

HORNBILL

DISCOVER THE LIVING WORLD

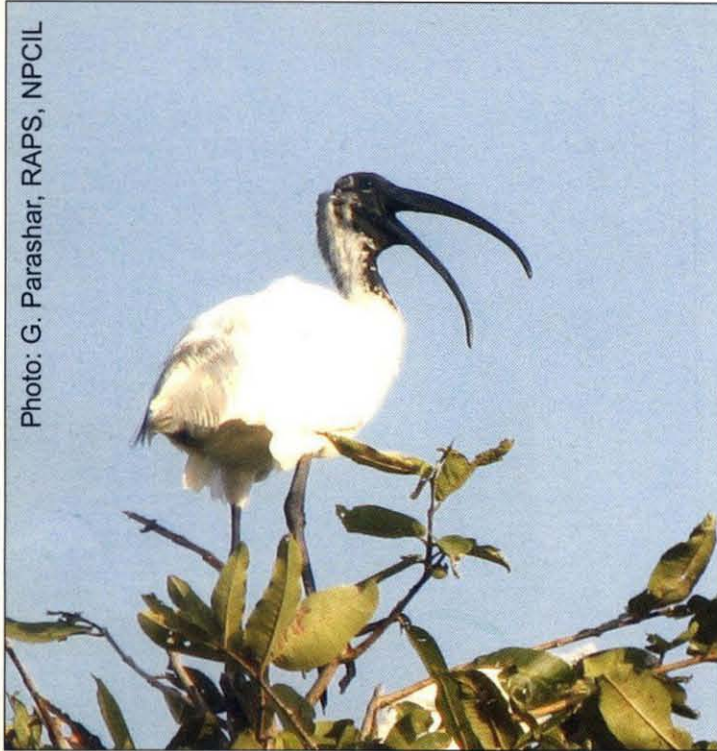
JULY-SEPTEMBER, 2008



BOMBAY NATURAL HISTORY SOCIETY

Oriental White Ibis

Photo: G. Parashar, RAPS, NPCIL



Oriental White Ibis (*Threskiornis melanocephalus*)

The Oriental White Ibis (*Threskiornis melanocephalus*) is a wading bird breeding in South Asia and Southeast Asia from Pakistan to India, Sri Lanka east up to Japan. The adult bird has dark head, long heavy down-curved black bill, dark legs and grey plumes over tail. Both sexes are similar, but juvenile has whiter neck and a black bill.

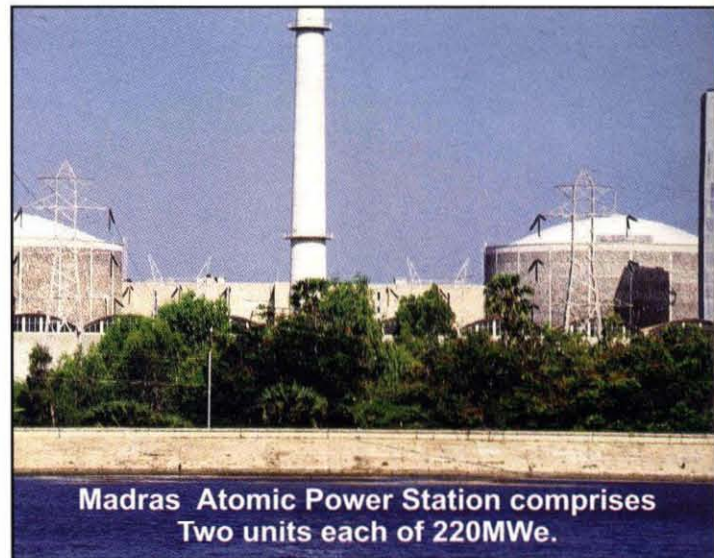
It inhabits freshwater marshes, lakes, rivers, flooded grasslands, paddy fields, tidal creeks, mudflats, salt marshes and coastal lagoons. It feeds on fish, frogs and other water creatures, as well as on insects.

It usually nests during monsoon and makes a platform of twigs built in a moderate-sized tree standing in or near water, frequently on village outskirts. The nests are built in association with other birds such as storks, herons, cormorants, and other marsh birds. Both sexes take part in nest building and all other the domestic chores.

The Oriental White Ibis is a 'Near Threatened' species as it is undergoing a population decline due to hunting, disturbance at breeding colonies and large scale conversion of its foraging habitats to agriculture. Oriental White Ibis also can be spotted in and around the Exclusion Zones of almost all the nuclear power stations in India.

The Environment Stewardship Programme (ESP) of NPCIL, a voluntary programme, envisages scientific study of bio-diversity, particularly avi-fauna, in the Exclusion Zones (EZs) and the environs of its seven nuclear power stations. EZ is a 1.6km radius area around the centre of nuclear plant. While only a fraction of this area is used for the plant structures, remaining is used for green-belting. Large numbers of bird species have made EZs their homes. The programme also includes training of local volunteers, public awareness campaigns to sensitize members of public on environment, improving habitat, particularly of avi-fauna, etc.

NPCIL as a responsible corporate citizen believes that these efforts will help in promoting habitat conservation and awareness on the importance of a healthy environment to make the world a better living-place.



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4

Kabini River banks, a treasure trove for mankind

The beauty of natural wealth ranging
from the Giant Bamboo to the majestic
Asian Elephant has been encompassed
briefly by **A.J.T. Johnsingh**.

Rediscovering Earth

We have been living on this planet for almost 2 lakh
years; but how many of us know our planet and its
mystic functioning?

Rushikesh Chavan has made an attempt to
Rediscover Earth and take us through this incredible
journey of life.



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Battle for Life

Sometimes in the wild the battle for life
takes strange twists and turns, and
something similar had happened in the
case of the Short-toed Snake Eagle and
its prey the Rat Snake. These series of
photographs were documented by

Clement Francis.

Environment Education for Effective Conservation

The importance of environment education is
expressed by **Erach Bharucha** and he has
made an attempt to help others realise the
same.



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OTHERS...

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Is it time to write epitaphs for ‘unsung’ species?

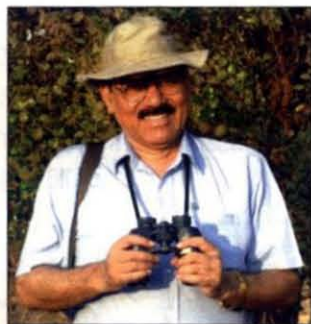
Like we have *amar jyotis* or memorials for our brave unknown soldiers who lay down their life for the protection of our nation, I think the time has come to start building epitaphs for the numerous species that we are loosing every day, mostly unsung and neglected, some probably not even known to science.

After every war, the officers get medals for their ‘bravery’ or strategic warfare in glittering government functions, while the ‘real heroes’ – the foot soldiers who give their life or get injured come as an afterthought. Even when the awards are given to the war widows of our brave soldiers, the camera appears to be focused more on the award presenter than the young widow. I see a great similarity here with the conservation scenario. Like the lesser known ‘foot soldiers’ who fight for our country’s security, thousands of species, like the bacteria, ants, termites, earthworms, shrubs, grasses, rodents, bats, bees, coprophagous beetles, amphibians, small birds – some unglamorous, some tiny – but nevertheless important, play an important role in the ecological security of our country. It is they that make our ecosystems function, not the large glamorous vertebrates (like our officers!). It is beyond doubt that the mega-vertebrates too are important for the ecological balance, but the attention given to them by the conservationists and government is disproportionate to their ecological role. It is also true that not many would get excited to protect a habitat or an ecosystem for a beetle or a termite or a frog or a bat, but neglect of such species, particularly by the government and scientific conservation NGOs, is, I think, bad conservation ethos.

The situation of some neglected and unsung species of wildlife has become so grave that if we do not act quickly the time when we start writing their epitaphs is not far.

Many believe that if we protect some large mega-vertebrates and their habitats, the so-called lesser species would also be protected. This, however, is only partly true. It is like saying that if we improve the general health of the society by cleaning the environment, people will not fall ill and individuals will not require medical attention! We have messed up the world to such an extent that thousands of species face extinction and numerous ecosystems need special attention.

The recent collapse of wild bee populations in Europe and Americas indicates that there is something fundamentally wrong in the way we live. Perhaps India’s wild bee population too is disappearing, but is anyone paying attention? Nearly 60 per cent of the world’s food comes after pollination by insects. What then will be the fate of our world without insects? Which child has not been fascinated by a honey bee busily collecting nectar from a garden flower, and sometimes giving a memorable nasty sting! Timidly following a dainty butterfly from flower to flower to catch it as it momentarily folds its wings, is a part of probably most adults’ childhood memory, but what happens when this child grows up? How many adults care for the environment? How many know that some of our protected areas are treasure troves of fascinating insect life. A child is fascinated by the appearance of velvet bugs that appear with the first rain, the croaking of frogs in a nearby pool, the flight of dragon flies, and appearance of the small Yellow Rain Lily; then why does he loose that childhood curiosity in later life? Is it our education system or our upbringing, or the daily struggle for survival? I do not know.





ISHAN AGARWAL

Unglamorous species such as the earthworm should be given due respect and attention

BNHS believes that all living species are important for maintaining the life-support system of this world, and for the ecological security our country. The Society's *Journal* and *Hornbill* publish articles on all types of species, from insects to elephant. In order to get people interested, we have published books on climbers and shrubs, trees, grasses, butterflies, shells, birds, amphibians, reptiles, mammals, and common wild flowers. In future, we plan to publish books, among others, on orchids, moths, reefs, grasslands, and corals. Besides the usual trips to national parks and sanctuaries, we organise programmes to get people interested in insects, frogs, plants, coral, and other flora and fauna. We have research and conservation projects on all types of species and ecosystems from the hill-stream fishes to Giant Clam, from Forest Owlet to Point Calimere ecosystem. At the BNHS, all species and all ecosystems are equally important, not just the pretty ones. These species are the 'foot-soldiers' of our ecological army. Just as no country can defend itself without an army that consists of both the officers and the 'foot-soldiers', no country can be ecologically secure without the numerous life-forms that live in our soil, our wetlands, our grasslands, our forests, our crop fields, and even in urban areas.

It is time we give them the respect and conservation attention that they deserve, else our country will be full of epitaphs for the numerous species that will soon not be with us. And without them can mankind survive for long? Probably not, but then who will write the epitaph for mankind?

Asad R. Rahmani

Rediscovering Earth

Text: Rushikesh Chavan

"It suddenly struck me that, that tiny pea, pretty and blue, was the Earth. I put up my thumb and shut one eye, and my thumb blotted out the planet Earth. I didn't feel like a giant. I felt very, very small."

These were the words Neil Armstrong spoke after seeing the Earth from the moon. It is only words like these that make us realise that planet Earth is a marvel and we are an integral part of this marvel. And as far as I know, there is nothing like it, surely not in our solar system! If life exists on a planet then there is a system that drives and maintains it. A system that allows the flowers to bloom just at the right time, the warm and cold ocean currents to move like conveyor belts across the globe controlling the climate and carrying food. And then of course, there are humans; considering the linkage and the influence man has on this system we need to assess and appraise our own position in the very same system if we are to prosper. So here we have a system which is dynamic yet stable; how does this whole system work? In the coming few pages I am making a humble attempt to discover the system of Earth and how we are affecting it.



To discover our planet in a 12 billion year old universe, I require to travel back about 4.54 billion years when the Earth was born, that's a long time ago. To cut a long story short let us fast forward to more recent times in the Earth's history, and to some events relevant to the scope of this article.

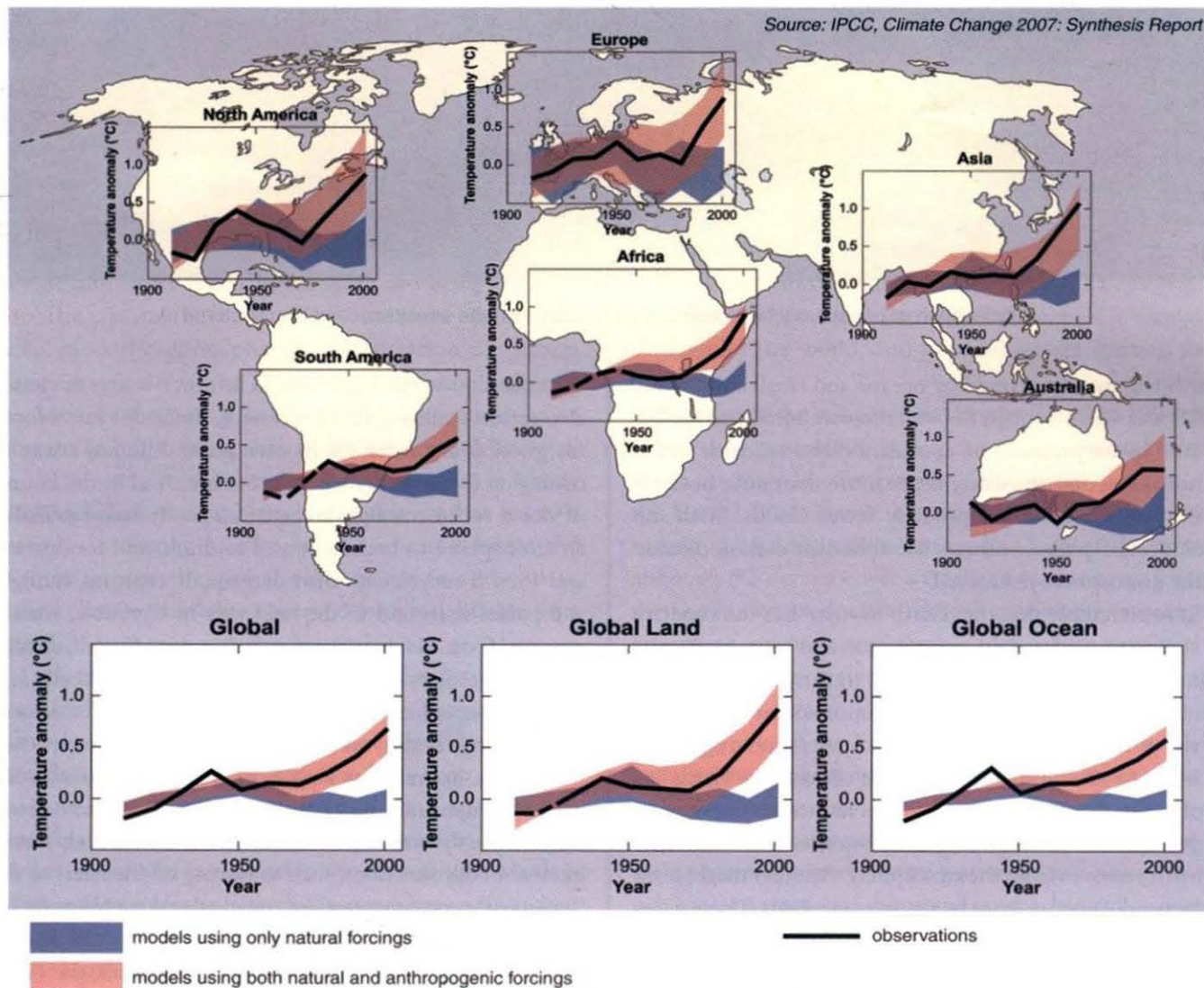
The last hot state seen by planet Earth was about 55 million years ago and the last ice age about 12,000 years ago. The climate on Earth has always been changing from hot states to ice ages and if we look at these patterns we realise that approximately every 25,000 years there has been an interglacial period. Is it not interesting that Earth changes dynamically and yet behaves as a single, self regulating system comprised of physical, chemical, and biological components? In fact, for better understanding let us view Earth as 'a living complex interacting system'.

