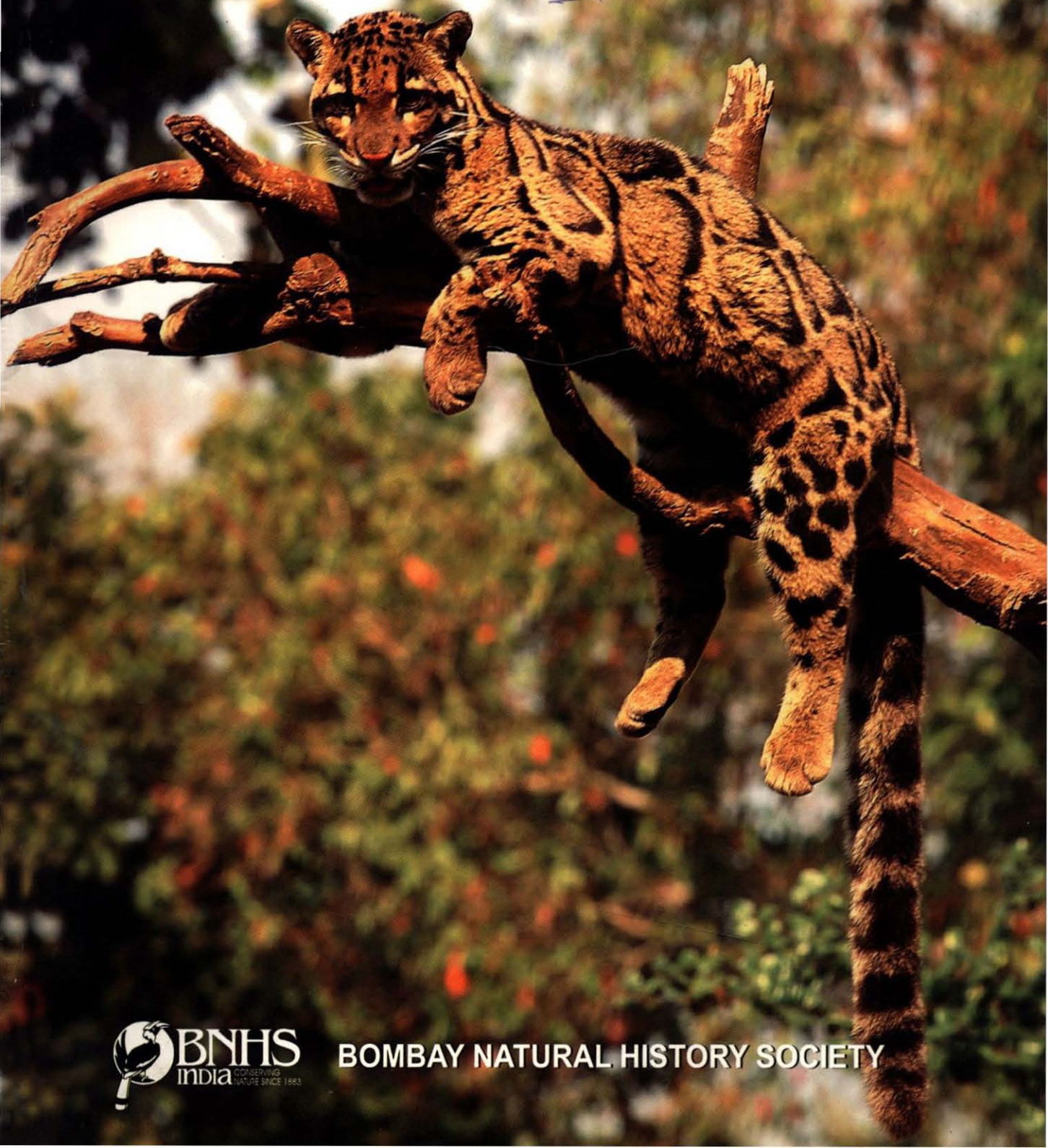


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DISCOVER THE LIVING WORLD

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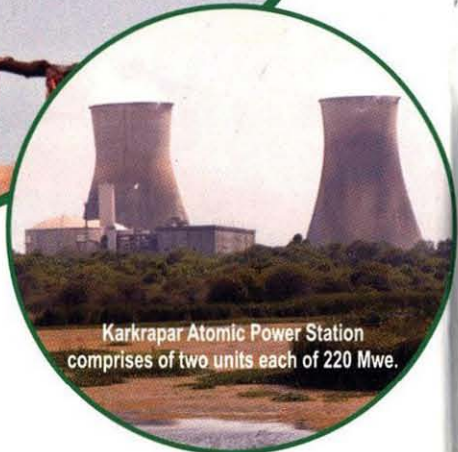
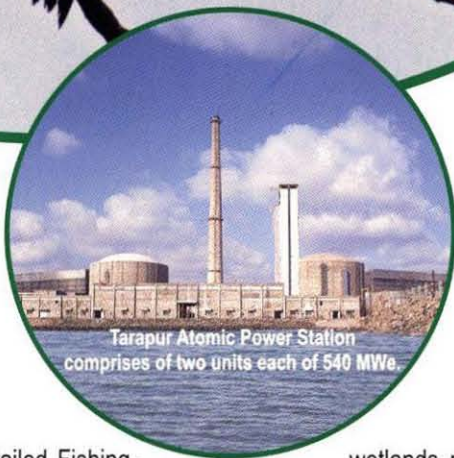
Pallas's Fish-eagle (*Haliaeetus leucoryphus*)

Pallas's Fish-eagle, also known as Ring-tailed Fishing-eagle, is a large, brownish eagle. It is named after a German zoologist Peter Simon Pallas. This bird breeds from Central Asia, between the Caspian Sea and the Yellow Sea; Kazakhstan and Mongolia; west to east along foothills of Himalayas and northern India. It is partially migratory; the central Asian and the southern Asian birds winter together in northern India, and also further west to the Persian Gulf.

It has a light brown hood over a white face. The wings are long, narrow, dark brown; the back is rufous. The tail is black with a wide distinctive white stripe. Juveniles are more uniformly dark, with an all-dark tail, but show strongly patterned underwing in flight, with whitish band across coverts, and prominent whitish primary flashes. Underwings have a white band.

This species has a small, declining population as a result of widespread loss, degradation and disturbance of wetlands throughout its range. It, therefore, qualifies for the 'Vulnerable' category of the IUCN with a population of less than 10,000 birds remaining.

The food of Pallas's Fish-eagle consists primarily of large freshwater fish and waterbirds. During the breeding season, it defends its territory strongly near the nest site. It uses large dry sticks for building nests on tall trees near a wetland. It is closely associated with



wetlands, mainly large lakes and rivers. Human beings are the major contributors in the decline of this species through habitat degradation, pollution and overfishing. Due to spread of Water Hyacinth *Eichhornia crassipes* over many waterbodies it has become difficult for this eagle to find its prey. The unavailability of large trees near wetlands has reduced the nest and roost sites of the Pallas's Fish-eagle. However, it can be seen in and around the Exclusion Zones of NPCIL plants, like NAPS, KAPS, RAPS and TAPS.

The Environment Stewardship Programme (ESP) of NPCIL, a voluntary programme, envisages scientific study of biodiversity, particularly avifauna, in the Exclusion Zones (EZs) and the environs of its seven nuclear power stations. EZ is a 1.6 km 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. A large number of bird species have made the EZs their homes. The programme also includes training of local volunteers, public awareness campaigns to sensitise members of the public on protecting the environment, improving habitat, particularly of avifauna.

NPCIL as a responsible corporate citizen, realizing the importance of a healthy environment, believes that the aforementioned efforts will help in promoting habitat conservation and awareness to make the world a better place to live in.



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Our wild neighbours are fond of the peace and quiet found in their homes. **Kumaran Sathasivam** gives out the commandments that are to be followed when in a sanctuary or national park to show them respect when in their home.



Present Continuous ... and Future perfect?

Palni Hills is one of the majestic mountain ranges of southern India that boasts of a rich biodiversity, which includes the Nilgiri Tahr. **Meena Venkataraman** focuses on the delicate balancing between the native inhabitants and the wildlife, and the effects of this on both.



Change in Vulture Culture?

Vultures are scavengers and feed on dead and decaying matter. But what happens when they are faced with a death of their own kind. **Satyendra** and **Kay Tiwari** bring to us intriguing behaviour displayed by vultures – the 'death-eaters' of the natural world.

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Biomimetics

Is it not ironic that as biodiversity loss increases, we are finding more and more uses of biodiversity? The use of medicinal plants is too well-known to write about. I think there is no plant which is not useful to us, either directly or indirectly. Similarly, innocuous and sometimes not-so-innocuous animals are also useful to us. It is our ignorance that we do not appreciate their usefulness. In this editorial I will discuss the new science of biomimetics, and how it helps to design new appliances, machines, toys and robots (and unfortunately killing-machines too).

Mimicry is widespread in the animal and plant world. The zoological meaning of mimicry is “close external resemblance, as if from imitation or simulation, of an animal to some different animal or to surrounding objects, especially as serving for protection or concealment.” Biomimetics, or mimicking biological systems, is a new, developing science where scientists learn from animals and plants to design their machines. It is quite popular in robotics and has led to a host of unusual designs.

We all use velcro without realizing that its design was copied from the ‘lowly’ burr that stubbornly sticks to our clothes and pet animals when we are outdoors. George de Mostral, a Swiss scientist, copied the burr in 1948 when he discovered how tiny hooks of a burr stick firmly to his dogs’ fur. Recently, the Bird Nest Stadium, the venue for Olympics-2008 held in China, was copied from a bird nest, and Joseph Paxton had used the design of a lily pod to structure the Crystal Palace, originally erected in Hyde Park, London, in 1851. Who can forget that the Wright brothers were inspired by birds while designing their putative aeroplane. Since the Wright brothers, we have come a long way in two different directions: biodiversity loss and biodiversity use. For example, scientists, taking inspiration and design from the bumblebee, have designed a flapping-wing robotic aircraft that can hover. Just a few years ago, engineers would joke that according to the aerodynamic theory, bumblebees cannot fly! But, they have been flying for millions of years, so why not change the aerodynamic theory and learn how these insects fly. The result is ‘ornithopters’ (tiny robotic aircrafts based on designs inspired from nature). These tiny aircrafts not only fly, flap wings, but also hover and fly backward. Just imagine, how useful it would be to imitate the flight design of bumblebees (and other insects and birds) for our over-crowded airports! Possibly, in future we may not require long runways, as passenger planes take off and land directly, and hover like a bumblebee during air traffic congestion.

