exploration, ships steer arrays of seismic air guns above the areas of survey. Pressurized blasts of air hammer down through the ocean into the seabed. The sound is so loud it can travel underwater for 2,500 miles,

the blasts repeated every ten seconds for days and weeks. At the bottom of the food chain even zooplankton are vulnerable to this sound invasion. Imagine what it's like for whales at the very top.

Fin Whale: Fin whales share these waters. When Americans first captured the fin whales' song, it was too deep, too regular, too pure and too loud for them to think an animal made it. Volume peaked at 189 decibels, as loud as a rocket launch or the noise of the Krakatoa explosion measured at a distance of 3 miles – but at a pitch too low for humans to hear unless it's speeded up ten times. It must be some geophysical phenomenon, the scientists thought, or perhaps secret Russian submarine activity.

Each year we learn more about fin whales and their song. In 2021 we learned that male fin whales trade songs with each other like folk musicians. And having seen that their songs penetrate the seabed, scientists are learning to use them to study undersea geology.

We know so little of these creatures yet presume so much.

Oil and gas explorers claim their seismic surveys cause no long term

damage. In 2019 fifty turtles washed up on Israel's beaches, dead or bleeding from the effects of seismic surveys. 2011 saw a massed stranding of Cuvier's beaked whales on the shores of Corfu: thirteen were confirmed dead and it's felt fifty might have died over all, and the cause was linked to military use of sonar in the region.

Danger ahead: Sperm whales, deafened by engine noise, fail to locate ships until the last moment and are too often struck. The added dangers of hydrocarbon exploration and construction could easily tip this endangered species into extinction. Dr Alexandros Frantzis, who led those first expeditions to discover this sperm whale population in 1998, managed to negotiate Covid 19 restrictions and return in 2020. 'During these six weeks we only had three whale sightings,' he reported. 'We were able to identify 18 animals. This is significantly less than ten years ago, when four sightings per week were the norm. This is a drastic decrease, which worries us.'

In May 2019 WWF Greece and Greenpeace took legal action in the Council of State, Athens' highest administrative court. Their focus was on the oil companies that had been given rights to explore off Crete. These rights should be revoked, they claimed,

for a lack of environmental monitoring.

With six companies licensed to explore multiple sites through most of Greek waters, sites will need a strategic environmental assessment (SEA), an environmental impact assessment (EIA) and an Appropriate Assessment (AA). Each SEA, EIA and AA will need careful scrutiny by environmental lawyers, independent of government regulators. The environmental law organization is offering legal advice. In these critical times, whales need their lawyers.

'Why replace dolphins with oil drilling?': the battle for Greece's marine life | Marine life | The Guardian, 7 June 2019

LINK TO SPERM WHALE IMAGE:
—Alert on the Mediterranean sperm whale subpopulation IUCN SSC Cetacean Specialist Group (iucn-csg.org)

Caption: Fin whale: Blue World Institute 3.4. Cetacean species in the Mediterranean Sea-AQUATIC LIFE LAB

The Daily Telegraph, UK

HARBOUR PORPOISES RETURN TO THE THAMES

Joe Pinkstone – 17 August 2022

Harbour porpoises are flourishing in the Thames after returning to the river in recent years, ZSL has found.

The river is now deemed to be a “vital habitat” for the marine animals which are native to British waters, marking a remarkable recovery from when the river was declared “ecologically dead” in 1957.

The porpoises were commonplace in the Thames Estuary in the 1800s, but pollution in the wake of the Industrial Revolution drove all wildlife away from the toxifying waters.

A clean-up effort in the latter half of the 20th century saw life return, but sightings were still “infrequent” in the 1980s before offshore sightings stabilised.

But while there has been anecdotal evidence of an increase in sightings in



© Nature Picture Library / Alamy Stock Photo Porpoise - Nature Picture Library / Alamy Stock Photo

recent decades, by fishermen and the public, there has been little in the way of dedicated porpoise research.

To fix this, the Zoological Society for London (ZSL) performed two surveys to gauge porpoise behaviour and

presence in the Thames, one in 2015 and one in 2022.

Both found the species to be flourishing, with 31 total detections during the two surveys. Sixteen were spotted in April 2022.