Life on Earth began about three billion years ago as microscopic single cells. With time, life became more

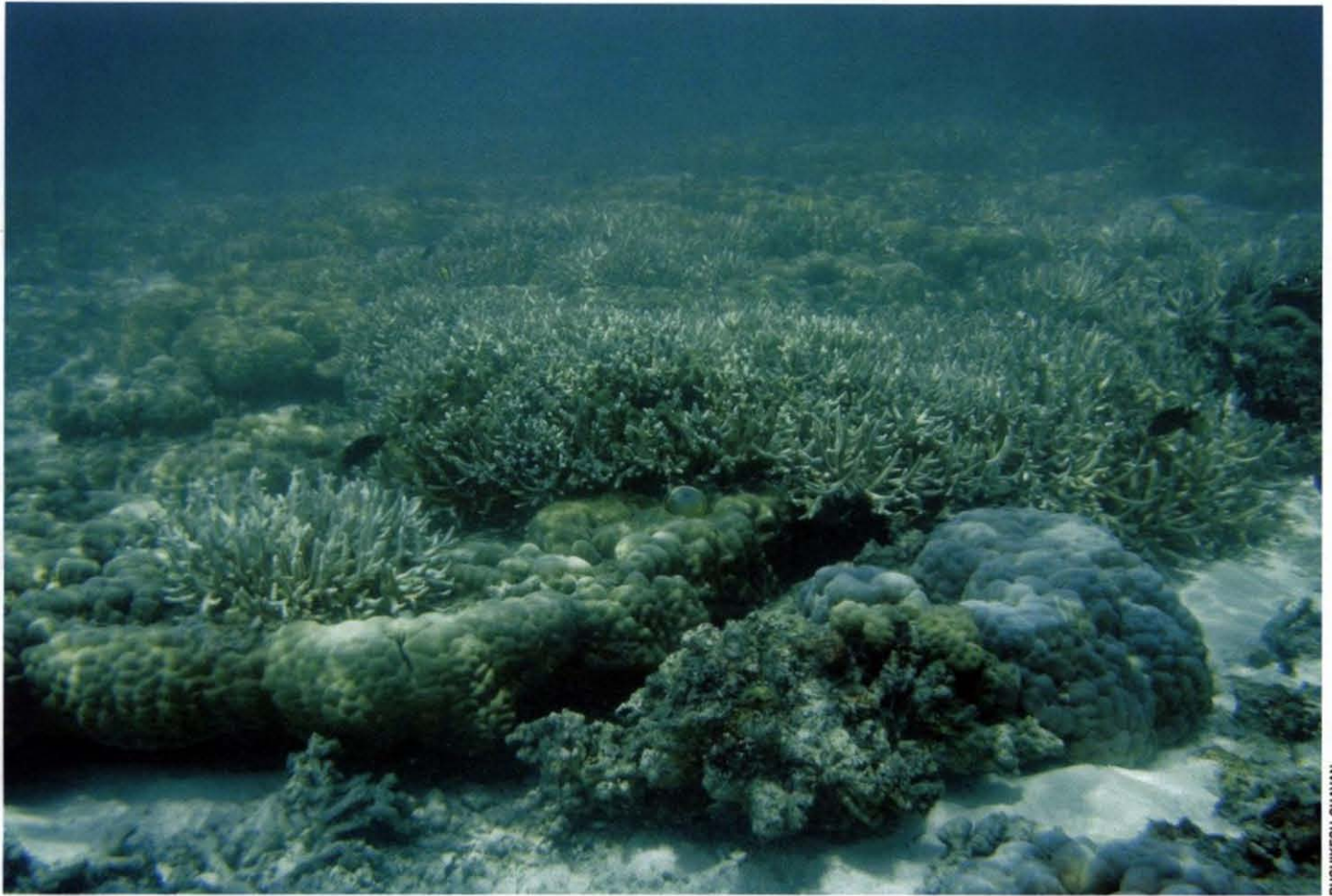
complex and macroscopic; a system had been born that regulated, maintained, and drove the whole functioning. Until recently, it was accepted that the evolution of life takes place as per Darwin's theory, and evolution of the material world of rocks, air, and ocean takes place according to 'text book geology'. But a relatively new theory called the 'Gaia Theory' considers these two previously separate evolutions as part of a single Earth history, where life and physical environment evolve as a single entity. It will be easier to visualise 'niches' evolve i.e. small components of physical and biological entities that interact with each other. These organisms bargain to acquire a place in the system by offering services like nutrient cycling, release of gases for these niches to function and life to prevail.

According to this Theory, when life began the sun was probably 23% less luminous than it is now. We believe that

Source: IPCC, Climate Change 2007: Synthesis Report



Comparison of observed continental and global scale changes in surface and ocean temperatures



RUSHIKESH CHAVAN

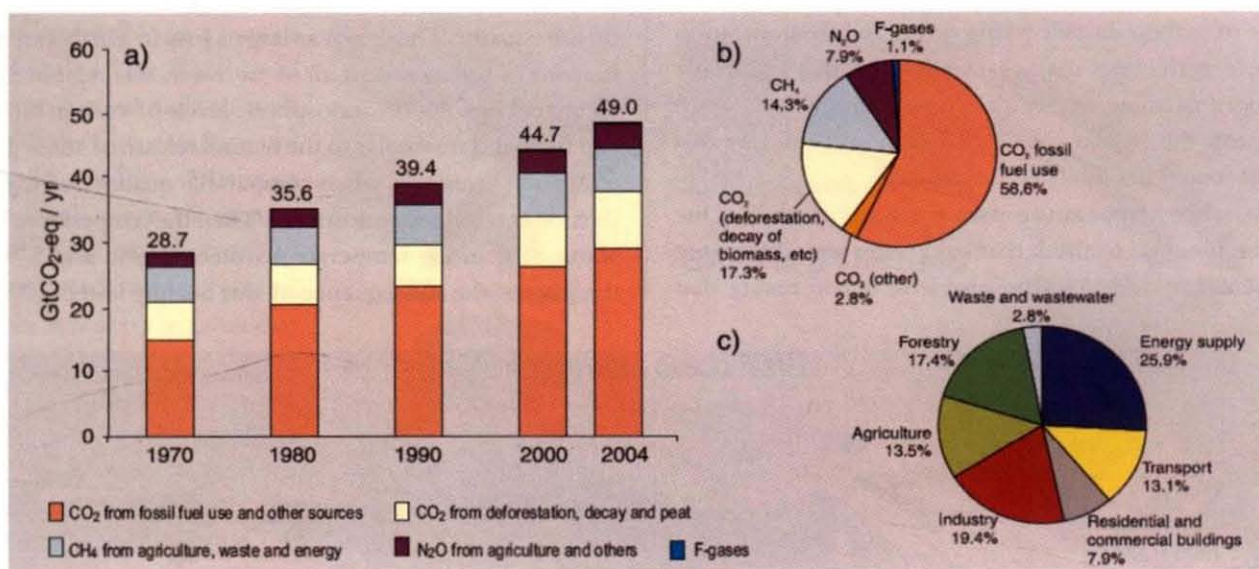
Acidification of oceans will have tremendous impacts on the sensitive coral reef systems

Earth was mainly covered by oceans and small continents. But it was warm enough for water to stay liquid and for life to start in the presence of abundant carbon dioxide in the atmosphere, perhaps thirty times more than now, because there was less land and possibly fewer clouds. With the evolution of photosynthesis the abundant carbon dioxide in the atmosphere decreased.

It is incredible that the 'Earth System' has the capacity to stay close to the right temperature and to maintain the right chemical composition for life to thrive. And to have done so for over three billion years, approximately a quarter of the time of the universe's existence, seems unimaginable. In order to sustain such an equitable climate, the Earth has evolved several conditioning mechanisms. Vegetation growing on land and floating in the sea uses carbon dioxide which it removes from the atmosphere. Another mechanism is the production of gases by marine organisms. These gases when oxidised in air make tiny particles called cloud condensation nuclei, without which water in the air would not condense as the droplets that clouds are made of.

Without clouds, the Earth would be much hotter as clouds also reflect sunlight. In a few words, life is not just a force for good, it is a force for its own good. Life has a way of managing things in favour of more life. And in the course of doing so, life manages an entire planet. It makes available an atmosphere to breathe, water to drink, and food to eat and then it recycles its own detritus. It captures sunlight and passes it around to the next user in digestible, shrink-wrapped form. Having done that, it disposes off itself, directly acting as nutrient for some other creature, or indirectly as a strata of phosphate or a layer of chalk or fossil limestone, which forms a system called the 'Earth System'. To experience this System, examine any long-term natural ecosystem in one of the few remaining untouched places of Earth and one will find it to be dynamically stable, just like our own body where internal bodily functions, such as beating of the heart or the 'super fast' nervous system are constantly taking place, yet on the outside the body is very stable.

Everything on Earth was fine till one species, the *Homo sapiens*, transfigured this system towards unforeseen



Global annual emissions of anthropogenic Green House Gases from 1970 to 2004

Source: IPCC, Climate Change 2007 : Synthesis Report

consequences. Humans, as all know, lived in caves, and as they civilised they came up with inventions and discoveries that changed the face of Earth. These changes initially didn't have much impact on the Earth System; however, since the industrial revolution there have been marked changes, unfortunately, on the negative side for the mechanism of which we are a part. Lots of fossil fuel is being burned, and tonnes and tonnes of carbon dioxide and other green house gases are being pumped into the atmosphere. In fact, since the Industrial Revolution the atmospheric concentration of carbon dioxide has increased by 35% and it is now the highest it has been in the past 4,20,000 years. Concentrations of other green house gases, such as methane, which has risen by 151%, are also on the rise. But, then what is wrong with that? Well, the problem is that this rise has led to a change – a change of climate, and one that alters the composition of the global atmosphere in addition to natural climate variability observed over comparable time periods. So what if climate changes?

Let's think of the System again, the sun is too hot for comfort, but most of the time the System has managed to pump down the carbon dioxide sufficiently and to produce enough light reflecting ice and clouds to keep the Earth cool and maximise the occupancy of the Earth's niches. But, with the human induced green house gases forming a blanket, more heat is trapped in the atmosphere, which is called as 'Green House Effect'. The green house effect then contributes and interferes with a number of mechanisms of the Earth System causing the climate to change.

Is that true; are there any evidences of climate change?

Definitely, let's observe a few things such as the average global temperature; 2005 was the warmest as per records, and eight of the ten warmest years on Earth have occurred since 1997. The Earth's average surface temperature has risen 0.7 °C since 1900. Heat waves and extreme rainfall have become more common in many regions. The sea level has risen 1.8 mm per year since 1950 and the rate is accelerating. There have been fewer frosts and the ice sheets of Antarctica and Greenland are shrinking. The timing of physiological processes in plants and animals is changing throughout the world, and populations are shifting their distributions.

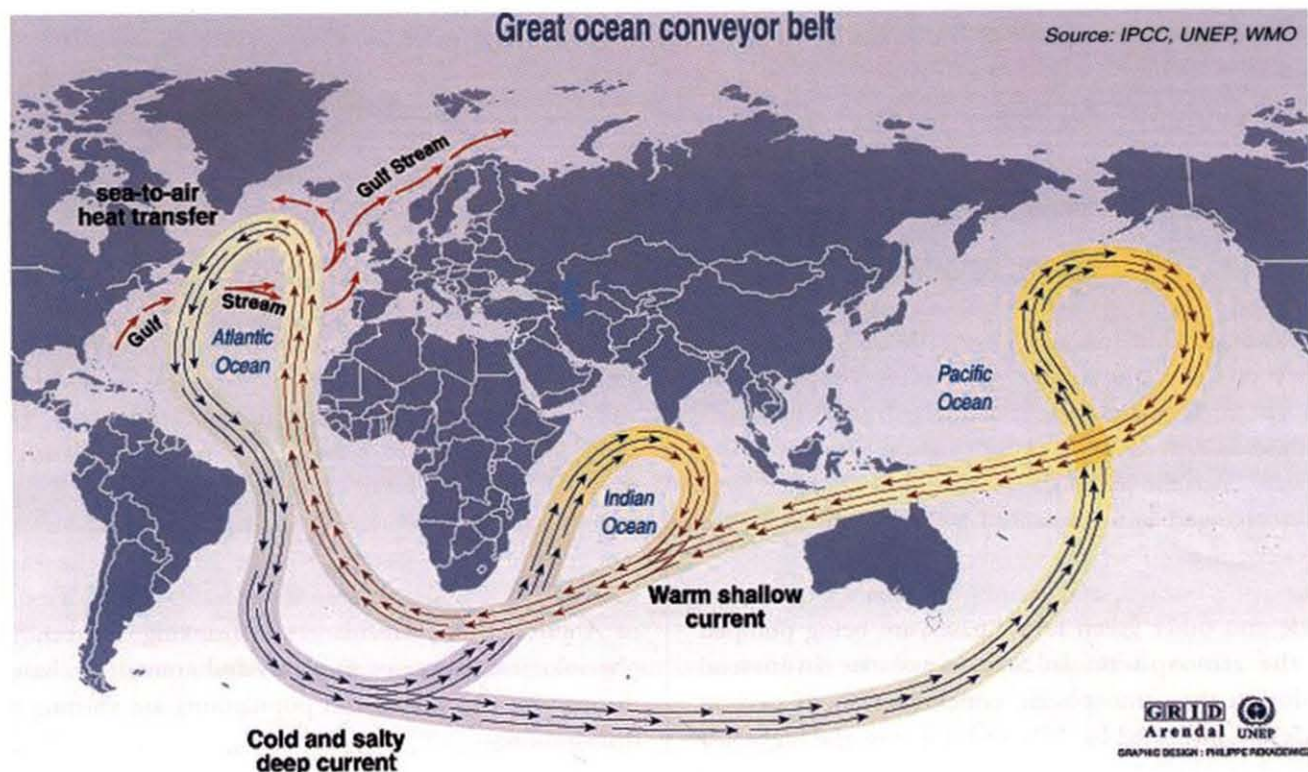
So what if the temperature rises by 0.7 °C in 100 years! "I have an air conditioner; I can easily cope up with a 0.7 °C increase in temperature." Yes, we all can. But, can the Earth? What havoc this seemingly miniscule number can do is hard to believe. Let us first look at the oceans; although the oceans cover a smaller area during an ice age, they are more productive because cold water favours the growth of primary producers – photosynthetic algae. A warm ocean is, perversely, nowhere near as productive as a cold one. Cold waters are dense forests in water, rich in life and help to keep the Earth cool by producing clouds and by pumping down carbon dioxide. So when there is rise in ambient temperatures, the upper layer of an ocean gets warm and does not support much life. Secondly, due to their physical property warm waters do not mix with the rich cooler waters, thus disturbing the mechanism of oceans and climate regulations. To make it even simpler, when oceans warm, the area covered by nutrient poor water increases, making oceans less friendly for algae. This reduces

Rediscovering Earth

the rate of carbon dioxide pump down and the generation of white reflecting marine stratus clouds. This only accelerates warming, in fact it's a snow balling effect, which could stop the 'ocean conveyor belts', and the day this happens would definitely be doomsday.

Also, when temperature rises ice starts to melt. One might be tempted to think that cold water would then get into the ocean and slow the problem, but in reality that

of the equator. This is not as large a loss to Earth as it is to humans as today, almost all of us live in this region. Since Industrial Revolution atmospheric levels of carbon dioxide and methane are similar to the natural release of these gases 55 million years ago, when comparable quantity of carbon dioxide entered the atmosphere. Then the temperature rose about 8 °C in the temperate northern region and 5 °C in the tropics, the consequence of this heating lasted 2,00,000



The Great Conveyor Belt of Oceans moves energy and nutrients in a slow waltz across the globe. It also regulates the climate

does not happen. This is because large deposits of methane are held in ice crystals within molecular sized voids, called clathrates, which are stable only at lower temperatures or under high pressure. As the Earth warms there is an increasing risk of these clathrates melting, resulting in the escape of large volumes of methane gas, a green house gas that is twenty four times more potent than carbon dioxide.

On land, the increasing temperature tends to destabilise tropical forests and lessen the area they cover. The bare land that replaces the forested land lacks cooling mechanism and is hotter, and so, like snow, the forests melt away. As forest and algal ecosystems die their decomposition releases carbon dioxide and methane into the air. If the Earth System has to cool, and to maximise the occupancy of the Earth's niches it will sacrifice the regions 45° north and 45° south

years.

Thus, we need to realise that the Sun is growing hotter and the heat received by the Earth now is more than what it was when life began. There was only a brief period in Earth's history when the Sun's warmth was ideal for life, and that was about two billion years ago. Before that it was too cold and after that it has become too hot for comfort. It is the Earth System that has allowed Earth to be a hospitable place for life. By adding green house gases to the air and by replacing natural ecosystems, like forests, with farmlands and constructions we are hitting the Earth System with a 'double whammy'. We are interfering with the System and that means we are interfering with our own life support system.