Some other recent examples are a robot fish (carp look-alike), developed in the University of Essex, UK, that can help in exploring seabed, checking oil leaks in underwater pipelines or detect pollution. Its sinister use can be for intelligence gathering for warfare. According to the newspaper report, the robotic fish can mimic the undulating movement of a real fish – a feat developed by fish over millions of years, but a real breakthrough research for the scientists only recently. The robotic fish will be equipped with tiny chemical sensors to find the source of potential pollutants in water. Another group of scientists have imitated the lateral lines of fish – the specialized sensory organs that help fish to provide guidance for synchronized swimming, navigation and predator/prey detection. In a paper published in the prestigious *Proceedings of the National Academy of Sciences*, scientists of the University of Illinois, write that artificial lateral line system in the submarine can



detect and track moving objects, and avoid collisions with moving or stationary objects. Anyone who has seen the synchronized movement of sardines or sprats would appreciate the importance of lateral lines in their life. Only we humans have learnt it recently.

Ants and termites are the backbone of soil ecology. Without them, many ecosystems would collapse. Now, we can learn something about our traffic management from ants. A professor of the Monash University of Melbourne, Australia, says that we can learn from ants about how to deal with traffic congestion and exiting large venues (such as Mumbai's Victoria Terminus in the morning on a working day when millions of individuals come out every hour). The professor found that unlike humans, ants move in an orderly manner and never seem to panic. Interestingly, they organise themselves in such a way that ants bearing loads move in one direction, while ants that are unladen are on the either side of this row. We call ourselves 'thinking animal' or *Homo sapiens*, but we probably need to learn from ants how to manage our traffic jams?

Snakes and other 'crawly critters' repulse many of us, but do we realize that snakes are some of the most important animals of an ecosystem. With the exception of few venomous snakes, most are harmless, and certainly most of them are beautiful. A group of scientists/engineers are copying the undulating movement of snakes to design a 'snake-machine' that can avoid obstacles and dexterously move in extremely narrow spaces. This will be particularly helpful in detecting lethal chemical leaks, putting out fires and detecting human life in collapsed buildings during natural calamities.

The roboticists or robot designers, mostly inspired from nature, are also developing educational toys that can engage in complex interaction with humans, involving speech, vision and body imitation.

Among all the animal taxa, frogs and amphibians are the most threatened in the world, with almost half of the species in danger of extinction, according to the IUCN. Most frogs are under threat due to habitat destruction, uncontrolled exploitation, pollution, disease and climate change. As they disappear in front our eyes, we are finding their uses for human welfare. In a paper published in the *Journal of Molecular Biology*, researchers say that a biomolecule amphinase isolated from egg cells of the Northern Leopard Frog *Rana pipiens* can help in fighting brain tumour. While this is not biomimetics in a classical sense, it shows the importance of all living forms for human welfare.

I can list many examples of biomimetics. The saddest part is that while the roboticists, mechanical engineers, biomedical researchers and others learn and copy natural designs for human welfare, the biological world faces the worst extinction crises in its 4 billion years of existence. While we develop robotic fish, the world's fish resources decrease due to over-fishing and pollution; while we copy bees to make flying easier, the world faces disappearance of 80% of honey bees; and while common birds such as Swallows are dying out, we imitate them to make mechanical flying machines to match their flight. Can this 'inspiration', which engineers are increasingly taking from nature, result in better appreciation of the living world and better protection of the life-support systems of our world? While we rightly spend billions of dollars in research on medicine, food, engineering, nano-technology, robotics, and electronics most of the governments do not have sufficient funds for protecting species and ecosystems. Will the robotic fish feed us and maintain the ecological balance of marine ecosystems? That is a big question?



Baby Bats of the Thar

An infant of Greater Mouse-tailed Bat *Rhinopoma microphyllum kinneari* attached to its mother's neck at a man-made tunnel in Mandore garden, Jodhpur

Text and Photographs: K.R. Senacha

Hheavy rains coupled with thunder in the scattered moonlight outside and deep silence inside, occasionally interrupted by the *chevik chevik* and flapping wings of roosting bats; this was the midnight scene at a microchiropteran roost in Mandore Garden when I first

witnessed the phenomenon of birth in bats. It took about a year of working with bats and hours of observation to be able to witness this breathtaking event, which I will always hold close to my heart.

Mandore Garden, a well known public park in Jodhpur, is situated on the north-eastern fringe of the city. There are four major roosting sites of bats in this garden. The Mandore

tunnel, a 183 m long, 1-2 m high and 6 m wide waterway under the base of Janana Mahal, is the largest among them. This site harbours four species of microchiropteran bats, namely Greater Mouse-tailed Bat *Rhinopoma microphyllum kinneari*, Lesser Mouse-tailed Bat *Rhinopoma hardwickii*, Egyptian Tomb Bat *Taphozous perforatus* and Blyth's Horseshoe Bat *Rhinolophus lepidus*, consisting of about 3,000 individuals.

Among the two historical monuments in this garden, Deval of Maharaja Shri Ajit Singh houses a mixed colony of *Taphozous nudiventris* and *T. perforatus* and the Deval of Maharaja Shri Gaj Singh is the abode of *T. nudiventris*. The size of the colony varies seasonally from 50 to 150 individuals at both these roosts. If you visit the palm trees planted near the tunnel in this garden and stand under the foliage you are very likely to hear the *chewick chewick* of the Asiatic Greater Yellow House Bat *Scotophilus heathii*. During daytime one might not be able to see them directly as they roost deep within the dry foliage of the palms, but at sundown you will certainly see the individuals emerge for foraging. And, do not forget to wear goggles and to keep your mouth closed while observing the bats here otherwise you may get bombarded by their droppings!

As per my routine, in the late afternoon of July 2, 2002, I carried field equipment and took the 40 minute bike-ride from my house to reach the Garden. Though a small place, not more than 2 sq. km, the garden is significant in terms of bat diversity; at least six species of microchiropteran bats can be seen here. Moreover, if you are lucky you may also see the Indian Pygmy Bat, *Pipistrellus tenuis* roosting inside the crevices of rocks and dilapidated buildings. All these seven species are



Microchiroptera

A small family of insect-eating bats of primitive structure, Microchiropterans generally have small eyes, and ears that do not meet at the base to form a ringed, funnel-like opening. Microbats generally use echolocation, whereas megabats do not typically use it (the Egyptian fruit bat *Rousettus aegyptiacus* is an exception). Microchiroptera includes all the insectivorous and carnivorous species. These bats are generally smaller and none of them attain the size of Flying Foxes that fall in Suborder Megachiroptera. But some are as big as or even bigger than some fruit-eating bats.

nocturnal, and insectivorous, i.e. they feed on insects.

On that particular day, for the first two hours I had been observing bats at three other roosts and then turned into the Mandore tunnel by 8:00 p.m. Most of the adult bats were out for foraging while a few were still inside with the subadults and infants. It took 15 minutes for the colony to settle

down before I could start observing a group of *R.m. kinneari* roosting on the upper walls and ceiling of the 15th chamber of this tunnel. There were 45-50 adult individuals roosting, silently huddled together, as usual. But what drew my attention was one restless bat roosting a bit far away. Parturition in *R.m. kinneari* is observed in July and August here, and therefore,



Infants of Egyptian Tomb bat *Taphozous perforatus* are left alone in their roost when their mother goes out foraging in the night

Baby Bats

I assumed that it was a pregnant female, which I confirmed later by looking at her swollen belly. I was tempted to continue watching her and after another hour of observation and a quick dinner, I was back to check on her; though, as per my schedule, I was supposed to observe the infants in the other chambers of the tunnel. When I returned, the bat was still roosting in a corner of the chamber near the ceiling. She did not react to my presence, whereas most other bats got disturbed.

Usually this tunnel is hot in July, but fortunately, that night it was cool as it had rained. I moved to other chambers for a quick observation; on returning to chamber 15, at around 11:30 p.m., I was delighted to see the nervous mother delivering her pup. To avoid disturbing the female I did not move too close and so couldn't make out the position of the delivering pup, i.e., whether head came out first or tail. Another minute went by and she had had a safe delivery. What interested me the most was the way the mother helped her newborn to

grip her neck properly, so that the pup would not fall to the ground. Soon after birth, the pup started feeding in head to tail direction with a tight, cross grip over its mother's neck with its hind limbs. I had witnessed this event for the first time in my life and it was awe inspiring for me. I stayed there for another ten minutes with the mother still looking depressed and not active before moving out from the chamber, not wanting to cause any inconvenience to the female. Any unexpected movement by the mother could have been fatal to the newborn.

I have worked on bats in Jodhpur, Jaisalmer and Bikaner parts of the Thar desert for more than three years and observed breeding patterns of different species of bats found here. It is interesting to note that in some species of bats in this part of the Thar, the pups attach to their mother in head to head direction while in others they attach in head to tail direction. Mothers of some species leave their pups at the roosts when they go out for foraging at night, but others take

their pups along with them. There must be some reason behind this difference in behaviour, but I am yet to learn it.

Mating in Indian Flying Fox *Pteropus giganteus* is observed in October and November, whereas parturition was observed in March and April. Flying Foxes normally deliver only one pup. Considerable maternal care has been observed in this species of megachiroptera. Just after parturition the newborn feeds off the mother in head to head direction by keeping its legs near the genitalia and head reaching near the neck of the mother. Mother provides the newborn protection under the cover of her wings and feeds them with milk; the young remain attached to her for first two-three weeks. During this period, the young gradually becomes active and, moves over the mother's body. The mother cleans her infant with the help of her tongue and periodically allows it to move and stretch its wings. As soon as she detects the presence of a human intruder at the roost, she hides the infants under her wing(s). If the intruder stays for long and does not appear to be a threat to the infant, the mother exposes her infant. In flight, the mother holds the infant on either side of her abdomen. Initially, newborn emits weak calls. As it grows it begins to live separately, but roosts near the mother.