ORCHIDS'S ROLE IN FOREST ECO-SYSTEM

Dr. Satish Kumar Sharma

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Peristylus constrictus

Dr. Satish Kumar Sharma has served the Department of Forest in Rajasthan and as such, amassed indescribable field knowledge on wild species. He attained twin PhDs and is based in Udaipur -- Editors

Orchids and cacti are considered among the plant groups that produce the world's most beautiful flowers. Orchids belong to the Orchidaceae family which is considered one of the largest plant families with a cosmopolitan distribution. Orchids prefer humid tropical and subtropical conditions for their survival, growth, and establishment. As many as 28,000 wild species of orchids have been so far known in the world.

The number of orchid species is nearly equal to the number of bony fishes, more than twice the number of bird species, and about four times the

number of mammal species.

Large markets: Since they produce very delicate, beautiful, and attractive flowers, they are much liked by the humans all over the world. People like to grow orchids in their backyard gardens. To meet growers' demand, horticulturists have developed a great number of hybrids and cultivars for more attractive flowers. They have developed more than 100,000 hybrids and cultivars so far. People like those forms which produce big, showy flowers with sweet fragrance in cultivation. There are large markets in the world where they are sold as cut flowers.

Many clubs, societies and organizations are working all over the world that are involving in cultivation, collection, and exhibition of wild as well as hybrid orchids. Many nurseries

can be seen in different parts of the world that indulge in orchid propagation marketing. Many orchidariums exhibit a large spectrum of orchids by creating in situ and ex situ micro-habitat conditions for the orchids.

Orchids are biologically very specialized plants. The high biological complexity exhibited by orchids must have taken a long span of time in evolution. Their high occurrence in a particular forest gives an indication about the good health of the forest ecosystem. Presence of epiphytic orchids is an indication that the upper canopy of the forest is intact and old aged trees are safe and present in good numbers.

If we have a base line survey of orchids of a particular forest area, periodic monitoring of the forest eco-system is possible. Their decreasing population

in a forest area gives a clue that upper most tier of that forest is facing some problems and probably gradual opening is increasing. Loss of old aged trees directly affects the number of epiphytic orchids.

Fire: Fire outbreak also affects epiphytic orchids. Orchids are fire-sensitive species. If frequent fires occur in a forest, the numbers of epiphytic orchids start decreasing. Epiphytic orchids are indicator of better relative humidity inside the forest eco-system. Being hygroscopic plants, epiphytic orchids absorb moisture directly from the air with the help of their hygroscopic roots equipped with velamen tissue. Epiphytic orchids never suck the supporting plant as do parasites. With the help of velamen, the hanging roots absorb moisture from the surrounding air.

The presence of terrestrial orchids under a forest cover is an indication of good health of many soil fungi. Their roots grow in association with many soil fungi. Their orchid roots become associated with a filamentous mass of a fungus which takes the place of and acts as the orchids' root hairs, absorbing water and minerals from the soil.

Orchids give clues about storey-fication of the forests. A forest area may have top canopy of tall trees, middle canopy of medium sized trees and ground flora of still smaller species. Epiphytic orchids like to stay in middle layers where they get shade of top layers from the scorching sun.

Epiphytes: Ground orchids get protection from direct sunlight due to intactness of all layers. Any opening in the top layer may affect population of epiphytic orchids and any opening in the top and middle layers may affect terrestrial orchids adversely. Thus, if anybody has a baseline survey of orchids of a landscape forests, one can monitor the quality of forests easily.

Epiphytes however, can generally be categorized into holo-epiphytes or hemi-epiphytes. A holo-epiphyte is a plant that spends its whole life cycle without contact with the ground and a hemi-epiphyte is a plant that spends only half of its life above the ground before the roots can reach or contact the ground. Orchids are a common example of holo-epiphytes and Strangler Figs are an example of hemi-epiphytes.

Epiphytes are not connected to the soil and consequently must get nutrients



Eulophiaorchreata, a terrestrial orchid in bloom

from other sources, such as fog, dew, rain, and mist, or from nutrients being released from the ground rooted plants by decomposition or leaching, and dinitrogen fixation. Epiphytic plants attached to their hosts high in the canopy have an advantage over herbs restricted to the ground where there is less light and herbivores may be more active. Epiphytic plants are also important to certain animals that may live in their water reservoirs, such as some types of frogs and arthropods.