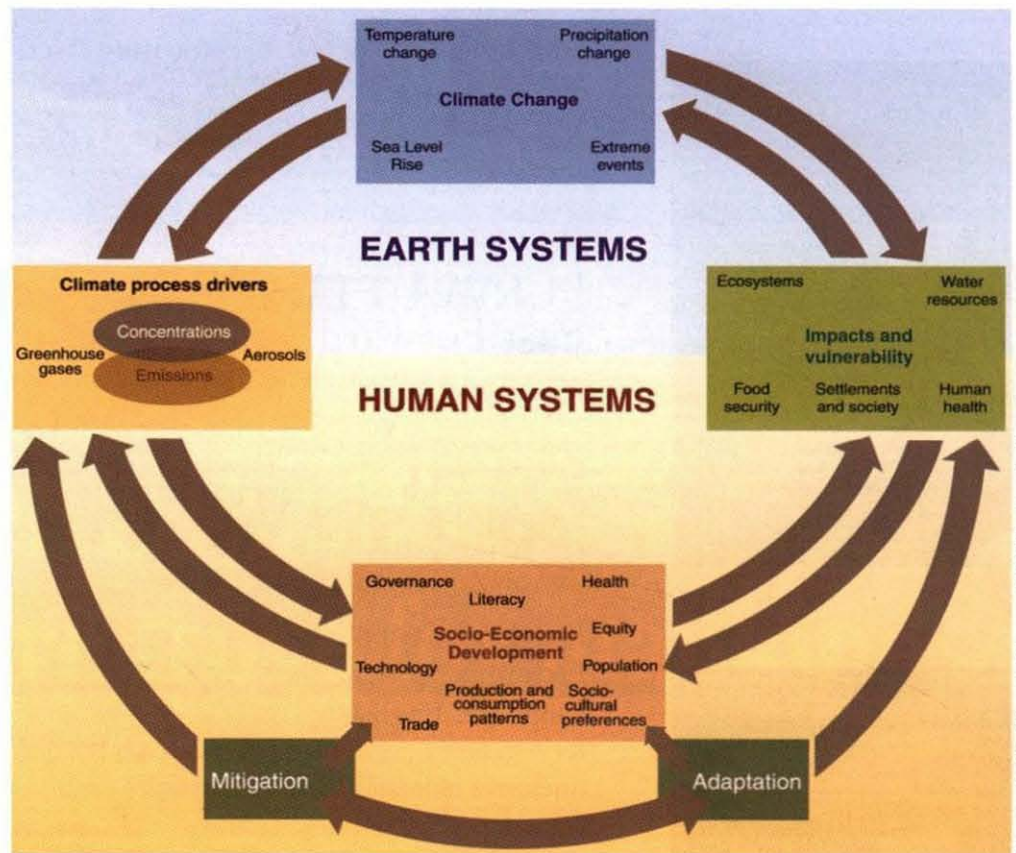
Climatologists now think that we are perilously close to the threshold beyond which adverse change sets in; change

that is irreversible on a human time scale. The Earth will become hot enough to melt most of the Greenland ice and some of the West Antarctica ice; enough water will then be added to the world oceans to increase sea levels by fourteen metres. It is scary to think that nearly all the present great centres of population are currently below what would be the level of ocean surface in a mere blink of geological time. One can't even imagine the consequences if such a situation or for that matter even a fraction of it occurs. There will be several ecological refugees. And as their number increases so will the social, political, and financial unrest. Unfortunately, it is not difficult to believe this as already some islands in Sunderbans have disappeared, rainfall patterns have changed, coasts have started eroding, glaciers have started receding, and diseases such as malaria are reaching places where they were never known.

Does this mean that the doom is inevitable? Yes, if we continue to reduce the natural carbon sinks, i.e. Earth's ecosystems such as forests, wetlands and continue pumping green house gases into the atmosphere. But, we are so used to exploiting natural resources that we cannot go back to being cave men. This makes the whole crisis very challenging and interesting as well. There is no denying that we have to take action now. First, and the toughest part of this battle is the need to come out of the denial mode and accept the situation as a problem. We then need to work at all levels from policy to grass root.

The BNHS, through its Marine Biodiversity Research and Conservation Centre at Lakshadweep, is making efforts to identify resilience factors for climate change for both the islanders and the coral reefs.

It will take a series of articles to list what we need to do to prevent the impending calamities. However, I will mention some easy changes in lifestyle that will make a difference. First, accept the fact that climate change is



Framework represents drivers, impacts and responses to climate change and their linkages

Source: IPCC, Climate Change 2007: Synthesis Report

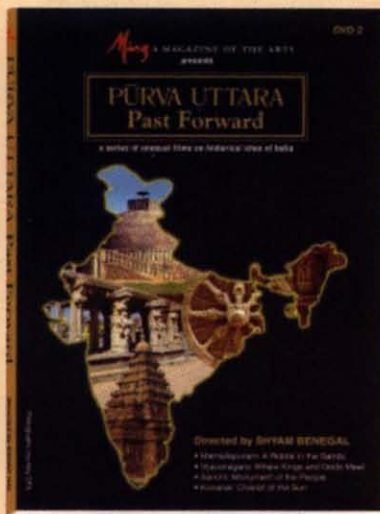
affecting us and gather more information on it. Two, spread the word – if every individual who agrees with this article talks to about 10 people and requests them to spread the message to 10 others, in a week's time we would probably have reached at least half a million people. Next, reduce resource utilisation, for example switch off lights, fans, ACs, electrical appliances when not in use; use public transport if car-pooling is not possible. Do not waste water for every drop is expensive; about 60-70 years ago we would have laughed if someone said that a litre of drinking water would cost more than rupees twelve. It is criminal to waste treated water on car washings, toilet flushing, or for that matter to keep the tap running while brushing or shaving. We need to look at waste as a resource and not garbage. We need to recycle. If we can do these few things, I think we can give ourselves time to adapt to the change. As mentioned by James Lovelock "We live on a planet that can respond to the changes we make, either by canceling the changes or by canceling us." ■



Rushikesh Chavan is at present the Conservation Officer at the BNHS

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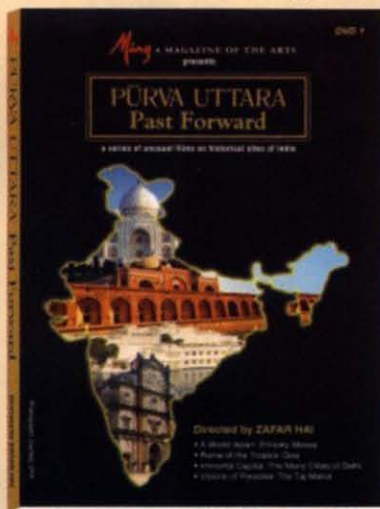
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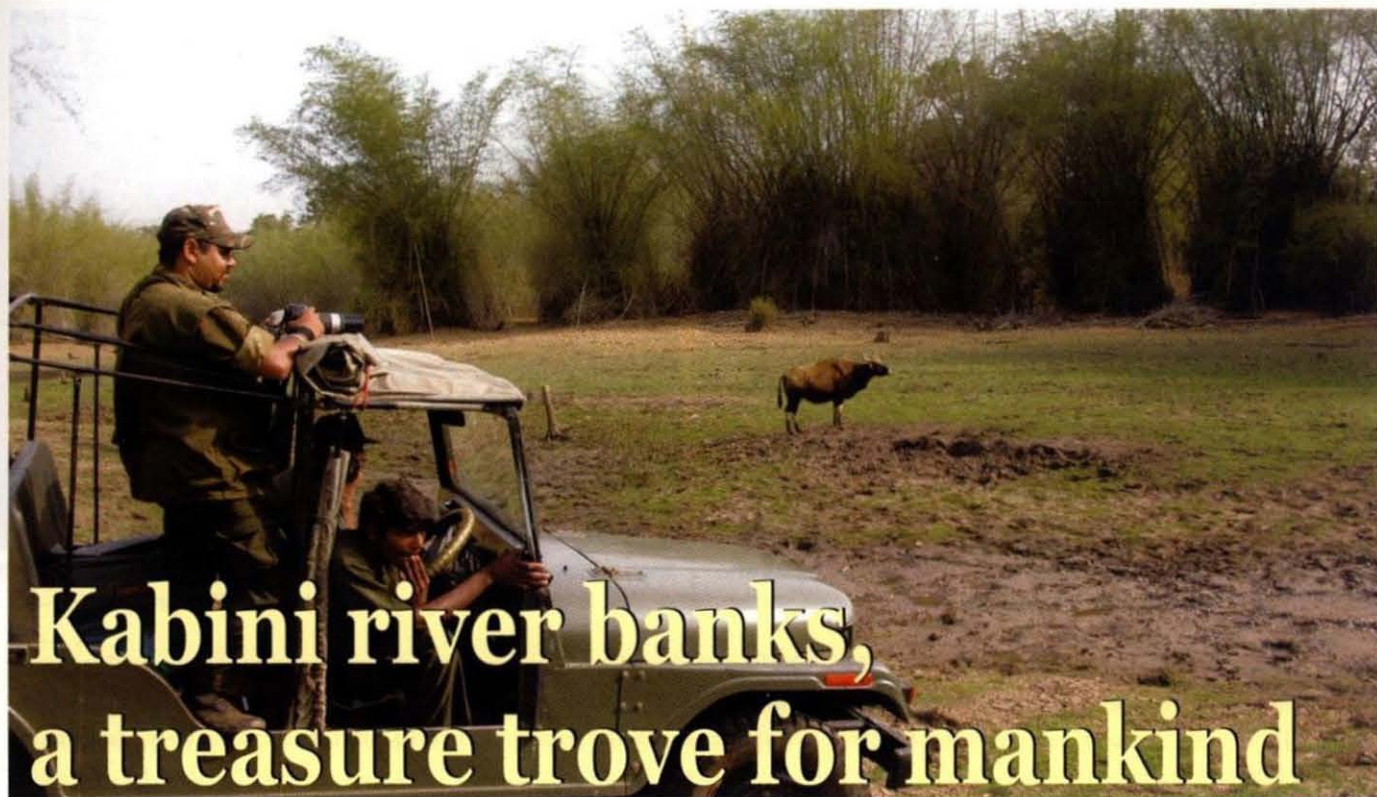
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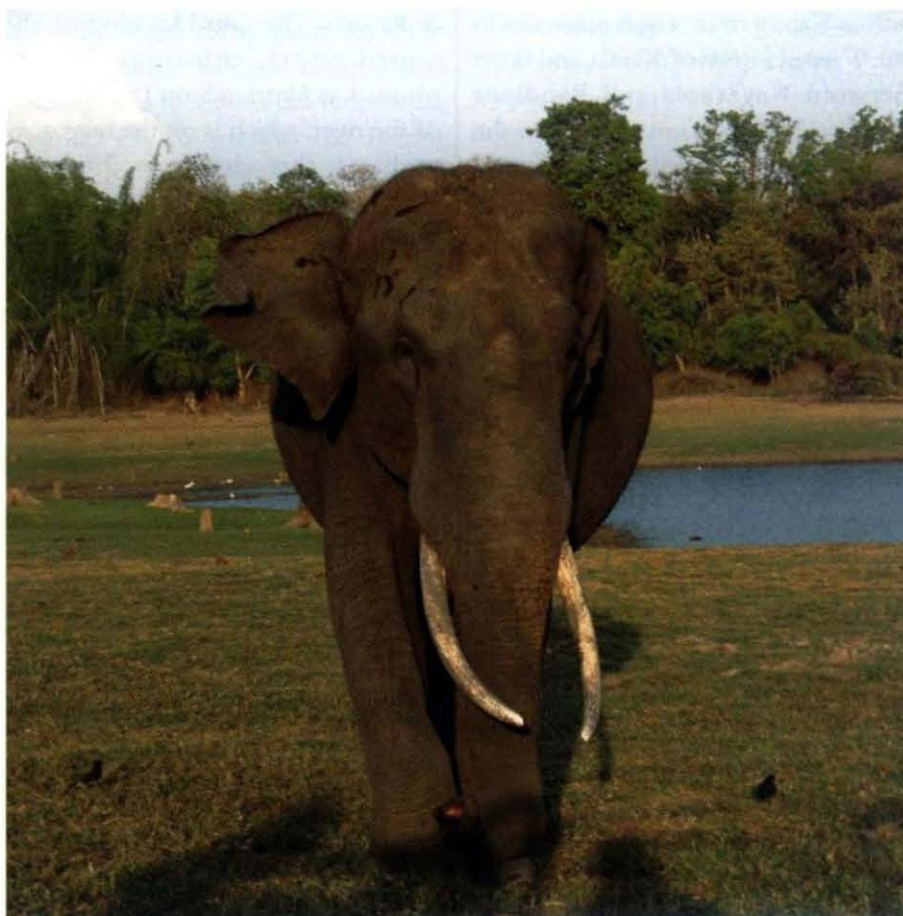


Kabini river banks, a treasure trove for mankind

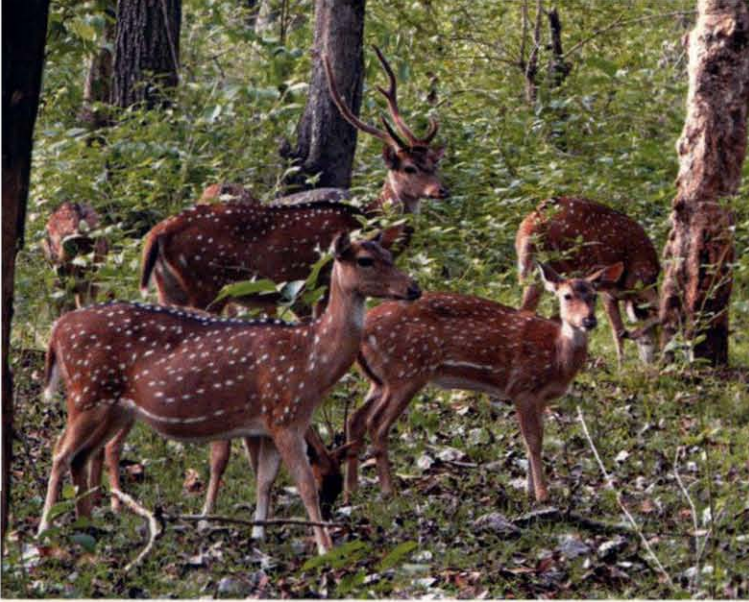
Text and photographs: A.J.T. Johnsingh

Patches of rain clouds, occasional drizzles, distant lightning and thunder indicated the onset of the pre-monsoon showers. It was an evening in late April 2007, and a plethora of wildlife – elephants, gaur, sambar and chital – fed on the green carpet of short grass formed by the receding backwaters of the Kabini reservoir. Giant bamboo *Bambusa* sp. growing on the banks of the river also provided forage to the herbivores.

Several large green vehicles, belonging to Kabini River Lodge, slowly moved along the west (left) bank of the river. Each vehicle had several wildlife enthusiasts comfortably seated, and several equipped with cameras and binoculars. Excitement and anxiety were evident on their faces – excitement as they had memorable wildlife sightings and anxiety as they were warned by the accompanying naturalists that at any time they may encounter a bull tusk. As the sun began to touch the horizon, one by one the vehicles disappeared from the river bank, implicitly obeying a well-meaning and well-respected instruction that the tourists should



An elephant's trunk is sensitive enough to pick up a single blade of grass, yet strong enough to rip the branches off a tree



Chital are the most common deer species in Indian forests and are abundant in Kabini Forests



High density of tigers on the banks of Kabini can be attributed to the abundance of Sambar and other prey

return to the lodge before darkness, so that the animals be left in peace after nightfall.

As I drift back to the past, I can remember when this reservoir came into existence in 1974 with the construction of a 2,732 m long dam across Kabini river, which originates in the Wyanad forests of Kerala, and flows between Nagarhole and Bandipur National Parks in Karnataka. Once the river was the stronghold of the Hump-backed Mahseer *Tor mussallah* and on March 22, 1947 a fish weighing 120 pounds, a record size capture with rod and reel, was caught by J. Wet Van Ingen. Unfortunately, this mighty fish is now seldom reported from this river.