Mating in Greater Mouse-tailed bat *R.m. kinneari* and Lesser Mouse-tailed bat *Rhinopoma hardwickii* occurs in March and April, whereas parturition takes place in July and August. They deliver a single pup, which remains attached to the ventral side of the mother in head to tail direction. Pups hold onto their mothers by clasping her neck with their hind limbs and hold one of the mother's teats in their mouth. The newborn of this species is hairless. They do remain attached

Megachiroptera

Bats that primarily feed on fruits, flowers and flower products such as nectar, that is, they are *frugivorous* or *nectarivorous* bats. Most fruit bats have large eyes, allowing them to orient visually in the twilight of dusk and inside caves and forests. The sense of smell is excellent in these creatures. In contrast to the microbats, the fruit bats do not, as a rule, use echolocation (with one exception, the Egyptian fruit bat *Rousettus aegyptiacus*, which uses high-pitched clicks to navigate in caves). Often the fruits are crushed and only the juices consumed. The teeth are adapted to bite through hard fruit skins. Large fruit bats must land in order to eat fruit, while the smaller species are able to hover with flapping wings in front of a flower or fruit.





Colony of bats at a roosting site

to the mother for 3-5 successive days of parturition and then start separating during the night so that their mother can go foraging. But usually they are attached to the mother in daytime till they are 15-20 days of age. If you visit a roost of this species at midnight between July and August, it is likely you will see a number of pups hanging alone on the walls, but certainly you would not find that many during the daytime. It is because during foraging flights in the night the mother leaves the pup alone in the roost and collects it once its back in the roost.

The interesting and intriguing question here is how the mother recognizes her own pup among the hundreds of others that look alike hanging in the same roosts. It is believed that the mother secretes a specific pheromone on her pup which

help her to detect the pup by smell. Another noteworthy aspect is the way the pups turn over their entire body, while keeping a proper hold on the neck of the mother, for urination or defecation. They probably practice, so as to either facilitate the process of faecal excretion or to avoid their excretory waste to fall on their body, which is very likely to happen as they roost upside down.

Males of *R. hardwickii* perform a kind of display to stimulate the females for mating. During this act, one or two male(s) follow the female and come near their posterior and move their wings very rapidly for 3-5 seconds and repeat it within an interval of 1 or 2 minutes until one of them is able to mount the female. During mating, the male takes the position over the female and holds her firmly by pressing his jaws

on the neck of the female. Mounting time varies from 2 to 4 minutes.

Parturition in the Egyptian Tomb bat *Taphozous perforatus* was observed in May and June, but I am not certain about their mating time. Most of the females of this species were seen with single pups, but few were also sighted with two pups, which may either be twins or an adopted orphan by the mother. It was observed that the newly born pups in this species attach directly to the ventral side of their mother in head to head direction. Pups hold either of the thoracic nipples of their mother with their mouth and keep legs near genital portion of mother. Maternal care is similar to *Rhinopoma* species in terms of leaving their pups in the roosts while foraging and detecting the baby to continue rearing.

Baby Bats



Adult and sub-adults of Egyptian Tomb bat roosting inside a man-made tunnel



Bat guano is mined and used for various purposes. This process may disturb the bats to a large extent

Mating in Naked-rumped Tomb bat *T. nudiventris* was usually observed in March and April, whereas some mating pairs were also seen in July and August. Mounting time varies from 3-5 minutes, but no mating display was observed as seen in case of *R. hardwickii*. Parturition in this species was observed in July and August, where

the newborn directly attach to the ventral side of their mother in head to head direction by tightly gripping under either of the wings of the mother. Pups move, either perpendicular to the mother's body or reverse their direction entirely in head to tail direction for sucking milk from the pair of nipples in the lower

abdomen of the mother. But, pups defecate in the manner observed in case of *Pteropus giganteus*. They do turn over their body for urination or defecation by clinging to the thorax of their mother using hind limb claws. In contrast to *T. perforatus* mothers *nudiventris* always keep their pups attached to their body even when they go out of the roosts for foraging.

Parturition in *Scotophilus heathii* was observed in June and July, whereas mating time could not be determined. Most of the females which had delivered were observed with single pups, but some had twins. Pups attach to the ventral body parts of the mother in head to head direction.

However, parturition in *Rhinolophus lepidus* was observed in May and June, mating could not be observed. Only single pups were observed with the mothers. Newborn pups attach directly to the ventral side of their mother in head to tail direction and remain so for 3-5 days of parturition, but later the mother leaves them alone at the roost at night when she goes out for foraging. My experience at the bat colonies was extremely enriching and helped me understand the little known

lifestyle led by bats. There are many more interesting peculiarities, behaviour patterns and significant facts that I would like to share about these mysterious flying mammals, But this will have to wait until next time ... ■



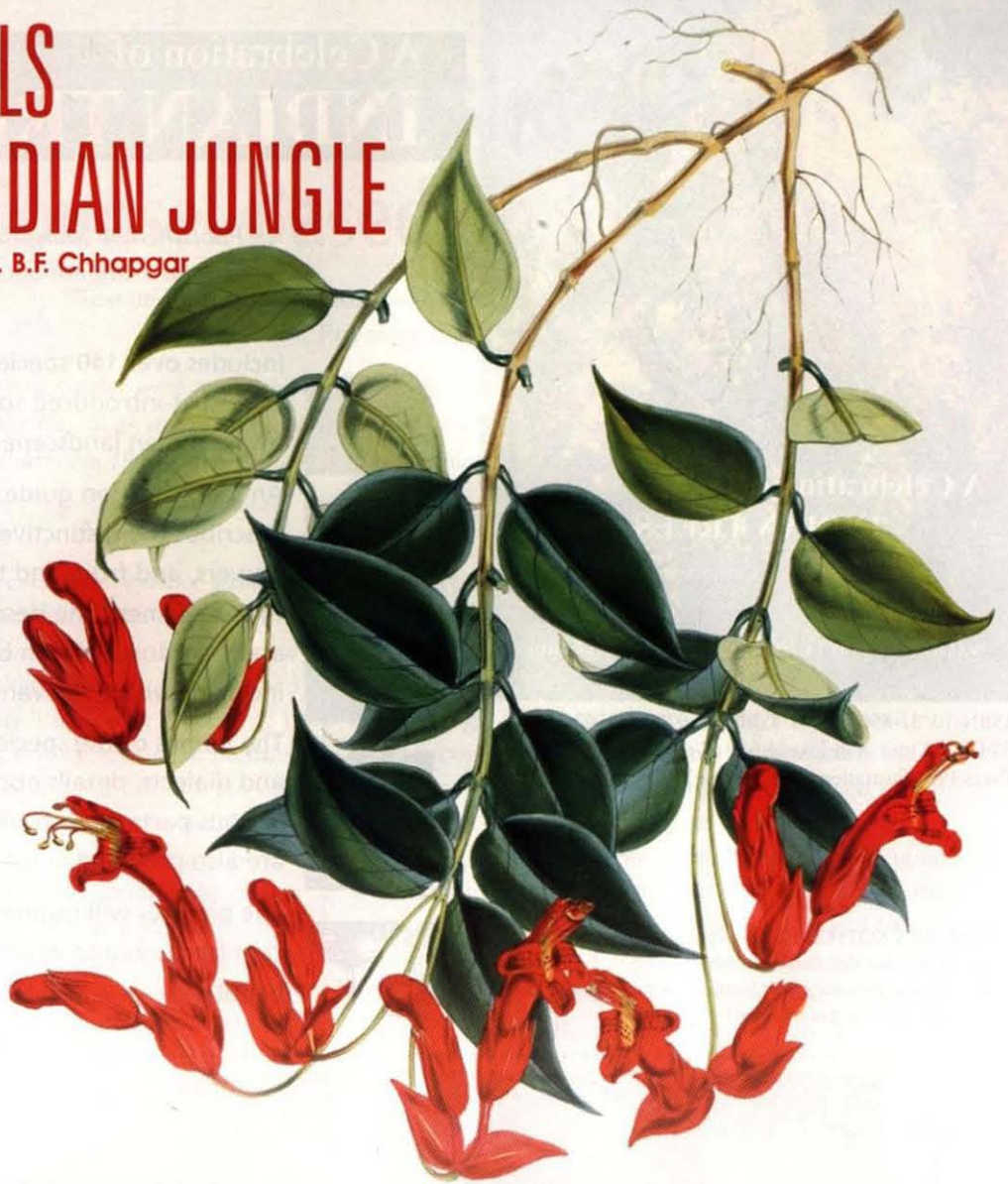
K.R. Senacha has been doing research on bats of the Thar Desert since 2001. He also worked as a Scientist at the BNHS on the Vulture Project.

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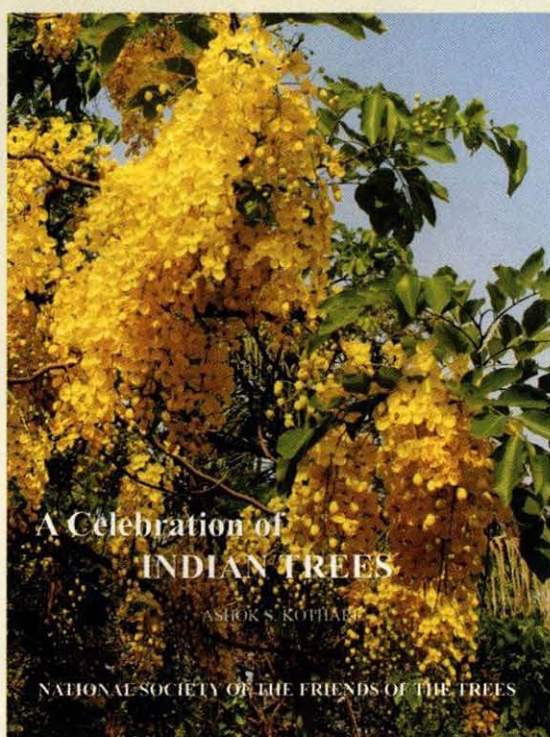
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ASHOK S. KOTHARI

NATIONAL SOCIETY OF THE FRIENDS OF THE TREES

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Commandments for Bird Surveys – Being Counsel Based on Experience

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Illustrations: **Priyanka Iyer**

Bastar and Kanker were two of the tribal states in the Eastern States Agency under the Raj, in an area that was little known biologically up to the time of my bird survey in 1949, and therefore a tantalizing blank for the field naturalist.