Epiphytes can have a significant effect on the microenvironment of their host, and of ecosystems where they are abundant, as they hold water in the canopy and decrease water input to the soil. Some non-vascular epiphytes such as lichens and mosses are well known for their ability to take up water rapidly. Epiphytes create a significantly cooler and moister environment in the host plant canopy, potentially greatly reducing water loss

by the host through transpiration.

CITES: Almost all orchids are included in Appendix II of the Convention on International Trade in Endangered Species (CITES), meaning that international trade (including in their parts/derivatives) is regulated by the CITES permit system. A smaller number of orchids such as *Paphiopedilum* sp. are listed in CITES Appendix I meaning that commercial international trade in wild-sourced specimens is prohibited and all other trade is strictly controlled.

Protected Areas (PAs) such as National Parks, Wildlife Sanctuaries and Biosphere Parks serve the purpose of in situ conservation, no doubt, but areas outside the purview of these PAs still harbour plenty of orchids. There is a need for an 'orchid map' of the country and an initiation of in situ conservation measures by declaring these as orchid protected areas.

THE CALL OF CRANES EXPEDITIONS INTO A MYSTERIOUS WORLD

By *Bernhard Wessling*

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Dr. Bernhard Wessling's main occupation is chemical and physical research which even led to a completely new material, the so-called "Organic Metal". Together with his team, he successfully commercialized it in some very special application in electronics and in corrosion protection. Nature and species conservation, and starting from this, his crane behaviour research, is a sideline, but very intensive occupation. – Editors.

It is possible to observe four crane species in India. Sure, above all, you have the Sarus Crane. Then, three migratory crane species are wintering in India, the Demoiselle Crane, the Black-necked Crane, and the Common Crane. The latter one motivated me first together with other volunteers, to start a crane protection program in a nature preserve in the North of Hamburg (Germany), when suddenly a first pair tried to establish a territory and began breeding, centuries after the last cranes may have lived in this former moor and wetland area.