An unforgettable year with regards to tourism in Karnataka was 1978. This was the year when the then Tourism Minister of Karnataka, Mr. Gundu Rao travelled to Kathmandu, Nepal, to attend the Pacific Asia Travel Association Conference. After the conference, Mr. Rao visited Tiger Tops Jungle Lodge, one of the world-renowned wildlife resorts at the Royal Chitwan National Park, Nepal. Fascinated by the ambience of the place and amazed by the plane, truck and elephant-loads of tourists, Mr. Rao had a dream. Why not create such beautiful wildlife resorts in the jungles of Karnataka that are teeming with

wildlife? On his return, Mr. Rao wrote to Tiger Tops, inviting them to start a similar venture in Nagarhole in Karnataka. A year later, a joint venture was agreed upon between the Government of Karnataka and Tiger Tops, and so was born Jungle Lodges & Resorts. The initial location of the tented resort, unfortunately, was planned at Mastigudi on the left bank of the river, which is on the migratory path of the elephants between Nagarhole and Bandipur reserves. Mastigudi has the remains of an elephant capturing operation established by Hyder Ali, the 18th century ruler of Mysore. Although he did not succeed in capturing many elephants (after he failed, he is said to have inscribed in stone that no one would be able to do so), reports indicate that later hundreds of elephants were caught by *kbedda* method (capture of elephants by driving them into a stockade). Nagarhole was deemed to become a national park in 1983, and going by the rules, no commercial activity could be allowed inside the boundaries of a national park. Naturally, the proposal to set up the resort in Mastigudi was vehemently opposed by the NGOs dedicated to conservation.

As a result, in 1982, Jungle Lodges moved their property from Mastigudi

to the present location – Karapura. The place housed a ruined 125-year old Maharaja's and Viceroy's bungalow. Jungle Lodges decided to replicate the Maharaja's bungalow with new bungalows, what are now known as the East and the North blocks. John Sandy, who was with the National Geographic architecture team, was the chief architect. In two years, the bungalows were completed and the complex was christened the Kabini River Lodge. It was opened for tourists in early 1984. Even during the initial days, visitors enjoyed every hour of their stay (delicious food, courteous service and plentiful wildlife sightings). So as to bring benefits to the local population, most of the employees come from the local populace, and even milk and vegetables are bought from the local farmers. Amiable settings, friendly service of the staff, mouth-watering food and exciting wildlife sightings have put Kabini River Lodge among the top five Wildlife Resorts in the world (according to rating by Tatler's Travel Guide of 1995). In 1997-98, Jungle Lodges & Resorts won the prestigious National Tourism Award for the Best Maintained Eco-friendly Tourism Project of India.

National and international bookings seemed to ensure the future of the Lodge. Then the tragedy came in



The Dhole produces a sound which is a strange whistle, and are known as whistling hunters for the same



The basking of a cold blooded crocodile, in this case an impressive Mugger, is a method to regulate body temperature

the form of the assassination of Mrs. Gandhi on October 31, 1984, which led to turmoil in the country leading to the cancellation of overseas bookings, which scared Tiger Tops into pulling out of the venture. The Government of Karnataka then bought back all the shares from Tiger Tops, and in 1987, Jungle Lodges & Resorts became a 100% Government of Karnataka owned body; a corporate body managed by a board of directors appointed by the Government. Having started with just 25 employees – including bearers, cooks, cleaners and naturalists – Jungle Lodges has grown into a 300-strong corporate entity.

When one looks back at the achievements of Kabini River Lodge over the last 25 years, it becomes evident that the Lodge is now synonymous with Col. John F. Wakefield, who wore several hats in the past – as a hunter (shot his first tiger when he was nine), soldier (involved in the training of soldiers in jungle warfare for the British army and took part in the Burmese operations) and wildlife tourism promoter (Chief consultant to Tiger Tops, Nepal). Papa John was born in Gaya on March 21, 1916. His father was the third generation of British administrators in India and worked with the then Maharaja of Tikari. Jungle Lodges is deeply indebted to Papa John

for his tireless energy and foresight, and for the invaluable role he has played as Resident Director. From his small room in the former Viceroy Hunting Lodge at Kabini to now, as Brand Ambassador of Jungle Lodges & Resorts Ltd., he still exudes the same passion for wildlife as he did some thirty years ago. The ethos of Jungle Lodges, under Papa's guidance, has spread to the functioning of other camps such as the fishing camps along the banks of Cauvery river, Kyathadevara Gudi (K. Gudi) Wilderness Camp in Biligiri Rangana Temple (BRT) Wildlife Sanctuary, and Kali Adventure Camp in Uttara Kannada.

My association with this landscape and Papa John goes back to the late 1970s, when I carried out a two-year field study on the group-living dholes or Asiatic Wild Dogs in the eastern part



Papa John – backbone of Jungle Lodges

of Bandipur Tiger Reserve. Having worked in Wildlife Institute of India, Dehradun, from 1985 to 2005, I had very interesting discussions with Papa John, particularly about the landscape around Dehradun where he hunted as a youngster (he even met Jim Corbett in the present day Chilla Range of Rajaji National Park), and where I have wandered extensively in the past two decades. The landscape around Kabini Lodge is part of the Nilgiri Biosphere Reserve (c. 5,500 sq. km) declared in 1986. This is one of the finest remaining large habitat stretches in Asia for large mammals, such as Asiatic Elephant (c. 3,000 of which live here), Gaur (c. 3,000), Tiger (c. 200), Leopard (c. 300), Dhole (c. 300) and several other species, such as Sloth Bear, Sambar, Chital, Nilgiri Tahr, Nilgiri Langur, Barking Deer, Wild Pig, Blackbuck and Chowsingha. Over the decades, several valuable research projects have been carried out in this landscape, and the findings are extremely valuable to ensure the future of large mammals.

My research and the studies by Dr. Ullas Karanth bring to light that this tract is one of the few places in India where the three large predators (Tiger, Leopard and Dhole) co-exist and thrive as a result of the occurrence of a variety of prey in high densities (Gaur, Sambar, Chital, Wild Pig and Langur). Certain

Kabini river banks



Large Cormorants feed almost exclusively on fish and hunt by diving and chasing under water

behavioural parameters also help the ecological separation of the predators. Tigers are largely nocturnal, prefer undisturbed habitats and dense cover, and have a preference for prey weighing over 100 kg. Leopards climb trees (very important to escape tigers and dholes), can thrive in sparse cover with smaller prey (50 kg or less) and being primarily nocturnal, can stalk around human habitations killing domestic dogs, one of their favourite prey. Dholes are primarily diurnal, can hunt even in open areas, and although capable of killing

larger prey (100 kg) largely thrive on prey weighing around 50 kg. While the Tiger and Dhole are highly dependent on water and shade, leopards are capable of withstanding the heat of the day and occur even in dry tracts. Dhole populations are periodically suppressed by diseases such as mange and rabies, and it appears there is no such population regulation of leopards and tigers. Research on the impacts of cattle grazing by Dr. M.D. Madhusudan of Nature Conservation Foundation, Mysore on the right bank of Kabini



Gaur have the habit of visiting 'salt-licks' to stock up on their salts and minerals that act as purgatives

river (Bandipur Tiger Reserve) clearly shows that grazing is detrimental to Chital and Gaur (both are primarily grazers like cattle), but not to Wild Pigs (feed on carrion, underground tubers, roots and beetle larvae) and sambar (largely a browser).

While the forests on the banks of Kabini river appear peaceful, visitors should never get off vehicles and disturb the confiding wildlife, and should only whisper if necessary, not out of fear, but out of respect for the wild denizens. Visitors have seen dholes hunting on the banks of the river and even tigers swimming across the river, unmindful of giant crocodiles basking on the banks. As Nagarahole has been relatively safe from poachers, many adult tuskers can be found around the backwaters of the reservoir. One evening several years ago, when the orange-ball of the sun was sliding behind the curtain of the Giant Bamboo, a magnificent tusker swam across the river from the Bandipur to the Nagarahole forests. While it was in deep water, only its trunk tip was visible like the periscope of a submarine. Although elephants are good swimmers, when it reached the shore, the bull breathed heavily, rested for some time and then slowly ambled towards a group of elephants feeding nearby. It is such moments that makes it all worthwhile; the efforts, the struggles and sacrifices gone into creating this beautiful haven for wildlife.

This is just a birds eye view of the journey of Kabini, the bountiful treasure trove that awaits those who wish to visit it and see nature in its full glory! ■

Dr. A.J.T. Johnsingh carried out the pioneering study on free-ranging large mammals in India in the 1970s by studying dholes or Asiatic wild dogs. Now after retiring from Wildlife Institute of India he works for Nature Conservation Foundation, Mysore and WWF-India.



Environment Education For Effective Conservation: The Way Ahead....

Text: Erach Bharucha

Sálim Ali joined Bombay Natural History Society (BNHS) in 1926 as a Guide lecturer in natural history to run a Nature Education Program for school children. In the early part of the 20th century, there was very little actual work done in this field in India. And the situation of school textbooks was worse, in terms of information pertaining to natural history.

Natural History was a sport or thrill for the British beurocrats, whose interest had grown mainly through the sights of a lethal rifle. And there were the equally avid Princes of Indian states who had to prove their ability by bagging a large tiger or knocking birds out of the sky. So one can say that 'Nature Study' was a rich man's hobby wherein only few of the enlightened naturalists of the British period could visualise the need of the general public to appreciate the necessity for wildlife conservation. Apart from the BNHS members, and a few other like minded members of other organisations, no one brought this into a coherent teaching programme at the national level.

While nature conservation oriented traditions existed in India from ancient times and Tagore's teachings included an appreciation of Nature as being central to the education process, the curriculum at school remained devoid of nature conservation concerns.

In the 50s, school students joined the boy scouts where an interested scout leader would show them how to track wildlife and observe the commonly seen birds, reptiles and insect life. Appreciating the ecological aspects of nature virtually remained in its infancy in India up to the recent decades.

When this gradually began to change, the text books and teacher's capacity to deliver effective learnings in conservation lagged behind and it was, thus, the NGO sector that furthered nature education in the 60s and 70s.

The BNHS ran camps and bird watching sessions, and by the late 70s the WWF and its branches were taking school students to nature camps and running training sessions for their volunteers on how this was to be done. Foremost among the protagonists for this were individuals such as Lavkumar Khacher, Chandrakant Wakankar and others who took up the cause as a personal agenda.



Children taking a walk through a Devrai and learning about nature

The belief that the NGO sector would eventually bring about a conservation movement in India had strong support from the then Prime Minister Indira Gandhi whose personal letters to children frequently talked of nature preservation.

The reason behind this dream not getting realised was that the NGO sector more frequently catered for English speaking children of well-to-do urbanites and was not a grass roots level activity. These NGOs were too few, too underfunded, and too diverse to make an impact. By the 1980s, the WWF-I strategy that had been based on trained young volunteers to run nature clubs changed to training school teachers. While the volunteers were good at field work, they were a migrant lot and were lost once they finished college. The teachers, on the other hand, had strong links to the formal educational set up, but frequently were not strong on nature studies. Both these approaches had strengths and weaknesses. The movement could not, thus, generate sufficient steam in our large and highly diverse nation.

A change also occurred when it was evident that unsustainable development was a major factor in the distressing scenario of degradation with loss of forests, wetlands, grasslands and other wilderness ecosystems being rapidly damaged. The NGO sector altered its emphasis from nature studies to bring about a deeper understanding of the effects of air and water pollution, loss of soil, erosion of mountains, conserving precious water and other issues.

Environment Education

Thus, a whole set of changing scenarios have occurred primarily from a scattered but need based frequent local urban initiatives.

Having said that, the push needed to stimulate action in the formal Environment Education sector came from a PIL filed by M.C. Mehta in the Hon'ble Supreme Court of India in 1991. The Court gave a mandate to the Government to mainstream environment education into school and college curricula. However, though some statements crept into the school curricula as environment studies, it was primarily piggy backed into the existing framework of general science. An extensive analysis of school text books from across India of all subjects done by Bharati Vidyapeeth Institute of Environment Education and Research, Pune, found that these statements could hardly be expected to interest or trigger young people to either appreciate or wish to conserve or protect Nature.

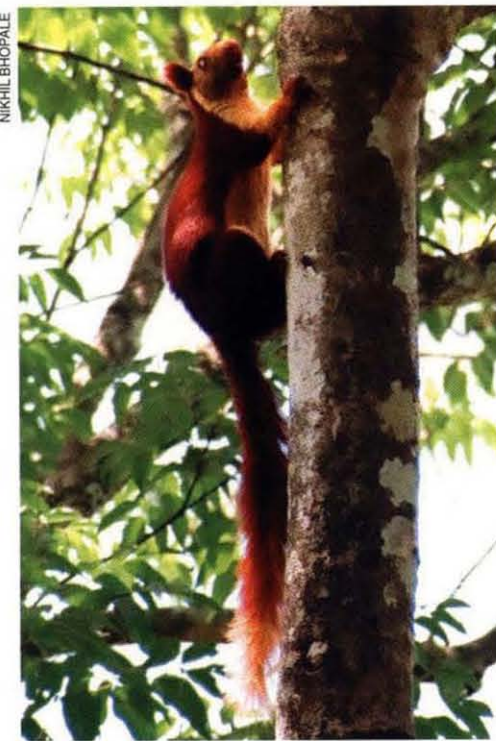
Besides this a study in eight states showed that teachers lacked the capacity to interpret nature in the field. Their world view on environment, frequently circled around what they had read in the press. They thought of environment education as being about planting trees and knowing about air and water pollution.

That water is a scarce natural resource and that forests have a host of life support functions, or that nature is a vast storehouse of biodiversity or that mankind is just one small speck in the fragile web of life in nature came as an 'Ah! Ha!' when the teachers were initiated into carefully designed environment education workshops.

Organisations such as Centre for Environment Education (CEE), C.P. Ramaswamy Environment Education Centre (CPREEC), World Wide Fund (WWF), Bharti Vidyapeeth Institute



School students explore a Devrai



The Indian giant squirrel, an upper-canopy dwelling species, travels from tree to tree with jumps of up to 6 m

of Environment Education (BVIEER) all had their own methodologies to train teachers to initiate and infuse environment related concepts into their classroom teaching. The ability of teachers to actually take students from the schools into the fields as a learning exercise to discover nature for themselves remained an unsatisfied dream of professional environment educators. The gap has just been too wide to bridge through brief Teachers Training Workshops. It is only through repeated exposures over a 2 or 3 year period of support that interested teachers have been able to develop the confidence essential for field studies.

The Biodiversity Conservation Prioritization Project (BCPP) of 2000 had a component on assessing environment information in various sectors of society. Obviously while traditional knowledge was present in people who lived close to nature, the school curricula had done little to enlist people to champion the cause of nature and wildlife conservation. The BCPP, eight years ago, found that those adults who had joined organizations such as the BNHS and WWF indicated during a survey that it had been the 'early nature experiences' and 'books on nature' accessed in their younger formative years that had led them towards joining these organisations. They emphasised that this had not been triggered through school text books or teachers in their school. This demonstrates clearly where the 'gap' lies even today.

As far back as 1976, the Amendment to our Constitution squarely placed the responsibility of preserving our natural resources on every citizen, through Article 51 A(g) quote 'It shall be the duty of every citizen of India to protect and



Farmers at Bhigwan at an awareness program



Teachers being trained through a field program

improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures'. How many policy makers, teachers, business executives and administrators, or environmental professionals know that this is an expected civic duty? Very few, and even among those who know of it, how many actually practice this in their day to day life?

How then do we move forward? There is no question that the formal education processes that deals with both school and college education requires a substantial change in approach; we need one that sees environment preservation as a major concern in our lives, and the well being of all sectors of society. The tools for this major thrust require not only teacher capacity building, but also more intensive introduction of environment concepts and their action components into all subjects through textbooks. While this requires in-service training of teachers in both schools and colleges it also requires a major change in the pre-service teaching, learning and curricula of aspiring teachers.

The University Grant Commission's (UGC) Compulsory Core Module Course on environment studies is a commendable initiative, but it needs to be supported through capacity building of college teachers to act as nature educators through field studies. That the current development strategy is based on a short term economic model without caring for a sustainable future for the Earth's future inhabitants must become the sheet anchor of the learning process in every subject. All this will require financial support and a strong motivational exercise from a variety of Government line agencies. The Ministry of Human Resource Development and the Ministry of Environment and Forests have to see this as their primary focus of interest over the next decade. This would echo what the International community recognises as the decade of 'Education for Sustainable Development' that should become a reality in our country.

When one assesses the current status of Environment Education in the country we see a large number of fairly successful NGO initiatives. The problem has been an inability to mainstream them into formal curricular processes. Some educators feel that attempting to mainstream these techniques itself kills them. This seems to be a rather unrealistic view.