Sálim Ali, *Fall of a Sparrow*

There is, in the life of every bird watcher a Bastar, a ‘tantalizing blank’ that waits to be explored. It is not necessarily as large as Bastar. But it would require a fair amount of fieldwork for it to be studied with any seriousness. Typically it is in your ‘backyard’. It has a fair cover of vegetation, is relatively free of humans, and holds out the promise of a good birdlife. No one known to you seems to have visited the area, and there is little information to be obtained from enquiries. There is practically nothing to be found in the literature about this intriguing place. The urge to carry out a pioneering bird survey grows until it cannot be resisted. Eventually, you gather a band of birders, and you pour over topographical maps. You begin preparations for a survey.

The great day dawns, and your little group of birders is on its way to the study area. The first view of the hills (or the marsh or island, as the case may be) sends a thrill through each of you. The team members have carefully studied Hugh Whistler’s suggestions on how to carry out a bird survey, given to Sálim Ali in 1931, and made widely known in *FALL OF A SPARROW*. Your team is keen to put into practice these valuable suggestions.

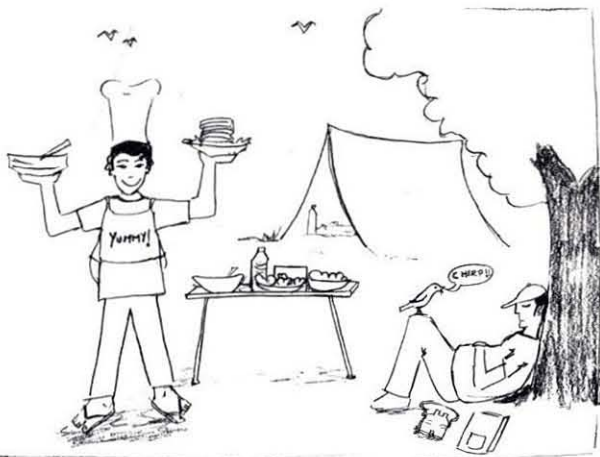
It would be presumptuous to attempt to improve upon Whistler’s recommendations. But as you stand on the metaphorical threshold of your survey, I would like to offer you advice in the form of some commandments and annotations. They are to be treated as an adjunct to Whistler’s counsel. Here they are:



When in a wildlife sanctuary or national park one must keep in mind the laws of nature and respect the denizens of the forest

Commandments

Select your cook with care: You would do well to keep in mind the statement that an army marches on its stomach. There is nothing your team would like and need more than to nourish itself well after a hard day's work in the field. But it is possible that in your efforts to sustain your team you overdo things somewhat. This is exactly what happened, though purely unintentionally, when the inimitable Ramesh was the cook for a recent bird survey I led. We were kindly provided accommodation in an estate in the area of our interest. Our plan was to visit distant locations every day, leaving the estate by jeep in the morning. We planned to return in the evening to the



estate. Among the staff of the estate was Ramesh, the cook. He was an excellent cook, by any standards, and he produced sumptuous meals with astonishing regularity. Ramesh ensured that every meal we had during the survey was exceptionally tasty and large. He hovered around the table anxiously, enquiring how we found the dishes, and whether we would like some more of a particular creation of his.

When we began the survey, the thoughts of my team, fanatic birdwatchers that we were, were entirely focused on going out into the field and viewing, identifying, and listing every bird of the area. But under the relentless attack of delicious food from Ramesh's kitchen, our concentration began to be diluted by themes other than those dealing with birds. We found ourselves staring vacantly into space at times, wondering what we would have for dinner, when we should have been scanning the trees with our binoculars.

Instead of consuming a hasty sandwich and heading for the destination of the day, we spent inordinate time doing justice to the delectable breakfast Ramesh had woken up early in the morning to prepare. Some months into the survey, one of the team members, who for the

purpose of this article shall be referred to as V, mentioned that he had put on a prodigious amount of weight since our visits to the estate began. At this rate he would soon need to be trundled out to the jeep on a perambulator or, considering our location, on a wheelbarrow, he said. V could have been speaking for any of us.

We began altering our plans so that we went to locations closer to the estate and returned there for lunch. The mid-day repast necessitated a post-prandial sleep even for me, who had always scorned afternoon naps. The afternoon outings were severely truncated or eliminated altogether as a result. Even our evening trips began to be planned in terms of the distance from the estate kitchen.

Consider the resultant decline in birding quality, dear bird surveyor, if you are fed lavishly throughout your trip. Consider the number of birds you will miss seeing as you doze. Think of the number of calls your benumbed senses will miss hearing. Select your cook with great care lest your ornithological tour become a gastronomic one.

Leave behind that cellular phone: The mobile phone network is like some creature of the depths, forever extending its tentacles in all directions. Its reach is impressive now, and even remote forests are not safely out of sight of one 'tower' or the other. Thus, contemporary bird surveys are subject to distractions from that remarkable link with civilisation, the cellular phone.

Of the four members of my survey team, three carried mobile phones. These phones would take turns to



ring loudly as we walked along a forest path. At any instant, at least one of these devices would be jingling out, polluting the atmosphere of the wilderness with some ludicrous and incongruous tune. Our progress along a track could well have been that of a troupe of jolly musicians of yore, marked as it was with periodical outbreaks of singing and music. One almost expected us to turn cartwheels and execute handsprings every now and then.

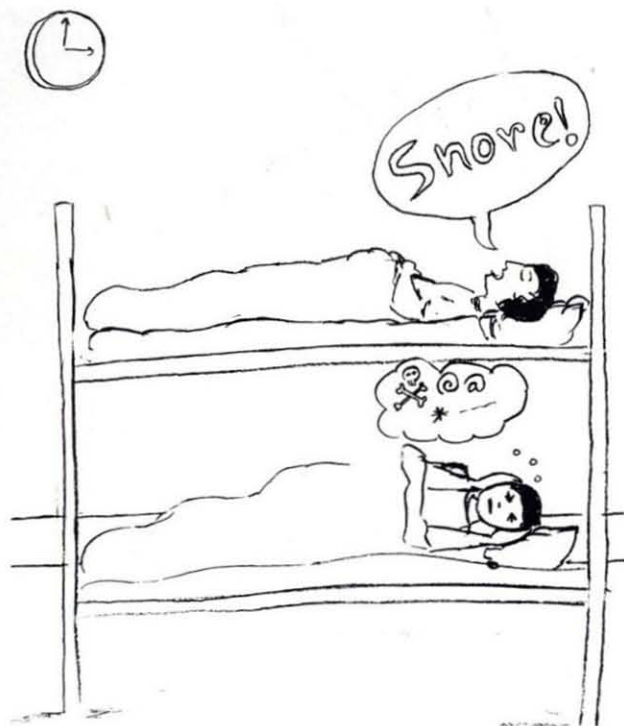
Bird watching was the casualty again. You can hardly expect to do justice to your birds when your office or a client is on the line with some mundane request. Often the communication is sporadic and makes you repeat everything several times. Your voice grows louder with each repetition, and soon the attention of your team members is directed to you, away from the birds. Mobile phones have their uses, but they are not needed for surveying birds. Leave the phones behind at home when you set out on your survey.

Quell the snorer: Our hosts had told us before we started the survey that the nights were very still and quiet in the estate. They said that it was so quiet that it was possible to sense the vibrations of trains passing by very far away as one lay in one's bed. We enjoyed anticipating the quiet of the wild. We would lie in bed with the moonlight streaming in through a window. There would be a gentle movement of the cool air bringing in the hooting of a distant owl, the call of a nightjar. Prospects of such nocturnal bird surveying were very pleasurable.

The reality was somewhat in variance with these dreams for we had not reckoned the efforts of another member of the team, whom I shall call R. To say that R snored loudly is to understate things. His snores were like the roar of heavy machinery. And he snored as soon as he shut his eyes. The rest of us were totally unprepared, and we cowered in terror after the initial blast. "I think Ramesh is operating a jackhammer in the next room. Strange time to do this," whispered V to me tremulously.

"I don't think so, V," I quavered back. "I have a feeling there is some impending calamity. This can only be a landslide coming down the mountain — or a volcano — possibly both".

We realised presently that R was the source of the terrifying sounds. We listened, shivering in our beds; to his repertoire — for there was no pattern to the snores. There would be a loud snarling and growling at times, reminiscent of a trapped leopard seeking to escape and exact revenge. Then there would be a series of piping sounds that could have been the calls of tailless amphibians. Occasionally, there would be loud hisses



suggestive of an overloaded air compressor being depressurised. Then there were brief silences. As V pointed, these silences were as frightening as the noisy bits. Subjected to R's snores continuously, unable to sleep, we had a wretched night.

Listening for night birds from one's bed? Forsooth! Suffice it to say that we were greatly relieved to see the light of dawn. It was time to set out on the survey. Not having had even a wink of sleep, we were in no position to do anything intelligent or to exert ourselves. Thus, apart from losing the nocturnal birds, we lost the diurnal ones of the next day as well.

In case you think I exaggerate, consider what Sálím Ali wrote on sharing quarters with snorers: "One of my pet aversions, and my idea of uttermost misery, is having to share a cabin or a tiny high-altitude tent with a robustly snoring companion. I had not met Gudmundson before and I had no notion of his vital statistics or his potential as a snorer. Therefore, when I first set eyes on him filling our little cabin with his gargantuan bulk my heart sank, and I braced myself for a thoroughly miserable night". Fortunately for Sálím Ali, Gudmundson turned out to be a non-snorer.

As for us, we had to suppress R each night under a mountain of blankets, ignoring his protests that he was sweating and suffocating under them. Even so, the roof of our accommodation trembled ominously and appeared to be in danger of flying off its moorings — we had to secure it with the largest boulders we could hoist onto it.