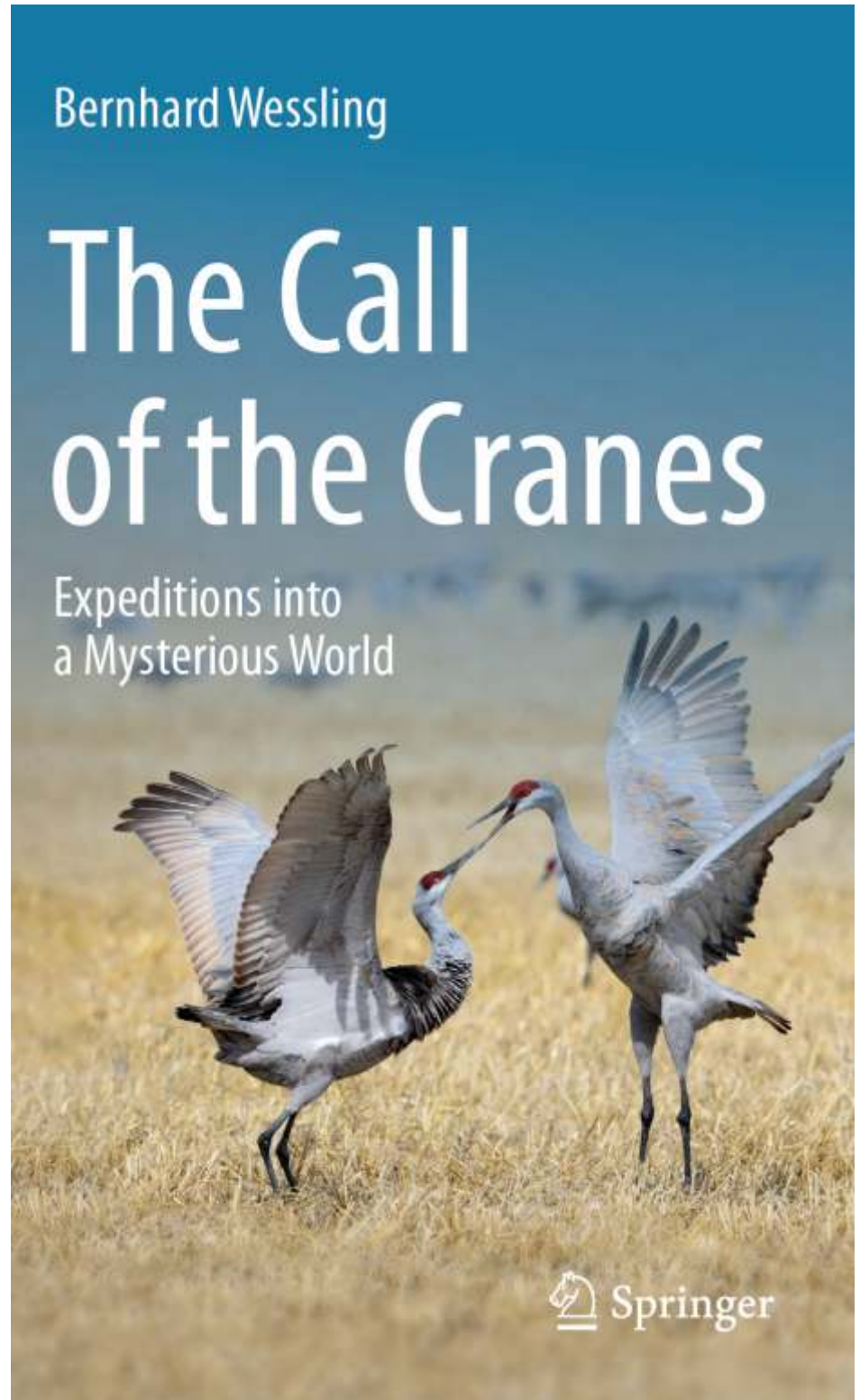
Truth: While I was responsible for this program, I spent a lot of time (besides my job) in this about 10 km² small area. I observed over the years, with slowly increasing number of cranes, a lot of behaviour which made me doubt about what I had read in books and articles about cranes:

- Are these birds really basically dumb and are living only controlled by their genes, by their innate behavioural patterns?

- Is it this innate behaviour which results in a life-long partnership between male and female crane, and a life-long return from wintering always to the same territory?

- So cranes are basically inflexible? But why did I get the impression by carefully observing them, that these and other statements may not be valid?

Therefore, being a nature scientist by education and in my main profession, I decided to find out "who is who". But



how to do it without catching and banding them which itself has a lot of limitations? (Besides others, we would never been able to get all of the cranes here in the area, especially as

the partners from former local young cranes would be from elsewhere, and it is extremely complicated, risky and only rarely possible to catch and band adult cranes.)

Crane calls: I came to the idea to record the crane calls – how lucky I was to have realized by just hearing with my ears that the crane pairs' unison calls sound different from pair to pair! And how lucky that this bird species has the custom that both sexes are calling, and this together in unison! But I needed a software for analyzing my recordings – how to find this? As nothing was available, I finally succeeded to develop it myself, with the help of an IT expert, running on a software system which I was using in my job as well at that time, “mathematica”. (Later, I prepared a different approach which is available for everybody and free of charge.)

Year after year, the results became more interesting, and ever more surprising. In total, I made a systematic monitoring of this area close to Hamburg over 10 years, in addition I monitored three other crane breeding areas in Germany, but less thoroughly. Practically nothing what I believed before about cranes could be confirmed, in contrast: These birds are flexible, intelligent, observing, concluding, planning, they have an interesting relationship life, some for life with the same partner, many with at least another one, a few with many different partners, and a lot of unique relationship stories have been observed – just by listening to the cranes, I happened to uncover a few mysteries which the cranes have hidden from humans since thousands of years!

Push: George Archibald, the founder of the International Crane Foundation in Baraboo, WI (USA) pushed me to go abroad with my new technique and study other crane species as well. So I did,

- in Japan (Hokkaido) and in the Demilitarized Zone between North and South Korea with the Red-Crowned Crane,

- and in North America with the Sandhill and especially very intensively with the Whooping Crane.