Another major concern is the need to maintain a high level of locale specificity in the program. This is to be linked to biogeographic regions, urban, rural and wilderness audiences, age groups, the socio economic groups etc, of the learners. A review of several major NGO initiatives demonstrated that only a few were strongly locale specific and others, while knowing about the need for locale specificity, were unable to clearly bring out how this was being achieved.

The recent added mandate is to bring in learnings on 'sustainable development'. For several environment educators this transition and change in the philosophy necessary to shift from a purely environment education approach to one that is focused on 'Education for Sustainable Development' (ESD) has not been easy. Some have even felt that it is not different. While this is too large a debate to enter into here, it is of importance to note the differences in approach.

Every conservation program must include a component on public awareness if it has to reach its objectives. If conservation research is planned without a component of public awareness and advocacy it can never reach its goal. Appreciating the nature of nature education is a tool that is the key towards a sustainable future for mankind. ■



Erach Bharucha is the Director, Bharati Vidyapeeth Institute of Environment Education and Research, Pune.

BATTLE FOR LIFE

A summer was still keeping its grip on southern India even during the month of June and the monsoon was only a dream; my friends Nitin, Manjunath, Aravind and I were visiting all the birding areas around Bangaluru and mostly spent more time in the IBAs (Important Birding Areas) during the weekends to see how the birds were coping up with the heat. An experience that will touch all our lives happened during one such weekend trips to Maidenahalli Blackbuck Sanctuary, situated around 85 km from Bangaluru, during the month of June. This area is a vast grassland and scrub forest habitat. During that week it drizzled at night. These showers triggered termite activity. This sudden emergence of termites attracted large number of birds such as Tawny Eagles, Black Kites, White-eyed Buzzards, Cattle Egrets, Red-wattled & Yellow-wattled Lapwings, mynas, Indian Rollers, House and Jungle Crows, and even the seed eaters like munias were feasting on these juicy insects, which are one of the best sources of protein to birds of all kinds.

We were amazed to find more than 15 Tawny Eagles at one place as we have never seen more than 4 of these magnificent eagles at one place so far. Due to the presence of food the birds were just not bothered about the presence of our car.



As we all were watching a Short-toed Eagle from around 15 metres or so, it suddenly started to fly in the direction of our car and dived on a target on the ground. We by our experience knew that it was going in for a snake or a lizard. What we watched thereafter was something that we will remember all our lives.

The eagle dived on a Rat Snake which was around 1.5-1.8 metres in length. Normally the Short-toed Eagles are very talented when it comes to hunting snakes. They grab the head of the snake and with their powerful large beaks just tear the head apart and consume the prey whole.





Top: Short-toed Eagles also regularly feed on the most poisonous snakes like the cobras and vipers. In this particular incident the Eagle missed the snake's head and landed instead on its body.

Below: Rat Snakes are very aggressive when they are cornered, even though they are non-poisonous. The Rat Snake in a split second turned back and bit the chest of the Eagle and that surprised the Eagle to a great extent, and then put a coil around the Eagle's neck with its tail and started to squeeze the life out of the Eagle.





Top: It seemed that the Rat Snake was always looking for an escape hole to put this fight to an end from the time the coil was applied on the Eagle. This whole region is littered with Bandicoot holes at any time of the year. The Rat snake dragged the eagle for almost around 6 metres and was so much in control of the situation that it never let loose the typical "Rat Snake knot" on the eagle.

Below: Their coil really packs a lot of punch. The Eagle almost gave up the fight and was dragged. Finally, the Rat Snake found a hole and started to move in but kept the knot on the Eagle. Only when most part of the body of the snake was into the hole, the Snake slowly un-coiled itself from the Eagle and vanished. The Eagle did survive this ordeal and came back to its senses in a few minutes.





The Eagle circled a few times over our car and we were given ample opportunity to click few flight images of the mighty bird. This was an experience of a life time for all of us who have been birding for the last two decades. Mother Nature always surprises us all the time and this was one such experience where an incredible battle for life surged on ultimately leading to a happy ending.



Clement Francis is a wildlife photographer and a naturalist. An active participant in conservation activities and has special interest in the birds of Western Ghats

“I went to the woods because I wished to live deliberately, to front only the essential facts of life, and see if I could not learn what it had to teach, and not, when I came to die, discover that I had not lived.”

– Henry David Thoreau

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Queer case of quills!

The Jaisamand Wildlife Sanctuary is situated close to Udaipur. It is a small place which was a hunting reserve of erstwhile Maharanas of Udaipur prior to being declared a Sanctuary. In those days it was teeming with 'game', but now the population of wild animals in the Sanctuary has depleted considerably.

We visited the Sanctuary on May 22, 2008 to observe wild animals. The Sanctuary has a perennial water hole at Jhoomar Bawri, which is one of the prime spots for counting wild animals on waterholes during wildlife census. At about 4:00 p.m. we neared Jhoomar Bawri, where two game paths crossed; at the intersection of the game paths we found pellets of Neel Gai *Boselaphus tragocamelus*, Chinkara *Gazella bennetti*, Hare *Lepus nigricornis*, scat of Hyena *Hyaena hyaena* and Leopard *Panthera pardus*.

There were three pieces of Leopard scat. Two of them were trodden upon and one was of them was intact. The trodden as well as the



intact faecal matter, to our surprise, was full of undigested broken porcupine quills, with their spikes intact. We searched the nearby ground for traces of blood, but found none. We took photographs of the Leopard's scat. The longest quill was 5.5 cm long. It is astonishing that the Leopard gulped the quills of porcupine and excreted them without damaging its intestine.

I, Raza H. Tehsin, have observed scores of kills of leopards during the last fifty-five years, but only twice did I come across porcupine killed by a Leopard. But this is the first instance where I observed scat with undigested porcupine quills.

Raza H. Tehsin and Arefa Tehsin
Udaipur, Rajasthan.

Bird eating Rhesus Monkey

On May 8, 2006 I was cycling through the Rajaji National Park at about 4:00 p.m. when I saw a troop of Rhesus Monkeys *Macaca mulatta* scattered about on either side of the road, evidently feeding. On closer observation, I noticed that one adult female had a bird in a spread-eagled position on its back, the monkey's front paws pinning the bird by its wings to the ground, and part of the breast and throat torn away, fresh and still bleeding. I could not positively identify the bird, but it looked like a Brain Fever Bird or a female Koel.

I know that Rhesus Monkeys are fairly omnivorous, but this is the first time I'm seeing a freshly killed bird. Maybe one of the experts at BNHS or a member can shed more light on this kind of occurrence.

Sugato Chaudhuri
District Haridwar,
Uttarakhand



ABOUT THE POSTER

The Blue Tigers and Striped Tigers are often seen on bruised, decaying or uprooted plants like Rattlepod, Goatweed and borages. This is because of their need for pyrrolizidine alkaloids as these are essential precursors of pheromones. The pheromone makes the males distasteful, so more the pheromones more the distastefulness. This keeps them safe from their eternal predators, the birds. It also increases their chances for survival and the females want these qualities to get passed on to their progeny as well. Hence, this is very important, as the male with maximum ingested alkaloids is more likely to get selected by the female.



Blue Tiger (*Tirumala limniace*)
and Striped Tiger (*Danaus genutia*)





The silence of Amphibians

Text: Rajshekhar V. Hippargi

Photographs: Laxmikant J. Harkare

On April 17, 2007, at 9:30 p.m., I received a call from Laxmikant Harkare. "Sir, can you come to my house, now?" I rushed to his house wondering what it could be at that time of the night. When I reached, he showed me a live adult of the Indian Common Toad *Duttaphrynus melanostictus*. At this, feeling crestfallen, I asked him, "What's new?" But he ignored my disappointment and said, "Look carefully; this animal is not normal!" And that's when I realised that his urgency was completely justified, because after careful observations I found two major developmental abnormalities in the animal. "Sir, can you report this immediately?" asked Laxmikant in apprehension. "Definitely! This is a real good find, as amphibian deformities are a global problem." I said with conviction.

I first met Laxmikant Harkare, a curious yet patient, neat, co-operative and humble naturalist, at Pench. With just



Merged toes of left hind limb due to no development of finger bones

Matriculate behind him, Laxmikant has 15 years of field expertise in rescue and rehabilitation of snakes, and other wild animals, and has explored almost all the major forests of Vidarbha. It was he who turned my curiosity about nature into actual field studies.

Amphibians have been on this planet ever since the dinosaurs. They have survived approximately 350 million years of harsh geological, climatic, and biological changes. They live in varied habitats like wetlands, forests, agricultural landscapes, cities, and deserts. They provide lots of free services to the ecosystem like controlling diseases and organisms that are considered as pests by humans, for example, controlling malaria, especially in tropical countries.

Since 1990s, many reports have been published on the widespread increase in developmental abnormalities in amphibians. Investigations in California, Iowa, Kansas, Missouri, New York, Oregon, Texas, Vermont, and Quebec have found as many as 60 per cent of some frog and salamander species with abnormal limbs, digits, or eyes. It was in 1995, that amateur school students found numerous malformed frogs during a field trip to a Minnesota pond. Deformities among natural amphibian populations have raised concern about the state of the environment and the possible impact of the unidentified causative agents on the health of wildlife and humans.

In toads, reports of widely occurring deformities have been scarce. Correspondingly, developmental abnormalities in wild specimens of the Indian Common Toad *Duttaphrynus melanostictus* have never been reported previously from India or other areas of South-east Asia.

The specimen recovered by Laxmikant showed two major abnormalities. Both deformities were confined to the left side of the body, that is, the left hind limb and the left eye. After taking a few photographs, we took the morphometrical measurements. It was an adult specimen weighing 17 gm with snout-vent length of 70 mm. To learn about possible internal malformations we took a radiograph. The doctors managed to give us a satisfactory image, and we could record only two malformations.

Brachydactyly of the left hind limb: brachydactyly refers to disproportionately short or reduced toes. In brachydactyly, normal numbers of metatarsal bones are present, but the numbers of phalanges are reduced. Careful observation of the toad and radiograph showed that the first toe on the left limb was normal, but the remaining four toes had merged, with no visible development of phalanges.

Micro-ophthalmia of left eye: Micro-ophthalmia refers to a smaller eye, compared to normal. The left eye of this specimen was proportionately smaller and the smaller orbit is distinctly visible from inside the mouth. The left eye also showed two other eye-related deformities. Firstly, the iris of this left eye is noticeably absent. Secondly, there were other pupil irregularities, as well as presence of multiple white and green streaks within the pupil-iris region.

Amphibians are the best bioindicators of environmental



Smaller left orbit of the eye is visible from inside the roof of the mouth

health. They are highly sensitive to variations in environmental factors because of their dual life cycle, which includes both aquatic and terrestrial environments. Their permeable skin can absorb a variety of noxious substances released due to anthropogenic disturbances, having detrimental effects. Rampant use of insecticides, herbicides and fertilizers in agriculture, together with obnoxious toxins dumped by industries are likely suspects. A number of synthetic chemicals have been detected to disrupt endocrine hormone functions disturbing the normal growth and development of many species. The thinning of ozone layer in the stratosphere is known to cause damage to eggs and tadpoles of amphibians.

The eggs and tadpoles of amphibians are also affected due to the passage of parasites and pathogens from exotic species, such as molluscs and fishes in the wild. Wetlands and forests around the world are decreasing leading to habitat loss and degradation. Even today, these poor animals are over collected for food, biological supply houses and for international trade.

Could this be a single case or sign of a widespread problem? What could be causing these disorders? Parasites, introduced species, habitat loss, sudden climatic change, chemicals or acid rain? We had no answers. There was no obvious single common cause of these deformities.

'You see, Nagpur is an agriculture-intensive area and farmers from this area rampantly use various kinds of pesticides' informed Laxmikant. Surface run-offs from agricultural field sprayed with the pesticides may cause amphibian deformities.

'Interesting, but we must have strong statistical data to prove this', said I.

Deformity oriented monitoring programs should be designed at local levels to find the range, frequency, character and causes of anuran malformations. Right now we are not in a position to explain the reason behind these deformities. The only thing we are certain and can do is to conserve the native habitat of these animals and bring to notice this silent story of these amphibians. ■



Rajshekhar V. Hippargi is at present a lecturer at the Department of Zoology, Walchand College of Arts and Science, Solapur.



Loke Wan Tho, an excellent photographer, was a lover of nature and wildlife and was particularly interested in birds. This book has a comprehensive collection of black and white photographs which have been shot with a film camera. The book also includes extracts from Loke's diaries containing illuminating details of his trips.



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Bagagahana – the hidden paradise of Bhitarkanika



Asian Openbill Stork is a broad-winged soaring bird, which relies on moving between thermals of hot air for sustained flight

Text and Photographs: Gopi G.V.

What a spectacular sight that would be! Those were my first thoughts when I read about this heronry a few years back. The hidden jewel of Bhitarkanika called *Bagagahana* in Oriya, which means *Abode of Birds*, is one of the least known massive heronries. The Orissa Forest Department has been conducting regular census from early 1990s, since the existence of this heronry was realised. A study conducted by Dr. Subramanya on Indian heronries revealed Bhitarkanika heronry to be one of India's largest and oldest heronries.

This massive heronry hosts the colonial nesting of eleven species of resident water birds. It is almost

unbelievable that more than 30,000 birds breed every year in this heronry, which is a single unbroken patch with an approximate area of less than 5 ha. situated in the Bhitarkanika National Park. It is saucer shaped with small, short trees in the middle, and tall and stout *Heritiera fomes* trees in the periphery. The breeding birds in this mixed species colony in order of abundance are Asian Openbill, Large Egret, Intermediate Egret, Little Egret, Cattle Egret, Grey Heron, Purple Heron, Black-crowned Night Heron, Little Cormorant, Darter, and Black-headed Ibis. The birds use five species of mangrove trees and its associates for nesting, these include *Excoecaria agallocha*, *Heritiera fomes*, *Cynometra iripa*,

Hibiscus tiliaceus and *Tamarix troupii*. To a layman, it might seem wonderful yet confusing that so many birds of so many species breed in such a small area of the Park. Is there no other suitable place in the National Park for the birds to be more comfortable? The fact is that it is not the lack of suitable area in the Park that results in this massive congregation, but these birds find security in numbers. Whenever a bird of prey flies low over the heronry to rob a nest, all adults jointly create such a hullabaloo that the raptor even if not afraid of the birds would still leave them alone.

The availability of large number of nest trees in the mangrove forest, and foraging areas, which include the

wetlands and paddy fields, surrounding the forest are believed to be the factors favouring such large congregation of breeding water birds. In recent years, paddy fields in this area are rapidly being converted to shrimp ponds, reducing the foraging areas available for the breeding birds. It was, therefore, imperative to gather information on this heronry and take proper measures in response to concurrent changes in the surrounding ecosystem. Hence, the Wildlife Institute of India, in collaboration with the Orissa Forest Department, initiated a project in 2003 for a period of three years.

In early May 2004, after all the administrative formalities of permits and logistics were completed, our team comprising Dr. Bivash Pandav (WII), Dr. S.K. Kar (Orissa Forest Department) and I camped in Bhitarkanika to spend the next couple of breeding seasons to collect field data. We waited fervently for the South-west monsoon to hit Orissa, as we knew the breeding of the colonial water birds coincides with the onset of the monsoons. The South-west monsoon spans from June to September in Orissa. The monsoon not only has a profound effect on the local economy in this region, but also plays a pivotal role in sustaining plant and animal life in all its diversity. The coincidence of the breeding season with monsoon may be because with the onset of rains life flourishes. The major prey base for aquatic birds namely fish, shrimp, crabs, mudskippers, and aquatic insects, are seen in larger quantity.

In 2005, the monsoon was delayed and this worried our team a lot. We knew the consequences could be drastic if the rains failed as there have been records of instances of abandoning of nesting altogether. We were in nail biting tension, and at last

the heavens broke open on June 25, 2005. We were on "Chellam" – our country boat – rowing in the Bhitarkanika main river when the thunderclouds burst and the first showers of the year announced the arrival of the life-giving monsoon. We started early next day, the routine of visiting the heronry daily to study the settlement patterns. And like clockwork, in no less than two days the birds were there.



Purple Heron are crepuscular; appear during twilight

Darters are always the first to arrive and that year also they did not break the tradition as they were observed on June 27, which was almost a month later than in 2004. As the darters do not have the same mate each year, they start choosing nests and partners in the peripheral *Heritiera fomes* trees. In one morning, 18 darters and 35 large egrets' nests were observed in the heronry's 70 nests.