The water hole that was reached after taking the tick infested shortcut

What can a survey team do when they have a snorer in their midst? There are a number of patented devices that promise to curb snoring. Some of them are to be stuck to the roof of the mouth. Others look like a cross between a gas mask and a ventilator from a hospital. Try these. Pray that one of these will work.

Take no short cuts: One day we wished to survey the lower elevations. We were trekking down from the top, and were in a hurry to reach the foothills. Our trusty local guide assured that he knew a short cut, and against better judgement we left the track. Arumugam might have known the territory well, and indeed he eventually brought us back to safety. But we spent hours ploughing through dense undergrowth. Then we worked our way through miles of the tallest, driest, densest grass we had ever encountered. The grass tripped us and made us lose each other. It cut us with its sharp edges. Of course, we saw no birds. And when we reached the bottom of the hill, sweating, tired and badly scratched, we were in no condition to survey the rich birdlife of the scrub.

The next day we realised that during our passage through the grass, we had each unwittingly made a rich

collection of invisible ticks on our persons. By the time we saw the welter of red spots that sprouted on our skins, it was too late to do anything about it. We endured agonies of itching for months afterwards. We had to scratch incessantly to relieve ourselves, and these led to socially embarrassing situations. We had enduring reminders of our travails in the form of dark marks that left us spotted like some big cat!

Take my advice. Do not take short cuts. And do bathe in toxic insect repellents before trekking through tick-infested country.

When we began our survey, we were utterly ignorant of the foregoing commandments; under the circumstances, we were far more successful than may have been expected. I have offered you insights we gained from our experience. You would do well to heed them. Your survey will be vastly strengthened as a result.

Good luck! ■



Kumaran Sathasivam, a life member of the Society, is a writer. He is interested in all aspects of natural history.

EARTH DAY 2009

India is blessed with priceless natural treasures from dense forests, grasslands, deserts, mountains to wetlands and estuaries, which harbour a rich biodiversity that is truly unique. The health of natural habitats and their wild denizens is the finest indicator of the long-term health of our nation. All these together constitute the survival assets for over one billion Indians.

On Earth Day, we at Union bank wish to spread the vital conservation message to all our customers and beneficiaries.



Union Bank
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Present Continuous ...
and Future perfect?

Text: **Meena V.**

Forgive my use of the tenses for the title because tense is what I am! The reason for this is my encounter with an endangered species eight years back and my concern over its current status.

It was in the year 2000, that as an enthusiastic and optimistic wildlife researcher, I had chosen the Palni Hills and had set out to do a survey of mammals along this eastern spur of the Western Ghats that covers an area of over 2,000 sq. km. I planned to gather reports of mammals at different elevations and habitats across the Palnis and proceed to intensively survey the areas.

A challenging beginning to this endeavour was a two-day long arduous trek through the jungle from the Kudraiyar village, located on the northern slope of Palni's foothills, to the cliffs where the Nilgiri tahr *Hemitragus hylocrius* was reported by the locals. Two trackers from the local *Paliyar* tribal settlement accompanied



MEENA VENKATARAMAN

The picturesque and pristine Palni Hills form a part of the Western Ghats

me. On reaching the base of the cliffs, to my surprise, there before me, in the middle of nowhere, was a very cheerful set up! I noticed lemon grass collected and piled up on one side and people bustling about. Here at 1,300 m were 'smoking' tin boilers, and the pleasant smell of lemon grass welcomed us to the camp-site of two

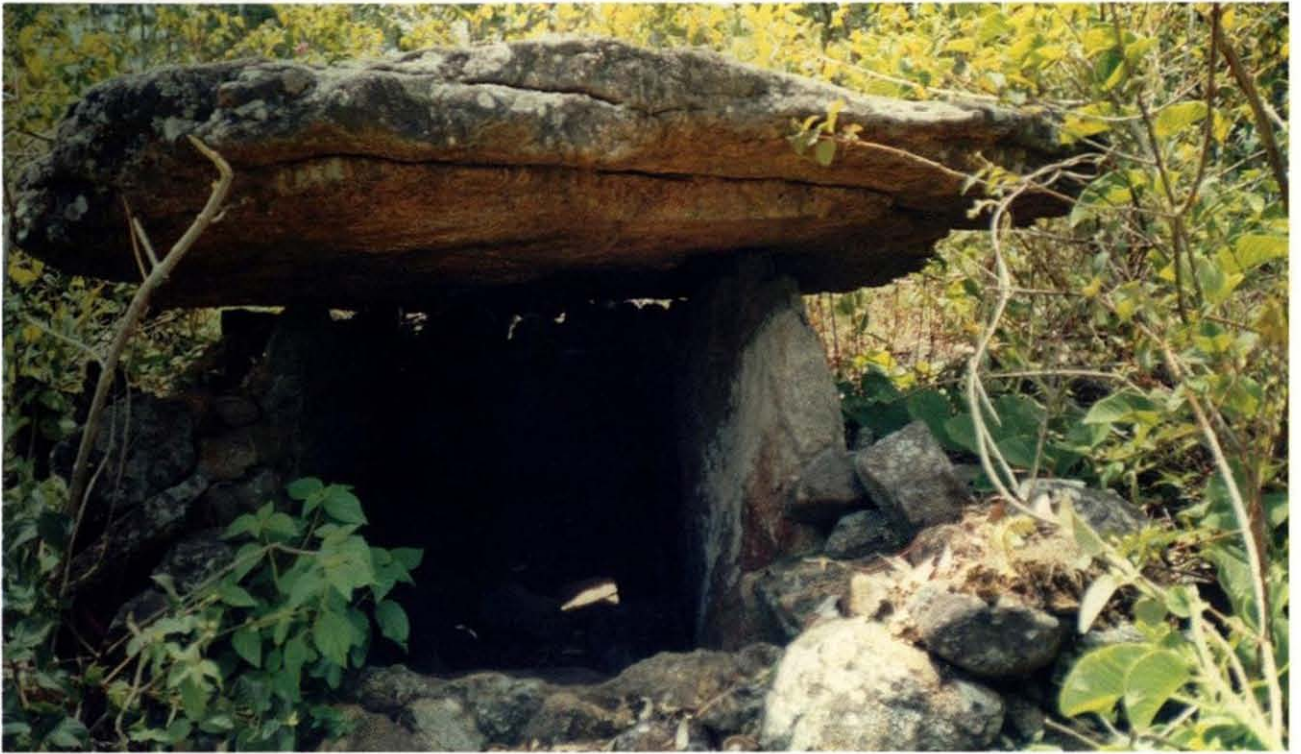
Paliyar families. Wearily, I sat to rest and watched the activity around me. I observed how collecting forest resources suited the lifestyle of these timid and elusive tribal people. The forest provided them with gallnut *Terminalia chebula*, soapnut *Sapindus emarginatus*, shikakai *Acacia concinna*, gooseberry *Emblica officinalis*, tamarind *Tamarindus indicus*, lemon grass *Cymbopogon citrates*, and honey all through the year.

After resting for a while, almost approaching sunset, we climbed the cliffs to look for the Tahr. To my great pleasure, a saddlebacked male came into view followed by a female and sub-adults. A kid that had separated from the group suddenly appeared and scampered away in fright. To me, it was amazing how this isolated population had survived all the pressures and confusion below, and beyond. I thought – "Peer down, just below the cliffs, Mr. Saddleback! and see how fresh grass is being ripped off and boiled." A bit further down is the Kudraiyar dam that had brought about many changes to the landscape. In the wake of its construction nearly twenty



MEENA VENKATARAMAN

Paliyar children of the *Mattupattis* growing up in the forest environment



MEENA VENKATARAMAN

Dolmen is a symbol of early settlers of the Palni Hills

years back, it had created the Kudraiyar village, and brought with it all the aspiration and requirement of a community of people. Further beyond was the ancient temple of Palni, whose visitors had helped the towns and villages to develop all the way up to the foothills. The other way was the beautiful Kukkal shola and other forests interspersed by many cultivations and settlements. "You are holding on well Mr. Saddleback, but you are literally on the edge!"

The Palni Hill population of the Tahr was yet unrecorded along its range in the Western Ghats. Elated at the discovery of a rare and endangered animal in such a remote and less known spot, I came back to the lemon grass camp. Soon we prepared for our trek back to base camp at Kudraiyar. On the way, my thoughts kept oscillating between the endangered tahr, its distribution in these less explored forests, and to the life and culture of the *Paliyars*. While the tahr

were losing their habitats and were being pushed to isolation, the *Paliyar* tribes were being drawn into the mainstream developmental activities and cultural changes happening around them. Clearly, there was more to be known about both.

The following months were spent interviewing people across the Palnis about mammals, especially the Tahr. Among the many individuals I met, the most interesting and informative were the people who had been part of hunting parties of the erstwhile kings and the tribal people who spend long hours in the forest. I could confirm and get information on the presence of tahr in many pockets of the Palnis. There were, apparently, other scattered populations and there was also a second good population along the cliffs of Kodaikanal that extend in the direction of Munnar. The distribution of tahr in this area is well known, but not yet accurately estimated. Historically, it seemed that

the tahr was distributed much more widely. In a lithograph provided by Mr. Dorairajan, Kodaikanal, there were pictures of tahr in the Pillar rocks – a present day tourism hotspot of Kodaikanal! No doubt that the history and changing land-use patterns of the Palni Hills have been responsible for the local extinction and other changes in the distribution of wildlife, particularly mammals in the area.

Speaking on the plight of wildlife in the Palni Hills, their habitats have been encroached and altered. Mammals, particularly, have been ruthlessly hunted; this practice, I observed, has not died out even today. Yet, in spite of all these negative impacts some remarkable species have managed to survive, but sadly, they shall not thrive for long without concerted conservation efforts. Realistically, there seems to be a very dim future for some of these isolated populations.

Apart from the tahr, there are



Lemon grass camp and extraction in the forest

scattered populations of the endangered Grizzled Giant Squirrel *Ratufa macroura*. A reasonably good population exists in the Siruvattu-kadu kombai in Dindigul district. The habitats of these populations were being eroded by spread of lemon plantations. To my horror, the Otter populations along the streams of Palnis were suffering from imminent extinction due to relentless poaching. I also noticed, during the course of my surveys, that the *Paliyars* hunted

many species, including tahr, Mouse Deer *Moschiola memmina*, Barking Deer *Muntiacus muntjak*, Pangolin *Manis crassicaudata*, and Monitor Lizard *Varanus bengalensis*.