The Whooping Crane is, among the fifteen cranes species we have on earth, the worldwide most endangered crane species. It was the goal of a huge project to establish a second wild population in Wisconsin, and to teach the just fledging young cranes to follow ultralight airplanes from Wisconsin to Florida – but without getting imprinted on humans! This was, no question, by far the most complicated and most exciting project about which I tell in my



Bernhard Wessling

book: how to record all kinds of, and also very soft, vocalisations which I needed to get from wild Whooping Cranes?

At home: And many more questions which became clear to me only when I was in the middle of the wild, huge area where the wild cranes were living. And then, how to provide an artificial communication technique between the caretakers, pilots and the cranes? It finally worked out.

Also the recording expeditions to Hokkaido (Japan) and into the Demilitarized Zone directly at the border to North Korea have been thrilling. While the most touching experiences and events happened in my home nature preserve in the North of Hamburg.

Moreover, in the final chapters of my book (the Call of the Cranes – Expeditions into a Mysterious World), I go far beyond my direct encounters with cranes, and I am evaluating lots of data and other peoples' observations which in total lead me to conclude: Cranes are much more flexible and intelligent than we previously were willing to give them credit for. Migration might not be primarily controlled by innate programs, but seems to me being the result of cultural development, an extremely flexible culture! I have collected several more evidence for the cranes' intelligence and culture development capabilities.

Bioacoustic: I have written the book hoping that it might help people to look at cranes, and birds in general, in a different way, with more respect and humility. I

hope to motivate more people to become active in nature protection – and perhaps a few enthusiasts who want to start their own bioacoustic monitoring program, if not on cranes, then on another bird species? A short tutorial how to do this is part of the book:

The Call of the Cranes – Expeditions into a Mysterious World

Soft cover book, ISBN: 978-3-030-98282-9

276 pages, 48 photos, maps and graphs, 45 of which in colour

Links to the book:

- on the publisher's web site:
<https://link.springer.com/book/10.1007/978-3-030-98283-6>

on the author's web site:
www.bernhard-wessling.com/the-call-of-the-cranes-short-intro

www.bernhard-wessling.com/look-inside-crane-calls

Cranes facts: Cranes are large, long-legged, and long-necked birds in the group Gruiformes. The 15 species of cranes are placed in three genera, Antigone, Balearica, and Grus. Unlike the similar-looking but unrelated herons, cranes fly with necks outstretched, not pulled back. Cranes live on most continents, with the exception of Antarctica and South America.

They are opportunistic feeders that change their diets according to the season and their own nutrient requirements. They eat a range of items from small rodents, eggs of birds, fish, amphibians, and insects to grain and berries.

Cranes construct platform nests in shallow water, and typically lay two eggs at a time. Both parents help to rear the young, which remain with them until the next breeding season.



HOW DRAGONFLIES MAKE THE MOST EXTRAORDINARY JOURNEY IN NATURE

<https://www.discovermagazine.com/the-sciences/how-dragonflies-make-the-most-extraordinary-journey-in-nature>



Globe Skimmer Dragonfly, Johanna Hedlund

The globe skimmer dragonfly flies from India to Africa during its annual migration. Now researchers are beginning to understand some of the tricks that make this feat possible.

Longest flight: Every October, the globe skimmer dragonfly, *Pantala flavescens*, migrates from India to Africa via the Maldives in the Indian Ocean. The nonstop journey from the Maldives across the Indian Ocean to Somalia is 2500 kilometers.

The dragonfly is just a few centimeters long so for its body size, this is the longest nonstop journey of any creature.

This extraordinary feat has long puzzled biologists who wonder how such a small creature can endure over such long distances. Various researchers have debated the role of wind, rain and life cycle on this phenomenon. But in the absence of sensors small enough to track insect flight over these distances, nobody has settled the question of how *P. flavescens* achieves this feat.

Energetics: Enter Kumar Sanat Ranjan and colleagues at the Indian Institute of Technology in Kharagpur in

West Bengal. This group has brought together all these factors along with a detailed study of dragonfly endurance to work out how long they can fly, what factor the wind must play and the annual timing of the migration.