By the first week of July, the birds with apparent breeding plumage, were busy building nests. At least 500-1000

nests appeared in 10 days time. Plenty of squawking noises could be heard indicating disputes over nesting area, or if the space between nests was too less. Several nests were entirely dismantled, probably for renovation or for others to come up. Observing courtship behaviours, such as the full extension of necks straight upwards, 'clacking' of bills and preening each others feathers were a visual treat. And by the second week of July, there were more stork, heron, egrets, cormorant nests, and the numbers were approximately 5000 nests in 3000 trees.

All throughout the Heronry we could see thousands of birds busy romancing, nest building, renovating, laying, and incubating eggs from the watch tower, and observing all this one feels overwhelmed. Amidst all this action, I found an eggshell that appeared old and blemished under a *Heritiera* tree, and in excitement, I wished, 'Happy Birthday!'. A darter chick was first observed in the Heronry on 31st July. I saw my first live chicks, fuzzy heads bobbing and weaving in the nest and my joy knew no bounds. Hundreds of other herons, storks were still incubating eggs. The day-old chicks weighed about 15-50 gm and ranged from the size of a child fist (Little Cormorant) to an adult fist (Grey Heron). The chicks hatch and cannot maintain their own body temperature for the first three weeks of their lives; therefore, one of their parents have to be at the nest constantly. Once most of eggs had hatched, the annual heronry census was carried out during last week of August. A total count of nest trees and number of nests carried out in the second fortnight of August 2005 revealed the presence of 11,249 nests on 3,237 nest trees slightly lower than August 2004 census which revealed 13,704 nests in 3839 trees!

The young chicks, as always is the case with young chicks, could be heard demanding food by making begging bouts. Both parents share the duty of caring for the young. They catch, digest and then regurgitate the fish based diet for their chicks. The majority of the chick's diet consists of small fish, aquatic insects, larvae, tadpole, small fish and freshwater crustaceans except for Asian Openbill Storks. Asian Openbill Storks are selective feeders; they completely feed on Apple Snails *Pila globosa*. In large heronries, it is not uncommon that siblings push each other out of the nest when it comes to competing for food or otherwise. Feeding the chicks is a full-time job for both parents. The highest number of chicks observed in a single nest was six, in an Asian Openbill Stork's nest.

The chicks grow the most between 10 and 40 days of age. At the same time, chicks continue to hatch daily and eggs were still being incubated. There were many signs of life in the colony and I was finding broken shells under trees every day. There were signs of death too; predation was high and animals such as Water Monitor Lizards, Jungle Crows, Striped Hyenas, White-bellied Sea Eagle, Greater and Lesser Spotted Eagle and even crocodiles were frequent visitors. Hyenas and crocodiles don't actively predate on the nests, they feed on the fallen chicks and injured individuals. However, the most destructive of all are the Water Monitor Lizards and the Jungle Crows. I have seen several instances of the monitor lizards climbing the tree and swallowing Grey Heron, Large Egret, Openbill Stork eggs and dismantling the entire nests in which they feed.

Late October, and the first farewells had taken place! At least a dozen darter chicks had fledged and left the heronry for independent life,



Bhitarkanika Heronry in its full glory!

and were now relying on their own hunting instincts and skills for survival. There were many more chicks that were in the less than graceful phase of learning to fly. Chicks could be seen undertaking short flights, from tree to tree, and on longer trips around the immediate area. Though the heronry was still very active, there were many more outgoing flights than incoming ones after December. More juvenile birds of the heronry were spotted at many locations around the heronry. They had started leading their own lives, finding food and learning to escape from potent predators. By last week of January the entire heronry was empty. The cycle would start all over again when the birds will be back during the next monsoon.

There are a few worries for this heronry that would surface in the long run. The Asian Openbill, which is a predominant nester among the breeding birds of the heronry, feeds nearly exclusively on molluscs *Pila globosa*, obtained from the agricultural fields surrounding the Park. Paddy fields are increasingly being converted into aquaculture farms in around the

Bhitarkanika Wildlife Sanctuary. A total of 674 aquaculture farms (793.45 acres) were located along the peripheral region of the National Park alone. This illegal conversion of coastal wetlands will result in loss of foraging grounds for Asian Openbills. This, in future, may affect the breeding behaviour of these birds in the heronry and may be detrimental for the survival of the Asian Openbills in the long run. The dependence of this species on restricted nesting sites makes the sites critical to conservation. The loss of this species and many others in its wake may lead to the loss of this beautiful heronry, which I believe we cannot afford.

After all, this incredible canvas of life which is away from human eyes has a beauty still not marred by negative activities. Let us hope to keep it that way!! Long Live *Bagagahana*, the Abode of birds!!! ■



The study on the Bhitarkanika heronry is part of Gopi G.V.'s doctoral work. Currently, he is a Scientist, at Department of Endangered Species Management, Wildlife Institute of India

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POINT CALIMERE SANCTUARY:

Forty years thereafter...



Text: J.C. Daniel

The Society's association with Point Calimere Wildlife Sanctuary in the Nagapattinam district of Tamil Nadu dates back to the time when Dr. Sálím Ali, accompanied by the State Chief Wildlife Warden, spent a week in November 1962, assessing its potential as a wildfowl refuge. In the process and with the assistance of the Wildlife Warden, 120 waders were trapped and ringed. Extraordinarily enough one of the Marsh Sandpipers *Tringa stagnatilis* ringed on November 12, 1962 by Dr. Sálím Ali was recovered near Kupino in the then USSR on May 4, 1963, approximately 5000 km north of Point Calimere. Since then, Point Calimere has an established name as a bird banding centre, especially for the smaller waders.

My association with Point Calimere started about forty years ago, when I did the first census of the isolated population of Blackbuck that inhabited the Sanctuary. An animal with unusual attributes, namely the only two species of the genus *Antelope* in India. It is the fastest animal in India, which once roamed in the thousands on the plains now survives in isolated pockets.

The Red-vented Bulbul and the White-browed Bulbul are both common in scrub jungles and are also sighted in gardens and compounds

Nature Watch

Point Calimere used to be the end station in a rail laid in 1936, but was considered uneconomical and removed in 1982. The rail bed is now an excellent 'bird walk' with forest on both sides till it reaches the salt pans. There was a passenger train to Calimere. The station was about 200 yards from the Forest Rest House, which was built by a private individual Thambuswamy in 1910, and handed over to the Government for officers to relax. Hence, the name – '*Thambuswamy Illam*' meaning Thambuswamy House. The only improvement in over 90 years is the addition of a massive portico destroying the frontage. There must have been a fair amount of money floating around waiting to be fished out, hence the unnecessary portico.

The forecourt of the Bungalow had groves of *Portia* or *Thespesia* trees forming a green foreground for the sea view from the Bungalow. Brahminy kites in some numbers used to use them as daytime as well as night time roosts. Some were banded and Dr. Balachandran, our bird banding expert, recovered one further down the coast at Rameswaram. The *Thespesia* trees were wiped out when the portico was built and the forest department has gone for topiary and has created some odd animals.

You walked about 200 yards from the station to the Rest House to be welcomed with a hot cup of coffee by the watchman cum cook. The facility does not exist now. If you want tea you will need a vassal with a vessel to collect it from dilapidated tea shops on the main road, which also provides



MOHANRAM KEMPARAJU

One can see a congregation of waders at Point Calimere Wildlife Sanctuary

you with the staple food of idlies as it had done forty years before. I and the Ranger planned our census strategy for the next morning while the family walked the beach and returned as the distant lighthouse came to life. The night was peaceful with the surf breaking on the beach in the distance till a frightened cow in the compound and my frightened three year old daughter bawled at each other. The first census gave a figure of 659 counted and 750 estimated. Since then, many censuses have been done and quite often cantankerously. I believe there is an annual departmental census that is conducted. The forest was full of birds. Sixty seven non-migrant resident and breeding species have been recorded. The species you heard most persistently was the White-browed Bulbul. One associated it with the Sanctuary.

What is tragic is that you hardly ever hear it now and even other resident birds of the sixty seven species that were recorded are hardly

The Black-tailed Godwit forages by probing on mudflats or in marshes, and may pick up insects by sight



MOHANRAM KEMPARAJU



MOHANRAM KEMPARAJU

The horns of the Blackbuck are ringed with 1 to 4 turns, rarely more than 4 turns, and can be as long as 28 inches

ever seen. The Sanctuary seems to have been used as a dumping ground for Bonnet Macaques, which had made themselves a nuisance elsewhere. Notorious nest robbers, they seem to have eliminated resident bird species by robbing the nest of eggs and young. The forest seems to have become denser probably from severe *Prosopis* incursion and the Great Vedaranyam Swamp, the main stay for the wintering hordes of migrant waders, ducks and flamingos and a Ramsar site is being eyed by the ONGC for oil exploration.

In spite of all these threats we remain optimistic. We have started a Bird Migration Study Centre under the able leadership of Dr. S. Balachandran, our bird migration study expert, who with the assistance of some of our influential members found the funds for the construction of the Centre. The Centre will be in operation from the end of 2008.

It is crucial that we have the Centre in operation to keep track of the effects of global warming. A large number of species wintering at Point Calimere breed within the Arctic Circle and we would have an idea of the Global Warming Effect on the ground where the birds breed from the breeding success as indicated by the presence of first year birds seen at Point Calimere. The situation is grave and critical and the Bird Banding Centre would help us to keep a hand on the pulse of change.

We look forward to support from the members for running the Centre as they have supported several endeavours of the Society in the past. ■



J.C. Daniel has an open ended association with the BNHS which started in 1950. Presently he is the Honorary Secretary.

We are grateful to
RISHAD NAOROJI
for a generous donation to the
Kekoo Naoroji Memorial Fund
to support the publication of *Hornbill*



White Storks lack voice muscles and the only sound they produce is the loud clattering of the beaks during the breeding season

Stork Festival at Turkey's Uluabat Lake

Text and Photographs: Diana Singh Roy

Even the bravest can be intimidated by a full grown stork, but the migrating ones nesting close to Turkey's Uluabat Lake were just too absorbed in feeding their chicks to offer any threat. I was fortunate to get close to these nesting birds on a recent visit to Turkey, and was included in the festivities of the Fourth International Stork Festival at Uluabat. This time the Festival also celebrated the inauguration of a centre designed for bird watchers offering accommodation, a library and observation tower, and other facilities.

The large 135 sq. km Uluabat lake is in the north-western part of Turkey in Bursa district. On the day of the Festival, Sunday, May 25, 2008 Uluabat was calm and beautiful, surrounded by tree and grass covered slopes. There is little human habitation, in spite of there being twenty-five villages, on the lakeside. The village hosting the Stork Festival, Eskikaraagac, has the largest number of residents, about three thousand people.

The Uluabat lake is fairly shallow with a maximum depth of 10 m, the average depth being about 2.5 m. It is home to twenty-one different kinds of fish and attracts as many as eighty-five varieties of birds. This lake is an important breeding, nesting and wintering area for water birds and it must be Uluabat's rich fish stock and peaceful surroundings that attract so many birds.

The storks start coming in March, migrating from far off places, including Siberia, and fly down as far as South Africa; the longest distance being about 12,000 km. One hundred and twenty-five storks arrived this year and by May three hundred chicks had been spotted. The storks nest in all twenty-five villages around the lake; Eskikaraagac had some

fourteen nests. The storks remain around Uluabat for about six or seven months and by then the chicks are developed and can fly.

The Festival was a fun event for Uluabat's villagers and those from nearby areas. There were food stalls, women making Turkish *rotis* and others selling preserves, clothing and souvenirs, including wooden stork string puppets that can be made to flap their wings. Storks were, of course, the main attraction. The walls of Eskikaraagac sported paintings of large White Storks and there were nesting storks all around the village, perched on specially made circular wooden platforms on top of wooden electric poles. The village mosque also had a nesting site nearby.

At the Ramsar Convention in 1971, UNESCO agreed to aid wetland protection projects. Turkey was a signatory in 1993 and Lake Uluabat was announced a Ramsar site in 1998. As a Ramsar site, the lake needed to be managed by a special management plan. This was prepared by the Turkish Ministry for Environment and the Society for the Conservation of Natural Life, now the Turkish representative of World Wide Fund (WWF). During the preparations for the management plan WWF-Turkey conducted several surveys.

Power lines can kill

Prof. Dr. Ismet Arici and his wife Franziska have been key players in local stork protection. In 1983, when they moved to Bursa there were many storks, but when Franziska took part in a 'Breeding Bird Survey' in 2003 she noticed that the population had decreased drastically. In the interim, power lines had been introduced. Storks perched and built nests on uninsulated transformers and poles, and collided with power lines, causing blackouts and fires, and high repair costs for the local electricity company. Every year dozens of storks died.

The company destroyed the stork nests on poles and transformers, but the storks continued to collide with wires and their number kept dropping.

Providing nesting platforms was part of the management plan, but nobody had the time or money to put up the number required.

Franziska said, "After my husband and I became members of the Steering Committee for the Lake's management plan in autumn 2003, I voluntarily took over this activity. It was clear from the beginning, that only installation of nesting platforms wouldn't be sufficient to stop further decrease of the stork numbers. So I developed a more detailed project called 'Stork friendly villages around Lake Uluabat', which was accepted by the Steering Committee."

Up to date the Project has facilitated the insulation of low voltage power lines in ten villages and the transfer of stork nests to about 100 safe platforms. In the villages, stork losses have almost ceased, and villagers have a stronger and safer power system. In order to raise the environmental awareness of the local people, University student birding groups conduct environmental education in village



Stork nesting tray secured to electricity pole near Uluabat lake, Turkey



The 135 sq. km Uluabat Golu (lake) around which the villages are situated



Village market during Stork Festival, Uluabat lake



Painted representations of the storks during the Stork Festival

schools. Today, children observe and count the storks in their villages and call for help when storks get injured.

Improving the water

The Lake had been showing signs of pollution from human habitation. Concerned committee members spearheaded action and brought it to the attention of the Government and other bodies. In fact, on May 24, 2005, a day before the Festival, there had been a workshop on water pollution and related topics, which was attended by representatives of WWF, government and other local bodies. Today, the waste water of Eskikaraagac's houses is collected by canalisation and pumped into

a sedimentation tank. From there the fluid goes into treatment beds consisting of gravel spread on thick plastic, where it is naturally cleaned by local plants, in this case – reeds. The more or less clean water flows back into the Lake. The reeds make an excellent breeding place for song birds. People have been made aware of the necessity to clean up the Lake and protect bird life for everyone's good.

The Festival has proved to be a good way to bring people together, inform them about the storks and their problems, get more support for further conservation work and provide an additional income source for villagers. The new centre, which has been sponsored by Bosch (Turkey), will be run by the Managing Committee and the villagers. It is likely to attract many groups, including school children, all wanting to experience Uluabat's attractions for themselves.

Slowly people are becoming proud of the storks and are starting to protect them. The villagers, storks and bird watchers should all benefit. ■



Diana Singh Roy is a writer by profession. Voluntary work has included newsletters for the Friends of the Trees and the Bombay SPCA where she is now involved in donkey rescue and re-homing.