History of the Palnis

Dolmens (500 BC to AD 100), scattered across the Palni Hills, provide evidence of early human presence, and according to local tales, home of the dwarf-like people of the *Pandiya* kingdom. According to literature, the

early immigrants to the Palni Hills were the two Tamil speaking tribes, the *Paliyars* and the *Pulaiyars* who came in around the sixteenth century. Later, during the seventeenth and eighteenth century, the *Kunnuvar Vellalars*, now referred to as the *Mannadiars*, migrated from Dharmapuram and Kangeyam. This community was the first to establish the practice of *Kumri* or terrace and swidden agriculture. The late arrival of other immigrants in the eighteenth and nineteenth century, including the Telugu Chettiars, Asariars and the Christian missionaries too did not alter the environment much. Thus, for most part of the nineteenth century the Palni Hills managed to be out of reach of colonial administration and remained largely unexploited.

However, the process of degradation started once the Hills were included under the *ryotwari* system on request from the locals and, immediately, the British state increased its control over the forest by imposing restrictions and creating reserve forests. Introduced species of Patula pine *Pinus patula*, Black wattle *Acacia mearnsii* and eucalyptus *Eucalyptus globules* and *Eucalyptus grandis* began to cater to the demands of ship building, railway construction and other activities outside the Palnis. The local people too soon began to alter the natural habitats, when they took up cultivation of banana, orange, cardamom, pepper, garlic, coffee and lemon, and the link up with outside markets, particularly after the construction of the Kodaikanal road, encouraged further change. Needless to say, these activities resulted in shrinking of forest land, discouraging the growth of native species, and increasing the pressure on forests particularly to meet the subsistence demands for fuelwood, livestock upkeep and forest resources. The post-colonial era brought no respite to the



Boiling of lemon grass in tin boilers by *Paliyars*

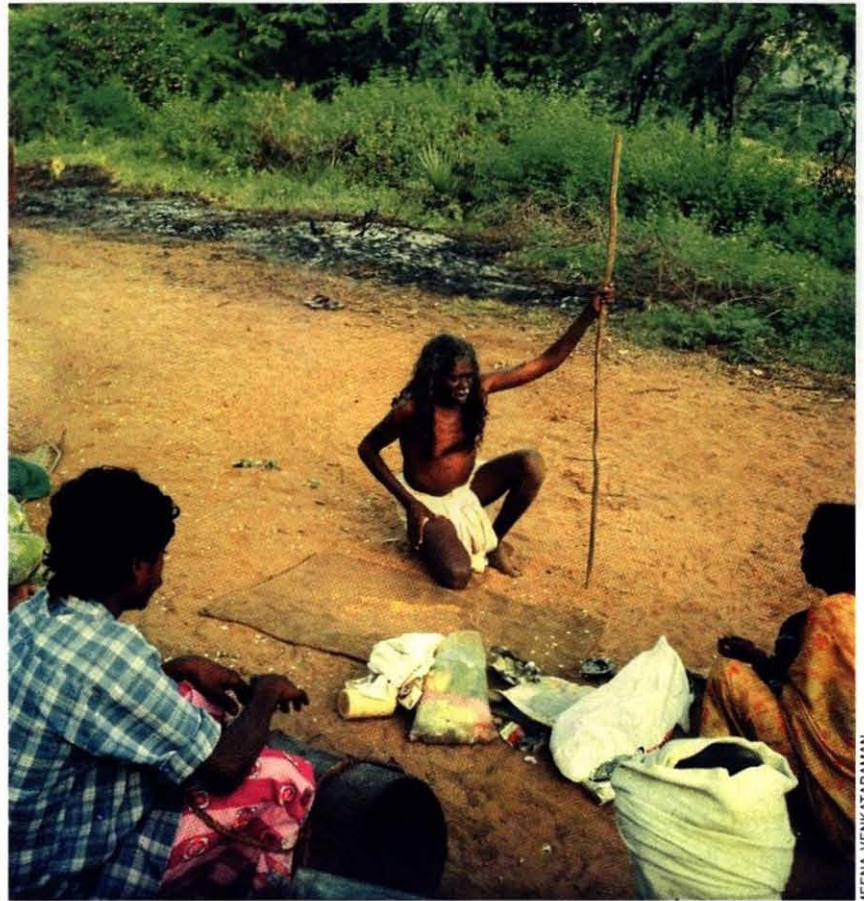
Palni Hills

existing pressures on the forest. The Indian government's new policies of land allotment, construction of dams, intensive form of agriculture emphasising on use of pesticides and chemicals, altered the lives of people even more. The new system displaced people and brought in immigrants, and also changed the cropping patterns, introduced tourism and tourism related activities.

Samiyadis: the symbols of *Paliyar* culture

In addition to wildlife surveys, I surveyed seventeen *Paliyar* settlements out of the twenty-six found across the Palni Hills to better understand their status, economic and cultural identity.

The *Paliyars* are known to have settled down at the lower elevation of the Palni Hills two hundred years back, especially for the love of *Dioscorea* yam, honey, and the flesh of monitor lizard. They continue to retain their closeness with the forest. Anthropologist R.M. Gardner defines *Paliyar's* subsistence strategy as 'isolation-contact-retreat-contact' cycle. A case in point are the *Paliyar* family groups that live, in what are called *Mattupattis*, entirely in the forest for months together, grazing cows that belong to the local landowners. Unless the owner sends word, the family stays in the forest moving from one area to another based on grass and water availability. At the transitory phase are the tribals depending on forest resources for their subsistence who get to make a living without distancing themselves from the forest. This form of employment suits their shy nature and the choices are made quite unmindful of the wage or profits gained. At the other extreme are the *Paliyars* from settlements close to towns like Kodaikanal who have cut off their close links with the forests, depending entirely on estate wage labour for



MEENA VENKATARAMAN

Samiyadis are the true symbols of *Paliyar* culture

subsistence. Paddy, sugarcane, lemon, jackfruit, coffee, banana, pepper, legumes and vegetables cultivated at different elevation of the Palni Hills provide them with employment.

The *Paliyar* culture, their religious beliefs, superstitions and rituals, has undergone gradual transformation over the years and it is difficult to say where a traditional religious practice has given way to a new one. The true *Paliyar* culture is fading and what remains is treasured away from the eyes of prying outsiders. Each occasion – birth, death, marriage, religious ritual is characterised by parties of drumbeat and merriment – different rhythms for different occasions. Out of the seventeen tribal settlements, except three, each worships different goddesses, and each *Paliyar* community celebrates annual

functions at different parts of the year. Undoubtedly, this apparent variety of cultural and traditional practices of the *Paliyar* community is in fact the influence of the surrounding Tamil culture. The *Paliyars*, thus, blend better with their neighbours than their fellow tribesmen scattered across the Palni Hills. The culture of the *Paliyars* and the people in the neighbouring communities, particularly the Mannadiars who share much of the Palni Hills history and evolution, are woven well together. The *Paliyars* act as *Pujaris* (*purohitis*) in many of the common village festivals and may be called upon to control natural disasters, appease raiding elephants or bring forth rains to save the crops.

The *Paliyars* are also known for their knowledge of medicinal plants and their mystical healing powers. Where

normal treatments fail the *Paliyar Samiyadis* or witch doctors are called for by the local people. The *Samiyadis* who practice the art of black magic can be considered the true symbol of *Paliyar* tribal culture. They draw rich and poor clients alike, and equal professional doctors in the fees they charge. The rituals or *kottams* mostly start at dusk and carry on till late night. The *Samiyadi's* squat features, his long hair in semi-darkness lend a spooky atmosphere that is heightened by an assistant who mediates on behalf of the client. The *Samiyadi's* chanting is interspersed by weird calls - a shrill "Heeee!". The *Samiyadi* whips himself, throws paddy grains on his arm, reads the patterns and gives the verdict.

There are two types of clients: one is the possessed one and the other is patient with a poisonous ingredient lodged in his or her stomach. In case of spells, the *Samiyadi* holds up a *moram* (winnowing basket) and after three hours of singing, questioning and answering, the object on which the evil spell has been cast falls from the skies (we presume) and the client is released from the binding curse. He may go back to get his daughter married, find lost possessions, be cured of a long



MEENA VENKATARAMAN

Paliyars are the purohits of the local village temples

troubling ailment or even solve a nagging family feud. In the second case, the *Samiyadi*, made-up with a charcoal smeared face, after completing somewhat similar rituals sucks out the poison from the client's stomach. Now do these things work? Many people educated and uneducated swear by the *Samiyadi's* powers and as they say faith is a great healer.

Conservation

Located to the south of the Palghat gap, the Palnis are a very important stretch of forests, forming the Palni-Anaimalai block, an important animal corridor. The forests, thus, continue to provide refuge to a number of important wildlife species. However, forest conservation programmes in the present day, are challenged with the task of taking into consideration both status of wildlife and their habitat, and also the dependency of local indigenous people. It has been eight years since I surveyed the area and wonder what 'development' has done to the natural habitats, its wildlife and its shy people. To review the situation, however, status surveys have to be undertaken and threats reassessed. In this age of relocation and revival of animal populations, perhaps tahr populations can be resurrected in the Palnis as the habitats are still intact. In that case, it calls for not 'passive', but pro-'active' management. ■



Meena V. has finished her Ph.D. on Asiatic lions from the WII. Prior to that she had undertaken surveys in the Palni Hills for nearly two years.

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Deformities in House Sparrow

Declining number of common birds in our surroundings is a matter of concern. News on decline in the numbers of House Sparrow and Common Myna from our country side are coming from all corners of our country.

House Sparrow *Passer domesticus indicus* is the commonest bird in human proximity. Salim Ali and S.D. Ripley, in their popular HANDBOOK OF THE BIRDS OF INDIA AND PAKISTAN, mention that "it is very widespread and is an abundant resident found all over India, Pakistan, Bangladesh and Sri Lanka"; for its habit "an unfailing commensal of man, affects cities and suburbs, villages, often even isolated homesteads, and human habitations of every description."