In this way, they show how *P. flavescens* perform their extraordinary migration, why it is only possible at a certain time of the year and how the dragonflies become so widely dispersed across Asia.

At the heart of the work by Ranjan and colleagues is their model for studying the energetics involved in dragonfly flight. Their model includes factors such as lift, drag and energy involved in flying with wings beating at a certain frequency. It then compares it with the chemical power the insect has available from onboard fuel storage.

“Energetics calculations reveal a *P. flavescens* can endure 90 hours of steady flight at 4.5m/s,” say Ranjana and his team.

Wind helps: That's an important finding that suggests the migration is not possible without help. “The prevailing winds play a pivotal role; a direct crossing of the Indian Ocean

from Africa to India is feasible with the Somali Jet, whereas the return requires stopovers in Maldives and Seychelles,” say the team.

DRAGONFLIES?

These are insects having “unequal” wing. The hind wing is broader than the fore wing. About 3,000 extant species of true dragonfly are known. Most are tropical, with fewer species in temperate regions. Loss of wetland habitat threatens dragonfly populations around the world.

Adult dragonflies are characterized by a pair of large, multifaceted compound eyes, two pairs of strong, transparent wings, sometimes with coloured patches, and an elongated body. Many dragonflies have brilliant iridescent or metallic colours produced by structural colouration, making them conspicuous in flight.

Dragonflies can be mistaken for the closely related damselflies, which are similar in body plan though usually lighter in build; however, the wings of most dragonflies are held flat and away from the body, while damselflies hold their wings folded at rest, along or above the abdomen. Dragonflies are agile fliers, while damselflies have a weaker, fluttery flight.

Dragonflies are predatory insects, both in their aquatic nymphs stage and as adults. In some species, the nymphal stage lasts for up to five years, and the adult stage may be as long as ten weeks, but most species have an adult lifespan in the order of five weeks or less, and some survive for only a few days. They are fast, agile fliers capable of highly accurate aerial ambush, sometimes migrating across oceans, and often live near water. They have a uniquely complex mode of reproduction involving indirect insemination, delayed fertilization, and sperm competition. During mating, the male grasps the female at the back of the head, and the female curls her abdomen under her body to pick up sperm from the male's secondary genitalia at the front of his abdomen.

VILLAGERS FIGHT SOLAR POWER PLANTS

By *Mohammad Iqbal*

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Khejri trees being taken out

The proposed installation of eight solar power plants in Jodhpur district's Phalodi tehsil has led to a major confrontation with the Bishnoi activists, who have strongly protested against the felling of khejri trees. The solar energy companies, which have acquired 25,000-bigha land on lease in the region, have cut down a large number of khejri trees, which is the State tree of Rajasthan.

The two new entrants in the power sector have provided economic gains to the agriculturists whose land was taken over to install the plants with the

payment of cash compensation. While several villagers have welcomed these projects because of their economic benefits, the vast majority of others are bitterly opposed to this new intervention across the semi-arid agricultural fields.

The Bishnoi activists, who have a sentimental attachment with khejri or *Prosopis cineraria* trees, claim that the solar panels are causing incredible loss to Thar desert's flora and fauna. Thousands of khejri trees have been chopped off wherever the new solar power plants have been set up. The

incident in Phalodi tehsil's Badi Sid region is the latest one involving a clash with the villagers.

After the solar energy firms cut down the khejri trees and buried them in earth to make the fields plain to set up panels, three organisations of the region joined hands to forge a front for opposing the move. The activists, who had raised the issue for more than four months, held demonstrations for several days outside the fields last month and brought a bulldozer to dig out the trees.

“The impact of new power intervention



Bishnoi community opposing felling of green Khejri trees for solar panel project near Phalodi, India, all photos by Ramnivas Bishnoi.

by private companies on the desert ecosystem is quite visible. The majority of our population depends on the wild vegetation which is getting lost forever for the gains of power plants,” Ramnivas Budhnagar, general secretary of Bishnoi Tiger Force, told *The Hindu*.

He said the evidence of indiscriminate felling of trees in Badi Sid was submitted to the district authorities.