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Text and photographs: Rushikesh Chavan

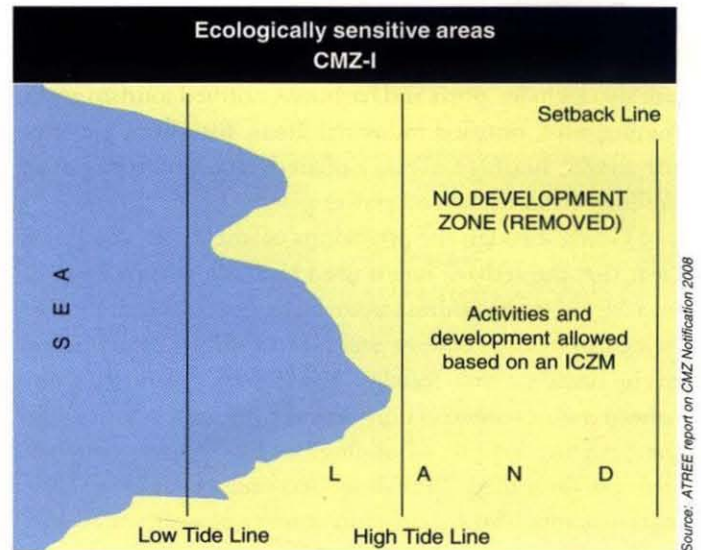
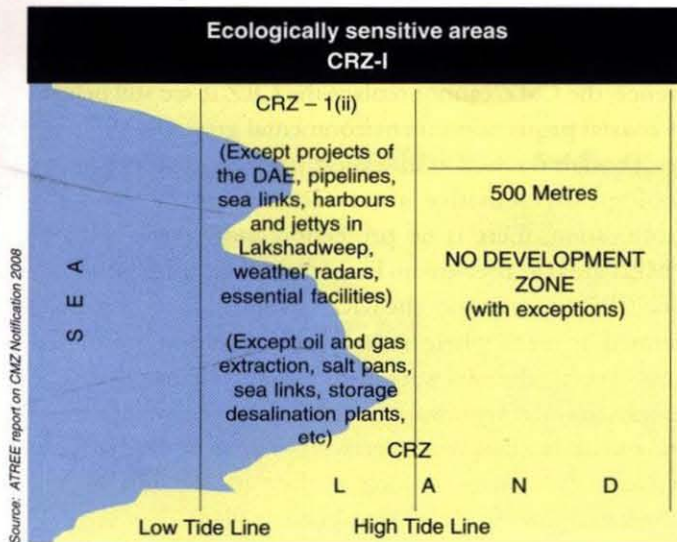
The Indian coastline stretches about 7,500 km, including the two island territories, and exhibits most of the known geomorphological features of coastal zones. Presently, the Indian coastline is facing grave problems, to the extent that India has been identified as one amongst the twenty seven countries that are most vulnerable to the impacts of global warming related accelerated sea level rise (UNEP, 1989). The high degree of vulnerability of the Indian coast can be mainly attributed to extensive low-lying coastal area, high population density along the coast, frequent occurrence of cyclones and storms, high rate of environmental degradation along the coast on account of pollution and non-sustainable development.

Sea level rise is likely to result in loss of land; as the sea intrudes land, coastal areas will get submerged, saline waters will enter the rivers and ground water contaminating potable water supplies. These factors will have wide economic, cultural and ecological repercussions. Observations suggest that the sea level has risen at a rate of 2.5 mm per year along the Indian coastline since 1950s. A mean sea level rise of between 15 and 38 cm is projected by around 2050 along India's coast. Besides a 15% projected increase in intensity of tropical cyclones, which would significantly enhance the

vulnerability of populations living in cyclone prone coastal regions of India. Most individuals residing in coastal zones are directly dependent on natural resource bases of coastal ecosystems and global warming-induced climatic change will affect them severely.

Given that many climate change impacts on India's coastal zone feature irreversible effects, an appropriate national policy should be adopted to enhance the resilience and adaptation potential of these areas. There are a few laws and notifications that help protect the coastal ecosystems of India, such as Wildlife (Protection) Act, Environmental Protection Act, the Coastal Regulation Zone notification (CRZ). Under the CRZ, which specifically looks at coastal issues, are four categories – CRZ I, CRZ II, CRZ III, CRZ IV – for management and regulation.

The CRZ has been, by far, the most effective notification for protection of the Indian coast. However, over the past 17 years a number of dilutions have been made to the notification. In fact, there is a motion to scrap the notification and replace it with the Coastal Management Zone (CMZ), which also proposes to have four categories – CMZ I, CMZ II, CMZ III, CMZ IV. The draft of the notification was made available to the people of India and



suggestions were sought by the Ministry of Environment and Forests before July 9, 2008. BNHS examined the draft and found with great dismay that the new CMZ draft notification issued by the Ministry does not help to protect and conserve our coast.

It abuses the idea of human vulnerability

Activities on the coast, according to this notification, will be determined by a setback line that is based on vulnerability. The setback line is a concept for which a scientific methodology is not clarified; instead some basic parameters are listed. This line is supposed to be based on vulnerability, which includes both natural and man-made hazards. But all the parameters of vulnerability in the document relate to natural hazards only; man-made hazards find no mention. In fact, even here only four parameters – elevation, geomorphology, sea level trends, and horizontal shoreline displacement – are listed, as against the six that were contained in the draft of the Coastal Management Zone Notification that was prepared by the MoEF in 2007. The current notification is regressive when compared to the CRZ (a 1991 version), as it allows large scale development in all the zones. In the proposed notification, the management will be guided by the ‘setback line’, which replaces the 200 m and 500 m lines of the CRZ-1991 notification. The setback line is being preferred in the cases of housing and settlements of coastal communities, but not for other activities, such as tourism and recreation facilities that have the same if not greater vulnerability, owing to large public investments in them.

While the text of the CMZ notification only mentions the setback line, its Appendix V springs the provision, “no constructions shall be permitted on the seaward side of any existing (as on 2008) approved building or tarred or

surfaced road in the area”, which means we are once again using the CRZ II idea of using existing “approved” structures as the boundary for activities rather than a scientifically drawn setback line. The setback line in CMZ II is just a guideline for the development of ‘Integrated Coastal Zone Management Plans’ (ICZMPs). The setback line concept is diluted and becomes a “hazard” or “vulnerability” line.

Hence, it is foolhardy to base all regulation on the setback line before even mapping one stretch of the coast and demonstrating the use of the setback line to the coastal population and other stakeholders. It is also to be noted that the use of two setback lines (200 m and 500 m) under the CRZ regime is more pragmatic and recognises that one needs a graded response to coastal protection, while the CMZ seems to depend entirely on one ‘magic line’ that is supposed to solve all problems.

There is no mechanism of transparency, accountability and participation when drawing up the setback line. There is no indication if this setback line will be constant or dynamic. A realistic time frame to map the same has also not been provided.

Fisher communities will continue to lose their space

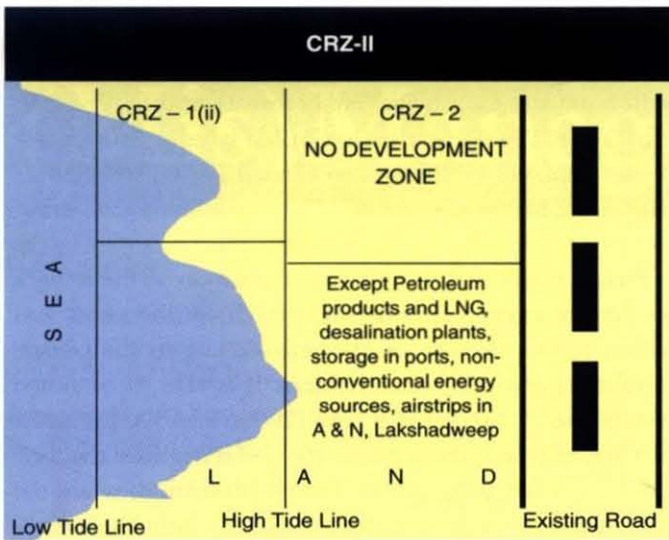
Another striking difference between the CMZ draft and the existing CRZ notifications is that whilst the rights of traditional fisher folk are protected under CRZ III, this is missing in the CMZ draft. The manner in which the CMZ draft is worded will actually result in less protection to traditional fisher folk.

CRZ II (with the least restrictions) was intended only to cover urban areas that are already developed, but the new CMZ II covers “Areas of particular concern” that has been enunciated in the previous drafts of this notification. CMZ II is to include all panchayats with population densities

Conservation Notes

of 400 individuals per sq. km or more in addition to the urban areas that came under CRZ II. Moreover, CMZ II will also include: ports and harbours, notified tourism areas, mining sites, notified industrial areas, foreshore facilities for SEZs, heritage areas, notified archaeological sites, defence installations and power plants.

Going through the provisions of the Appendix V it is clear that the setback line is used to disallow expansion of housing or social infrastructure for coastal communities (which in most situations will mean fishing communities) in the name of vulnerability. But it does not prevent any other type of construction between the setback line and the “existing approved building” or road, close to the sea that can be called “foreshore requiring facility or basic infrastructure”. So, fishing communities, already under siege



Source: ATREE report on CMZ Notification 2008

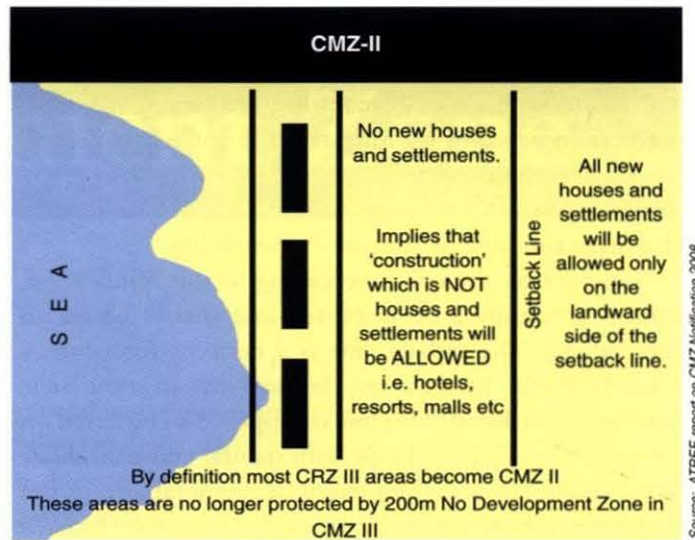
in the city areas (CRZ II), are now going to be squeezed out of all “areas of particular concern” that will be covered by CMZ II.

The notification has no protection and conservation measures

CRZ was essentially meant to protect the coast from environmental degradation while recognising that some provision had to be given for use of the coast for coastal and fishing communities and for activities that required foreshore access. On the other hand, CMZ does not seem to be about protecting the coast, and its environment and ecology, but about protecting the human interest and their assets. The setback lines under CRZ (200 m and 500 m) were intended to create a buffer zone to regulate activities close to shoreline for minimising the impact of shore based activities in degrading the coastal ecosystems and to reserve a zone close to the shoreline for fishery and other activities

which require shorefront facilities. However, the setback line under the CMZ regime will only act as a hazard line. Hence, the CMZ cannot replace the CRZ if we still believe in coastal protection on environmental grounds.

Though the new notification has expanded the list of ecologically sensitive areas from those in the CRZ Notification, there is no protection and conservation of CMZ I areas as they are no longer ‘no development zones’. The CRZ I areas under the CRZ Notification were initially defined as areas where no activities would be permitted until several dilutions were introduced to change that. The proposed CMZ Notification builds on this regressive trend and establishes that various activities will be allowed in these sensitive ecosystems as long as they are recorded in the Integrated Coastal Zone Management Plans.



Source: ATREE report on CMZ Notification 2008

The definition, criteria, guidelines, methodology and scope of such Integrated Coastal Zone Management Plans (ICZMPs) are not elaborated in the notification and neither are there any rules or parameters for defining who should prepare the ICZMPs. The CRZ Notification, 1991, provided a clear regulation for preparing a CZMP, which was ignored by all state governments, on the other hand, the CMZ notification refers to an ‘ICZMP’ which has no deadline for completion. All clear restrictions are now replaced by broad and obscure guidelines incomprehensible to common coastal and fisher people – largest stakeholders and custodians of our coastal resources – making it more difficult for them to intervene or play a role here.

No sanctity of the law from repeated amendments

After the experience of 19 amendments within a period of 18 years, wherein 16 were brought in without any public comment and on the basis of recommendations of



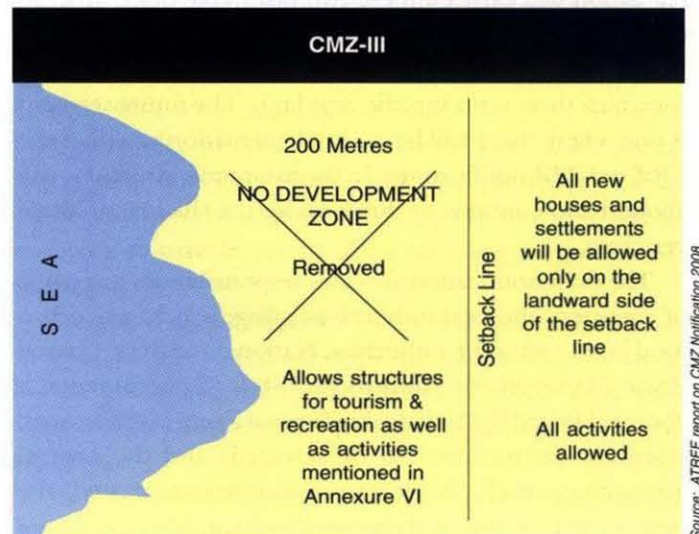
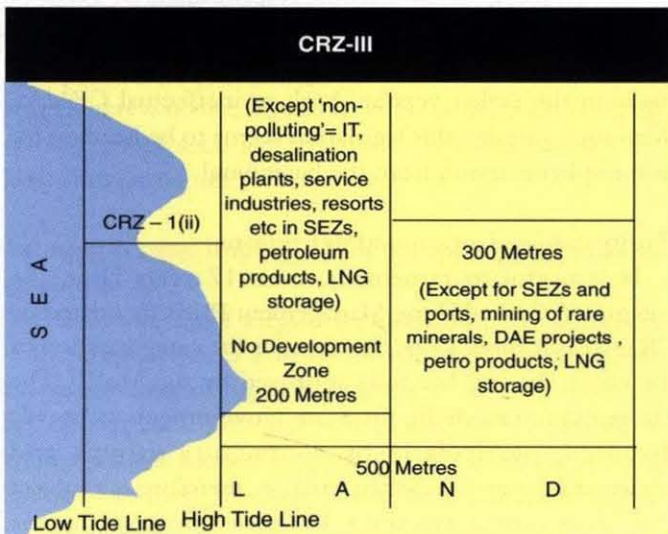
It is important to have detailed scientific methods to declare the setback line

committees specifically set up to foster investment through tourism, large scale urban housing projects, and industrial activities, the Ministry's commitment to transparent and participatory processes gets diluted. The process of formulation of the draft CMZ Notification and an amendment to this draft even before it is made public, only confirms that whatever be the law, the developmental pressures are dominant.

Implementation and monitoring difficulties will continue

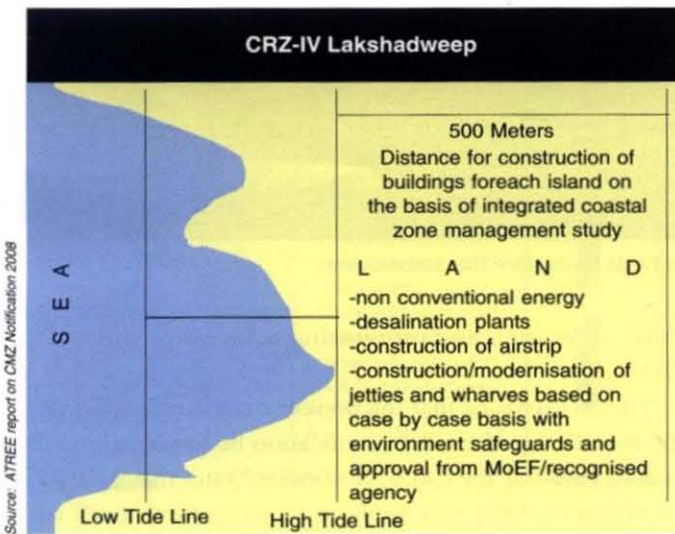
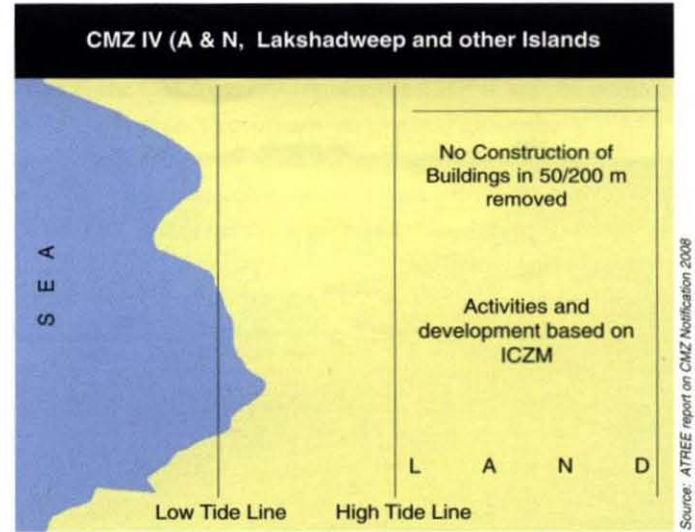
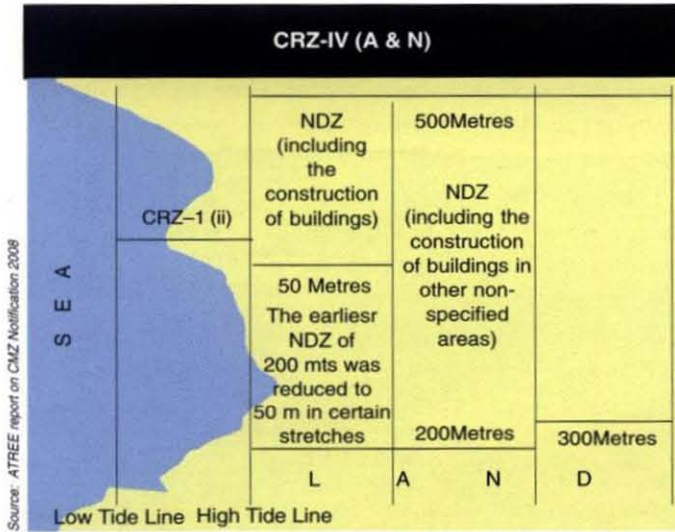
The fact remains that the present draft notification will still require that the CRZ Notification be implemented in totality. Para 7 of the CMZ Notification states that the CRZ Notification, 1991 will apply until the setback lines are notified, and until the Integrated Coastal Zone Management Plans are approved by the MoEF. But what happens in

Source: ATREE report on CMZ Notification 2008



Source: ATREE report on CMZ Notification 2008

Conservation Notes



practice is that absolutely no coastal management or regulation will exist till these two tasks take place. Instead there will be a mad scramble to build and violate the CRZ Notification till the setback lines and ICZMPs are notified for which there is no specific time limit. The future scenario is one where there will be no implementation of either the CRZ or CMZ notifications. In the meantime, violations will abound and continue to thrive under the shadow of these very laws.