Decline of the House Sparrow population is now a well established fact. It is known to have declined in its entire



distribution range world over. A few years ago, there was a panic alarm in Europe, when the population of sparrows was found to have declined



drastically. A study by the Royal Society for Protection of Birds, London, documented that over 25 years the Sparrow population had declined by 62%. Another study by the British Trust of Ornithology and Department of Environment, Food and Rural Affairs, UK, revealed that House Sparrow populations had declined in most of eastern England (90% since 1970) and south-east England (65%). Such estimations have not been conducted in India, so far.

Recently, I came across some deformities in two adult male sparrows in the Railway Traffic Colony, Jodhpur city. The 2nd and 3rd toes of the sparrows are amputated, but they have survived successfully for a year now. Another male sparrow had an unusual beak. Its lower mandible is four times larger than normal making picking grains from the ground difficult. This colony has an area where the locals spread food grains for birds. More than 150 birds visits this site, and their population increases to up to 500 during winter. This population roosts in the nearby bushes and trees, and is thriving successfully for long now.

The reason for these abnormalities could be anything, and should be ascertained with sound research. It is quite noteworthy to look for such deformities in bird population at other places, as the population of sparrow is a matter of concern for one and all.

Sumit Dookia
Jodhpur, Rajasthan



Marine Mammals

This letter is to inform one and all about a site that I have created with my friend K.S. Natarajan, a member of the Society from Coimbatore. It is a website (www.marinemammals.in) devoted to the marine mammals of India. This site aims to provide information relating to the cetaceans of India and the Dugong. It also seeks to collect in one place the scattered observations of marine mammals from the Indian region on a continuous basis. To achieve the second goal it needs the support of all individuals and organisations who may encounter marine mammals, including the Navy, Coast Guard, NGOs, and research and commercial organisations.

I earnestly hope that the BNHS and all its members and supporters will be actively involved in developing the database of the site.

Kumaran Sathasivam
Madurai, Tamil Nadu

About the poster



Lantern Fly *Fulgora* sp.

Entomologically the Lantern Fly is not a fly (Diptera), but a bug (Hemiptera) belonging to the Fulgoridae family of Plant-hoppers, abundant in the tropics. Fulgoridae is a diverse family containing over 125 different genera (a principle taxonomic category) world-wide. Plant-hoppers come in different shapes and sizes.

It was believed that Lantern Fly's strange protuberance of its head glows in the dark and that's how they got their name. Though soon it was found that they do not emit light, but the name remained. They feed on the plant sap and are often seen on small plants, as well as on large trees in groups or clusters as many as several hundreds. Very little is known about the natural history of Lantern Fly. In flight, this insect could be easily mistaken for a brightly coloured butterfly, as their underwings are brilliantly coloured.

Lantern Fly *Fulgora* sp.



Change in vulture culture?

Text: Satyendra and Kay Tiwari

Photographs: Satyendra Tiwari

Bandhavgarh National Park is situated in the Umaria district of Madhya Pradesh. Four species of vultures – Long-billed *Gyps Indicus*, Red-headed *Aegyptius calvus*, Egyptian *Neophron percnopterus* and White-rumped *Gyps bengalensis* – are resident here.

On May 28, 2008 at 7:01 a.m., we spotted a White-rumped Vulture near a stream in the Dadra meadow.



It appeared sickly in a sitting posture with head bowed. Nearby a couple of Red-headed Vultures were feeding on a carcass of what appeared to be another dead vulture. At 7:05 a.m. while we still watched the sickly bird walk further away, a Red-headed Vulture flew from a nearby tree and landed on the unaware bird, followed by another within seconds.



By now the first vulture was pecking at the White-rumped as it sat on its back. The White-rumped Vulture tried to defend itself by counter attacking with its beak, but it seemed unable to escape the grips of the heavier and healthier bird anchored on its back. The second Red-headed Vulture appeared unwilling to join in the attack, possibly due to hierarchy, and simply stood by watching.



After ten minutes of suffering, the White-rumped Vulture managed to escape and hop off to safety after the Red-headed Vulture became distracted by more arrivals. There were no further attacks on the bird for the following fifteen minutes.



The following morning at the same spot there was a gathering of 8 or 9 Red-headed Vultures. They were feeding on the carcass of a recently dead White-rumped Vulture. One bird appeared dominant and as it fed the others stood around watching. It is probable that this was the carcass of the sick-looking White-rumped Vulture we had observed the previous day.



Top: Vultures feeding on dead vultures may not be uncommon in Bandhavgarh, however, it is the first time that vultures appearing to attack sick-looking vultures for food has been documented.

Below: Surely this does not mean that these vultures in Bandhavgarh are facing any kind of starvation. This could be a case of opportunistic behaviour for getting easy convenient food.



Expert's comments: The Vulture sitting on the back of the White-rumped Vulture is a regular posture of an attacking vulture. Vultures do this for driving other vultures from food or a perch. It is highly unlikely that the Red-headed Vulture was attempting to kill the White-rumped Vulture. Vultures do sometimes take live prey, but only small ones like turtles, rats or lizards. Vultures do sometimes feed on other dead vultures.

Satyendra and Kay Tiwari live in Tala near Bandhavgarh. Satyendra is a Wildlife Photographer and Tour Guide and Kay is a Wildlife Artist.

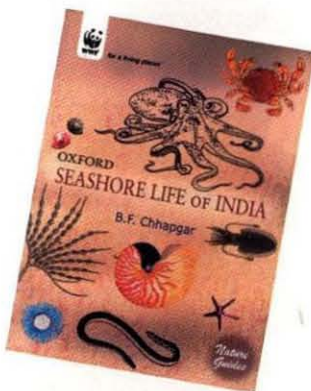


Reviewed by Smita Krishnan

This is the third book in the Nature/Field Guides series, brought out by the Maharashtra Goa region office of WWF-I in 1991, and now reprinted by its Delhi office.

The cover has a new look, with drawings of an octopus and other sea creatures together with paintings from the inside colour plates assembled on a sandy background.

To give a completely new appearance many of the drawings from the first (1991) edition have been removed and replaced by other drawings and (poorly reproduced) photographs. Many new drawings have also been added, sometimes without due application of mind, seemingly by someone ignorant of the finer points of marine life. For example, the argonaut, whose shell is depicted on page 7, is a deep-sea form and has no place in a book on seashore life. Similarly, *Busycon contrarium*, whose sinistral (left-handed) shell is pictured on the facing page, is an inhabitant of the New World, and should have no place in a book on Indian Seashore life. (It is



SEASHORE LIFE OF INDIA

by B.F. Chhapgar.
Oxford University Press,
India, 2008.
Size: 25.5 x 18.5 cm, Pp. 1-71.
Price: Rs. 145/-, Paperback.

understood that the proofs of this book and the one reviewed above were not shown to the author before reprinting, which is why such mistakes have crept in.)

It may be noted that, except for the first two pictures of the book, all the new replaced drawings and photographs have been taken from the book *MARINE LIFE IN INDIA*, so that the new edition has lost its original character and looks like a crude, miniaturized version of *MARINE LIFE IN INDIA*.

In the first (1991) edition, scales were drawn below each figure to indicate the size of the animal. These scales have been removed from the new edition, so that the reader has no idea how big the animal is.

As if the mass copying of pictures and photographs from another book was not enough, in a further case of plagiarism and breach of copyright, 12 full-page colour plates (96 photographs) have been taken from *MARINE LIFE IN INDIA* and reproduced in black and white.

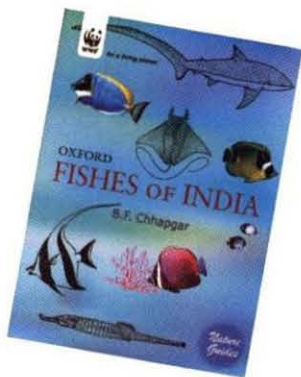
The first edition was in hard cover and was priced at Rs. 50/-. Considering that the new edition is in soft cover the increased price seems to be unjustified. When a new edition is to be printed it is hoped that better sense will prevail and the new edition will revert to the original 1991 matter. 📖

Editor's Note: The author asserts that WWF-I has added the pictures and photographs without the author's prior knowledge or permission, and that he became aware of this after he saw the books on sale.

Reviewed by Smita Krishnan

In the 1980s, the Maharashtra - Goa region of WWF-I initiated a series of Nature/Field Guides. The book under review was the second of the series. Some of these Guides have now been reprinted by the Delhi office of WWF-I.

When the book was first printed in 1987, it was titled *COMMON FISHES OF INDIA*. The word 'common' was inserted in the title in order to avoid confusion with the Bible of Indian Ichthyologists Sir Francis Day's *FISHES OF INDIA*. The word 'common' has been dropped in the new edition. Knowledgeable people will not be deceived by the similarity in the titles. How can a puny book of 43 pages be compared with Day's monographic masterpiece comprising of two volumes



FISHES OF INDIA

by B.F. Chhapgar,
Oxford University Press,
2008; Size: 25.5 x 18.5 cm, Pp. 1-43,
Price: Rs. 145/-, Paperback.

weighing over a kilogram.

At first sight, the cover appears to be different from the first edition. A closer look will reveal, however, that the

fishes in the cover have been jumbled up and relocated in different positions. An important diagram depicting the parts of a fish has been omitted in the new edition so that the beginner is confused when he reads the descriptions of the fish.

To give a new look to the new edition, many pictures and photographs have been added, the origin of which will be discussed later.

The very first picture (on page viii) shows a gross mistake. What is the fresh water angelfish, an inhabitant of central and southern America doing in a book on Indian fishes? Perhaps to add a touch of glamour and eye appeal, four new full-page plates have been added to the original four. That is fine, but, instead of making some effort in preparing new

About Books

photographs or figures, colour photographs have been taken from the book MARINE LIFE IN INDIA and used in this book. The only effort made is to take photographs from different plates and juggle them up. In the process, the photograph of juvenile clown wrasse has been printed upside down!

While adding new pictures to increase the number of pages of the book, many pictures of fishes from the first edition have been removed, so that the reader is left wondering what that fish looks like.