Hundreds of Bishnoi youths and people from other communities gathered to stop the traffic on Phalodi-Bikaner road. Several protesters laid down across the road to press the demand for stopping the destruction of trees and the saints led by Guru Bhagwan Das, representing the Jamba seat of Bishnoi sect, reached the spot to extend their support.

However, the police detained several persons, including a Sarpanch, Kailash Bishnoi, on charges of disruption of work of solar plants and the allied sections. The prolonged agitation finally led to an agreement brokered by the administration, in which the solar energy firms were directed to protect khejri trees and translocate them elsewhere if their removal was necessary for installation of the plants.

Phalodi's Additional Collector Hakam Khan said the companies would plant new trees as compensation for the loss of trees to be cut and action would be taken under the Forest Act for burying the trees in the ground.

According to the agreement, cases registered by the firms against the villagers would be investigated in an unbiased manner and security provided to the families staying in the nearby hamlets which had received threats from the interested persons.

The three organisations – Bishnoi Tiger Force, Akhil Bharatiya Bishnoi Mahasabha and Akhil Bharatiya Jeev Raksha Samiti – have since called off the agitation after the signing of agreement. Mr. Budhnagar said the State government should formulate a policy to ensure co-existence of solar energy plants and khejri trees.

“A new alignment of panels will be required to be developed that can be tackled easily,” he said. The solar power plants are being set up in an area measuring about 3.50-lakh bighas, mainly in western parts of the State. Trees have been felled at the places such as Devikot, Rasla, Mulana, Devda, Jhinjhiyali, Myajlar, Ramgarh, Pokhran and other regions of Thar desert.



Ramnivas Bishnoi addressing demonstrators

Khejri tree plays an important role in maintaining the ecosystem of Thar region because of its ability to survive in dry weather.

The tree is used in different ways, such as a source of fodder and firewood, and it helps in sustaining the soil's nutrient value and ensuring a good yield of desert crops and food plants. Its fruit is used to make the popular dish 'Sangri'.

CLOSE BRUSH WITH BROWN BEAR

By Naveen Kumar Singh

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Naveen Kumar Singh is among the Volunteers who work for Tourism & Wildlife Society of India and is an ace birder as well as good photographer. He serves Deutch Bank.--Editors

The Great Himalayan National Park (GHNP) is located in the Banjar subdivision of the Kullu district of Himachal Pradesh, India, in the far western Himalayas. It was initially constituted in 1984, and formally notified as a national park in 1999. In June 2014, the Great Himalayan National Park was added to the UNESCO list of World Heritage Sites, under the criterion of "outstanding significance for biodiversity conservation".

Biodiversity surveys of GHNP in the past decade have identified 31 mammal species, 209 bird species, 12 reptile species, nine amphibian species, 125 insect species, and 832 plant species. It is a prominent attraction for bird watchers, who visit this park for many elusive Himalayan species like Western Tragopan, Lammergeier, Himalayan Griffon, Cheer pheasant, and many passerine birds.

TWSI team visited GHNP on 2 June 22. Before starting our trek to GHNP we visited Government Senior Secondary School at Gushaini, a small village in



Brown Bear young one in Great Himalayan National Park, Naveen Kumar Singh

Tirthan Valley. It is prettily located on the banks of the pristine Tirthan River and has lots of greenery. Gushaini is the gateway for treks in Tirthan Valley and is hardly 10 km away from Banjar. The school is situated at a height of 1356 meters from sea level. We conducted a session on Birds and their conservation. Mr. Narendra Chowdhary (Vice principal) was kind enough to allow us to interact with students. About 300 students participated (from class 9th to

12th). We distributed the small booklet to help students and stakeholders know about the common birds of GHNP and understand their role in ecology. The session ended with a small quiz and goodies for students who gave the correct answer. The colour booklet, Great Himalayan national Park, was done by us (Nishant Nath Shukla and Naveen Kumar Singh).