The draft notification allocates responsibilities to a range of agencies – the local authorities – village panchayats, urban local bodies or other authorities, National and State Coastal Zone Management Authorities, State Governments, a National Board for Sustainable Coastal Zone Management, scientific institutions (to be selected) and the central government itself. While responsibilities are vested, the process of how they will execute this is not outlined. There

is also no mention of an appellate system for disputes related to decisions taken by these authorities.

The proposed CMZ Notification sets itself apart from the CRZ Notification in that it contains absolutely no monitoring mechanism, except for stating that the State Coastal Zone Management Authorities (SCZMAs) are responsible for monitoring the ICZMPs. These Coastal Zone Management Authorities (CZMAs) are also expected to determine the activities to be allowed based on an ICZMP for CMZ IV areas. The National CZMA is also supposed to monitor the implementation of the ICZMPs, but without any indication of how.

There are absolutely no procedures laid out for the clearance of projects and no system outlined for monitoring the clearances given under this notification. On this count, the proposed notification is no improvement over the CRZ Notification. The only thinking that the Ministry has done on this subject is to shift the responsibility of grant of clearances from the unknown State Environmental Impact Assessment Authorities (SEIAAs) – a recommendation made in the earlier version, back to ineffectual CZMAs. With such a design this legislation seems to be heading for non-implementation from the beginning!

Faulty categorisation and definitions

It is useful to remember, even 17 years later, the Integrated Coastal Zone Management Plans mandated by CRZ Notification, 1991, that records the categorisation of the coast, are still not fully approved by the MoEF. The categorisation made by the State Governments is heavily disputed, particularly by community groups and environmental groups. Categorisation, therefore, is a subject that needs careful execution. In this notification, there is



The proposed CMZ will affect the fisher community the most

no process for the public to be involved in the categorisation of the coast.

One of the criticisms of the CRZ Notification was that it used terms that were not adequately defined. The CMZ notification does not do better in this respect. Important operational terms, such as those of habitats that will eventually be categorised into particular zones are left open. Without clear definitions, the CMZ I areas cannot be clearly identified or protected. The CMZ has also no proper definitions for the activities it permits and the ones that it prohibits in the CMZ I-IV areas. It also makes a blanket description of certain areas as Economically Important Areas. There is no list, anywhere, in the notification defining terms/phrases such as “foreshore requiring facility” or “basic infrastructure”.

Planning for and implementing an appropriate coastal legislation

The drawing up of a legislative mechanism for protection of the coast requires a firm commitment to transparent and participatory planning. So, while it is not our contention that coastal zone planning is irrelevant or impossible, it requires a more modest beginning and it is not something that one can make the basis of the current regulation for an entire coast. If the MoEF is serious about ICZMPs there

is nothing that prevents it from engaging in this without tampering with the existing CRZ regulations.

The CMZ notification seems to be a document that allows a number of new stakeholders to enter the coast while ignoring the claims of those who have been traditionally linked to the sea and have been the real owners and protectors of the coast. Proper coastal management in India mandates a balance between environmental protection, use by traditional inhabitants and the entry of new users of coastal resources. This balance is absent in the CMZ regime. It is an environmentally and socially unjust legislation and needs to be withdrawn immediately, and replaced with a meaningful and sincere attempt towards these principles for coastal protection. The MoEF must prioritise the concerns of the coastal people above all else and not risk becoming an agency that brokers away sensitive resources to private vested interests using the power of legislation.

We would suggest that the CRZ notification of February 19, 1991 be put into place with the additional provision that the area protected should extend to 500 m from the Highest High Tide Level (HHTL) or setback line, whichever is greater.

For the draft of the new CMZ Notification visit: [http://envfor.nic.in/legis/crz/so-1070\(e\).pdf](http://envfor.nic.in/legis/crz/so-1070(e).pdf) ■

Respite for Tigers from Human Dam

The proposed Human (pronounced Hooman) Dam is a major irrigation project slated for construction across the Human river in the Wainganga-Godavari basin, near Sirkada village in Sindewahi tehsil of Maharashtra State. The Human is a tributary of the Andhari river, which ultimately joins the Wainganga. The Irrigation Department of Maharashtra had prepared the project proposal for this dam for which it received administrative approval as far back as 1983. The Project involved diversion of 906.26 ha of forest land and therefore needed both forest and environmental clearances from the Ministry of Environment and Forests (MoEF). On the basis of this agreement, the project authorities agreed to the reduction of the total forest area to be submerged and the MoEF gave the site

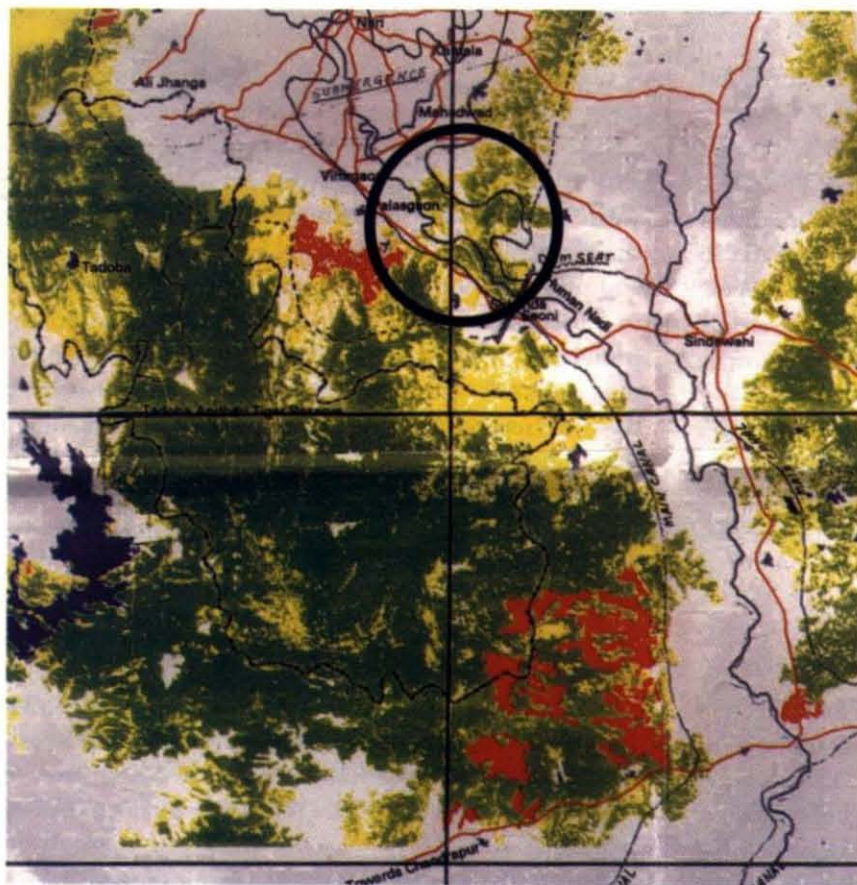
clearance to the Irrigation Department to enable it to conduct the required surveys and investigation. The BNHS, concerned about the drastic ecological impact on the tiger, conducted independent ecological and social impact studies of the Human Project. Looking at various irregularities and viability of the Project, a PIL was filed by the BNHS in the Supreme Court.

We at the BNHS have proposed the following alternative development options for the proposed catchment, submergence and command areas of the Human Project. These options may eliminate the need for such a destructive project by delivering comparable benefits to the local populace. All this at a fraction of the planned cost of the Human Dam, without the attendant ecological damage. Existing village tanks and ponds should



DEEPAK APTE

This forest is an important corridor for tigers



A satellite image showing the location of the proposed Human Dam

be de-silted to increase their storage capacity. Farmers should be provided economic assistance and technical know how to reduce distribution and evaporation losses. Existing lift and minor irrigation projects should be utilised to their fullest capacity. Dredging and de-silting operations and catchment area treatment should be undertaken to prevent siltation of existing reservoirs. A district-wide drive should be undertaken to identify sites for small check dams and water conservation structures. Such measures will provide employment, even as they enhance the water table and the water and food security of the region.

The Supreme Court has given an interim order "As regards Human River Project - it is noticed that it involved felling of very large number of trees and have serious environmental repercussions, therefore, for the time being this project as proposed is not cleared." It is encouraging that the court has for time being halted the project. However, one never knows when the threat may resurface. ■

BNHS 'PlantLife' Campaign in Mysore

In our continuing efforts to minimise the dangerous effects of global warming on Planet Earth, through our PlantLife Campaign (see *Hornbill*, July-September, 2007, pg. 48), on June 14, 2008, Mrs. Pheroza J. Godrej, Vice President, BNHS, joined a band of 40 enthusiastic staff members of HSBC to plant 500 saplings, most generously sponsored by the Bank. The site where the planting took place is in the plots specially allotted for this campaign by the Mysore Urban Development Authority (MUDA), in Mysore.

We had to be very selective about the species of trees that were planted on these treeless plots, because of the overhanging high tension cables; the indigenous variety chosen were: *Pongamia glabra*, *Lagerstroemia* sp., *Bauhinia* sp., *Cassia glauca* and *Bixa orellana*; also included was a non-indigenous species, the beautiful *Muntingia calaburra* – popularly known as Singapore Cherry, which appears to thrive in the Mysore region.

“Besides the joy I experienced hands-on, I was able to visualise a magnificent green canopy, buzzing with creatures of various shapes and sizes in a few years time”, exclaims Pheroza Godrej.



Mrs. Pheroza J. Godrej, Vice President, BNHS, planting a sapling

BNHS Members are invited to participate in this Campaign. Rs.750/- will take care of the cost of planting and nurturing one sapling, until it is able to survive on its own. ■

Monsoon Magic

Visiting wildlife during the life giving monsoon is an experience that is most enjoyable, beautiful and refreshing. To celebrate this drama of nature, Bombay Natural History Society organised a half-day interactive and educative programme called, 'Monsoon Magic' on July 20, 2008 at its Conservation Education Center, Mumbai. The programme was a combination of outdoor and indoor sessions for adults, as well as children. These included a walk in the wild and soaking-in nature's sights and sounds at its richest and grandest, and also, providing them with information about the monsoon flora and fauna. The participants were mesmerised by the experience which included the sighting of the *Karvi* buds.

This was followed by an illustrative talk on monsoon and a marathon series of interactive sessions covering topics as diverse as rainforests of India, mushrooms and insects. Also, a demonstration on rainwater harvesting



Dr. V. Shubhalaxmi, Centre Manager, interacts with the participants

educated the participants regarding the importance of water conservation. Children activities were also held in parallel, such as treasure hunt, quiz, film show and face painting. An informative programme kit comprising of education

material and souvenirs were provided to participants. The programme concluded with an interesting puppet show, which stressed the importance of water and raised concerns about water shortage and reasons for the same. ■

'Potential and Existing Ramsar Sites in India' released

At a brief function organised by the Bombay Natural History Society (BNHS) in New Delhi, the Vice President of India, Shri Mohd. Hamid Ansari, released the book 'POTENTIAL AND EXISTING RAMSAR SITES IN INDIA' on July 25, 2008. The book is authored by Dr. Asad R. Rahmani, Director, BNHS and Mr. M. Zafar-ul-Islam, currently with the National Wildlife Research Centre in Saudi Arabia. The President of the BNHS Shri B.G. Deshmukh, IAS (Retd.), presided over the function.

The book identifies and describes 160 wetlands in India that qualify for designation as 'Wetlands of International Importance' commonly known as 'Ramsar Sites'. As a contracting party to the Ramsar Convention, since 1981, India has designated a total of 25 Ramsar Sites. The authors believe that this small number does not represent even a fraction of the diversity of wetland habitats found in the country. The book also aims at representing all the biogeographic regions of India to provide a holistic



(L-R) Shri B.S. Parsheera, Additional Secretary, MoEF, Mr. B.G. Deshmukh, President, BNHS, Shri Mohd. Hamid Ansari, Vice President of India, Mrs. Pheroza J. Godrej, Vice President, BNHS, the authors Mr. Zafar-ul Islam and Dr. Asad R. Rahmani at the book release

approach to our wetland wealth. The data in the book assumes greater significance in the context of depletion of water resources and the potential impact of climate change on the water and ecological security of the country. Therefore, the authors call wetlands as 'liquid treasures' of the country.

The publication is targeted at decision-makers, conservationists and policy

makers in a bid to assist them in designating additional Ramsar Sites in the future. Each site is accompanied by a site description, avifauna, key fauna and conservation issues that would be of help to conservation managers and researchers as well. The publication was supported by BirdLife International and Royal Society for Protection of Birds (RSPB) and funded by MSPL Limited. ■

Chief of Army Staff visits BNHS

Through BNHS – Green Governance Programme the Society has developed strong bonds with the Indian Army. Since the Indian Army has the largest land holding and best proximity to wilderness areas it is natural that the Indian Army involves itself in protecting our natural wealth just as they protect our borders in a highly organised and disciplined manner.

The Indian Army has contributed greatly to the conservation of flora and fauna in the form of eco-battalions established exclusively to restore degraded habitats. They have also been in the forefront in protecting our threatened wildlife, such as the Black-necked Crane and Tibetan Antelope in Ladakh or the

Hangul in Dachigam. They have made significant contributions to conservation of wildlife by adopting a clean technology through harvesting solar energy in Ladakh, water conservation and habitat restoration.

To further strengthen the bond between the Armed Forces and the BNHS, the Chief of Army Staff, Gen. Deepak Kapoor, PVSM, AVSM, SM, VSM, ADC visited BNHS on July 18, 2008. The program began with condolences to Field Marshal Manekshaw and was followed by an introduction of the General by Major Arun Phatak.

Gen. Kapoor in his speech reiterated the support of the Indian Army to protect wildlife and took an overview of various environmental conservation



Gen. Deepak Kapoor, PVSM, AVSM, SM, VSM, ADC

activities undertaken by various units and commands of the Army. The other dignitaries that accompanied Gen. Kapoor were Lt. Gen. Thamburaj, SM, GoC-in-C, Southern Command, Maj. Gen. R.K. Hooda, Maj. Gen. S.P. Rai, Air Vice Marshal M. Matheswaran, VM. ■

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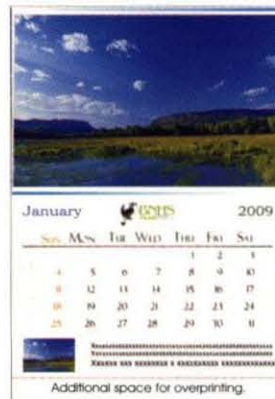
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