We started our trek to GHNP on June 2 and we stayed there till 6 June. We were able to spot around 60 bird species though did not have the luck to see/photograph Western Tragopan but had a hair-raising experience in the wild. On June 5, around 11:30 AM while going to Khorli Poi (breeding ground of Western Tragopan) we saw 2 Brown Bears (*Ursus arctos*) at a distance of about 40 meters. We were lucky enough they chose to run away to the other side of the valley instead of coming for us, thanks to our Guide Lobhu Ram, and his survival instinct, coughing a while to let them know our presence. Our group has been visiting GHNP for the past 15 years and has observed many changes in its surroundings. Increased tourism activities have proven to be a boon to the stakeholders but at the same time increased the challenge to conserve this Himalayan Eden.



The school group in GHNP holding the bird book created by TWSI.

BUILDING AN ENVIRONMENT FRIENDLY WORLD

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EDITORS FOR CONSERVATION TIMES



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Hartley Anderson is a Sydney, Australia resident who, after more than fifty years in sales and marketing roles, has decided it was time to pursue leisure activities. His recent and new activity which is relevant to conservation is beekeeping. He has a strong interest in India.



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Nandita Bhatnagar is a Clinical Biochemist with a passion for writing. Her articles have been published in local newspapers in the Bay Area. She also authors and narrates her stories for a monthly audio magazine "Suhava" published through Rotary Club of Maharashtra for blind school children.



Bhuvana Ramalingam

Bhuvana Ramalingam is a nature lover, travel enthusiast, long term meditator, and an Ayurveda wellness consultant living in Houston, Texas. She is the founding Director of Befriend Life Foundation, a non-profit based in Bangalore engaged in providing eco-friendly solutions.



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Martin Goodman is an award-winning writer and publisher based in the UK. His book *Client Earth* told the tale of eco-lawyers on their global battle to save the planet from environmental collapse. He is Emeritus Professor of Creative Writing at the University of Hull.



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Binita Pandey is a researcher in entomology with a keen interest in insect taxonomy, behavior, conservation, and plant preference of pests. She has conducted a Bumblebee research project in Nepal. She is the founder and manager of the Nepal Pollinator Network.



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Amit is an eco-lover based in Dallas, Texas. Believing that a traveler always starts out in his backyard, Amit traveled extensively across India. He kept his passion for nature alive after moving to North America and has traveled extensively around the continent.



Sharma, Manoj

Manoj Sharma worked for the Indian Statistical Service for 10 years and then immigrated to the USA to pursue graduate studies in statistics. Currently he is the Director of Biostatistics at Adaptive Biotechnologies in the field of immune-driven medicine.



Sharma, Satish

Authored 11 books on forest, wildlife management and biodiversity, specialized in ethnobotany and ethnozoology, did PhDs on Plant life of Weaver Birds (1991) and Study of Biodiversity and Ethnobiology of Phulwari WL Sanctuary (2007), former Forest Officer, based at Udaipur.



Sharma, Seema

Seema Sharma is an independent journalist based in Chandigarh. She was formerly with the Tribune and the Times of India. She writes on wildlife conservation and environment and is a fellow of CMS-IHCAP fellowship on impact of climate change in Trans Himalayas.



Thomas, Rosamma

Rosamma Thomas is a freelance journalist based in Maharashtra, India. She has worked in radio and print journalism. She has only ever lived in cities, despite being a wild creature at heart. She has supported by writing on a unique cause like House Sparrow ex situ breeding initiatives.



Vardhan, Mamta
Co-ordinating Editor

Mamta holds a PhD in Environmental Science and Policy. She has several years of experience working with rural communities in India and East Africa on issues that lie on the intersection of rural livelihoods and natural resources management. Mamta is currently based in Edmonton, Canada where she works as a Research Officer with the provincial Government.

Published for Tourism & Wildlife Society of India (TWSI, email: birdfair1@hotmail.com), C 158-A, Dayanand Marg, Tilak Nagar, Jaipur 302 004, India, www.birdfair.org. Design and lay out by Manish Sharma at It's A Design Studio, Adarsh Nagar, Jaipur, email: itsadesignstudio@gmail.com.

Managing Editor: Harsh Vardhan

Note: This is the twelfth edition, an e-newsletter for free circulation aiming at education and awareness on environmental conservation.

Conservation Times is on worldwide web, like to click: www.econservationtimes.com