In the first edition, a scale was inserted below each figure to indicate the size of the fish. These scales have been dropped in the new edition so that the reader has no idea as to how long the fish is. In addition to using new pictures, in some cases the original pictures have been replaced by new ones.

For e.g., the Morey, which was facing right in the first edition, now faces left and a picture of the front half of a Morey, and a poorly reproduced photograph, taken from the MARINE LIFE IN INDIA have been added. The picture of sea-horse in the first edition has been replaced by two new pictures, again taken from – you guessed it – the MARINE LIFE IN INDIA. This is also the case with the picture of mud-skipper, which has been replaced by another showing the fish sitting on a mangrove stilt root.

In fact, all the pictures and photographs added in this edition have been taken from the book MARINE LIFE IN INDIA.

All the captions of the diagrams in the new edition lack figure numbers and worse still the scientific names have been omitted making it difficult to relate text with the diagram.

When the book was first printed in 1987, it was in hard cover and was priced at just Rs. 20/-, which is affordable even to a young reader with limited pocket money. The price was later increased to Rs. 40/-, which is still affordable. Considering the new edition is only 'old wine in a new bottle' the increased price does not seem to be justified. Those who are fortunate enough in possessing the first edition should not be taken in by the gimmickry into buying the new edition, in the belief that they will gain more knowledge. 📖

Editor's Note: The author asserts that WWF-I has changed the title and added the pictures and photographs without the author's prior knowledge or permission, and that he became aware of this after he saw the books on sale.

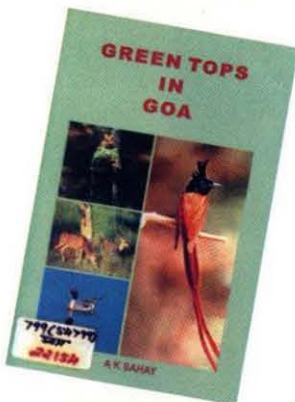


SNAKEBITE: A BOOK FOR INDIA
by B. Vijayaraghavan,
Aad Infitum Press,
India, 2008; Size: 24x17 cm, Pp. 1-96
Price: Rs. 65/-, Paperback

Reviewed by J.C. Daniel

No other Indian animal is viewed with such trepidation as the snake, and except for four species the fear is

unfounded. In this handbook, the author examines in detail the effects of snakebite and the methods to prevent the awesome and spine chilling ability of some snakes to deliver death, with a single strike. A very reasonably priced handbook that should be with all those who work in the fields and forests of the Indian subcontinent, and should be available at all medical facilities, which handle snakebites. 📖



GREEN TOPS IN GOA
by A.K. Sahay, Stusa Mudra Pvt. Ltd,
India, 2007 Size: 17 x 11 cm,
Pp. 1-106, Price: Rs. 250/-, Paperback

Reviewed by J.C. Daniel

Goa has been and continues to be an area of special interest for people from elsewhere in India, and of course

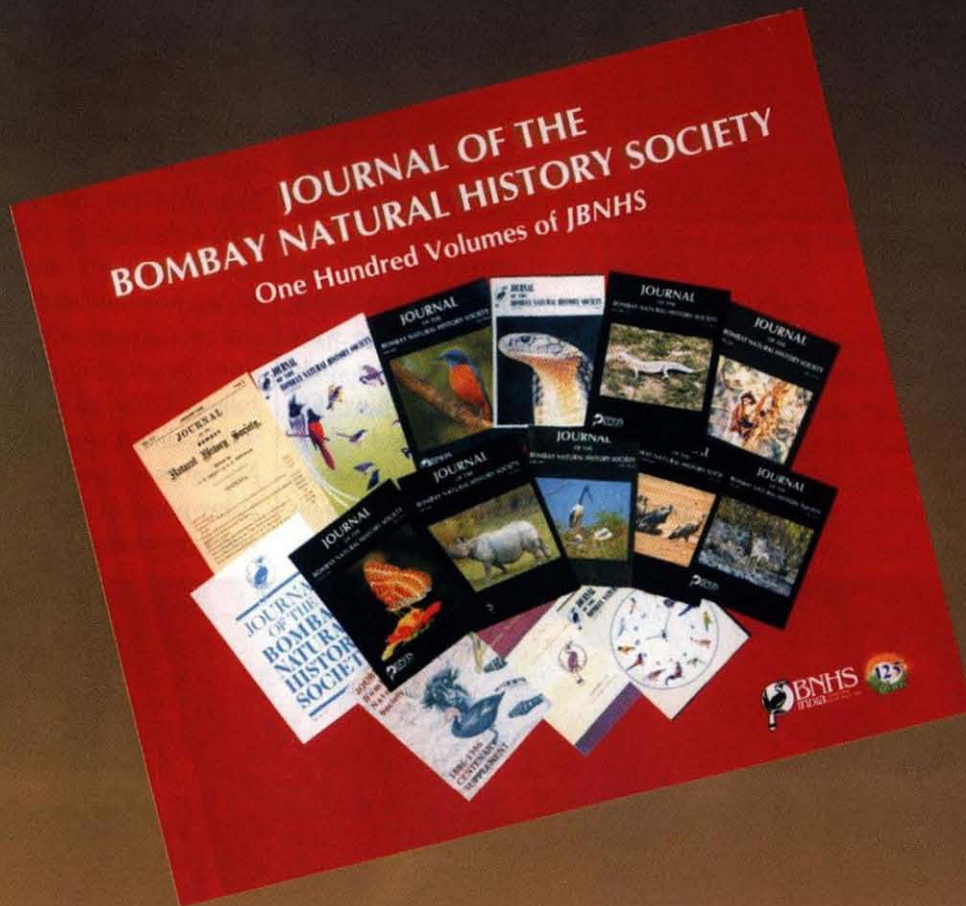
people from abroad. The particular fascination of the State is related to its beaches and the many wilderness areas that occur along the hills. The author briefly describes his areas of special interest, especially the sanctuaries and the birds they hold. An useful handbook.

The book is available for members at Hornbill House for Rs. 250/- 📖

Note: SEASHORE LIFE OF INDIA, FISHES OF INDIA and SNAKEBITE: A BOOK FOR INDIA are available for reference only, at the Library at Hornbill House, BNHS.

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THIS FORM MAY BE PHOTOCOPIED AND MAILED TO US

The wild side of wildlife

Text: Gangadharan Menon

In the last 36 years, I have encountered wildlife at extreme close quarters just four times. And when I say close quarters, I mean face-to-face encounters outside the safe haven of a forest jeep.

The first time was during my very first trip into the forests. We were filming a documentary called 'Silent Valley'. During the 3-week shoot we had run out of provisions, and I was trekking to a village 24 km away, along with my tribal guide. As we were trekking, we heard sounds that could send a chill down one's spine. On moving further, we spotted a lone tusker in 'musth', about 50 m away, breaking every single branch within his reach and smashing it onto the forest

floor. We had to lie low in the forest for almost an hour, and it seemed like a year long wait, to allow the rampaging elephant to pass. In this situation, we were pre-warned, and thus, we escaped shaken, but unscathed.

The second instance was also in the Western Ghats, north of Olavakkod, near Palakkad. I was trekking with my brother, Manu, and at one point, we had to cross a river that was in spate. My brother stepped into the gushing river first, and I followed. Just before I stepped in, I was holding on to a rock on the ledge. My brother casually turned to look at my progress, and to his horror he saw a viper inches away from my hand.



A full grown elephant will eat from 270-320 kg of green fodder a day

MANU MENON

Without letting me know the gravity of the situation, he calmly told me, “*Chetta*, don’t look back. Just take away your hand very, very slowly, and come towards me!” I did exactly that, as slowly as I could, and then turned to look back. There was a viper on the rock, and I had escaped death by inches! Here, I had a narrow escape as I had not threatened the viper, and it allowed me to retreat gracefully.

The third instance was in Tadoba, near Nagpur. My son Akash, who was barely ten years old then, and I had gone into the jungles with a guide. It was six in the morning, and the forest was coming alive with the chirping of birds. As the mission was to look for tigers, we headed straight to a waterhole about a kilometre from the forest bungalow. At the waterhole that was nestling among the rocks, there were no tigers. But the ‘wet pugmark impressions’ on the rocks were tell-tale signs that a tiger had been there a few minutes ago. We looked around, but couldn’t see it; maybe at that very moment it was watching us from the dense jungle around! Disappointed, we started trekking back. Suddenly, a full grown tiger emerged from the foliage and stood there majestically, staring at us from about 30 m away! The guide



The beautiful and serene scenery of Dhoni Forest

MANU MENON

asked us to ‘freeze’ and we did just that. So much so that I didn’t even attempt to click a photograph, though my camera was hanging limply around my neck. After staring at us for a full minute, the tiger disappeared into the mysterious forest. Dazed out of our wits, we started our journey back, marvelling at how small and insignificant you feel in front of the raw, unbridled power of a wild animal! Here, we escaped because we were absolutely still – the tiger was neither threatened, nor provoked.

The last of the encounters of the wild kind happened on June 15, 2008. It was at Masinagudi, the last village before Mudumalai Sanctuary on the Ooty-Mysore road. There were three of us: the guide Ombalan, my brother Manu and I. Ombalan had been a guide in Mudumalai for over 15 years, and he knew the forest like the back of his hand. But little did he know that very soon the lifeline on his hand would cross the path of a wild tusker. Spurred on by the sound of an elephant, we set out into the dense jungle. Within minutes we saw a tusker moving in the distant foliage. Ombalan asked us to double up as the elephant was downwind and could easily sense our presence. Then we saw two tusks towering above the bamboo grove, pulling down bamboo shoots, at a distance of some 50 m. As we moved ahead, we came across a strange forestscape, which had a mix of ancient trees, bamboo groves, and gigantic bushes of lantana. It was the first time that I saw such massive bushes of lantana in a forest, that too in circular shapes, as if pruned by Mother Nature.



MANU MENON

Vipers have heat-sensitive pits close to their eyes that help them to detect prey from its body heat

Nature Watch

The first uncanny sight we saw was a freshly killed wild hare lying on the forest floor. We looked around for the predator, which could have been a tiger or a leopard or a jackal. There was an eerie silence and we cocked our ears for the gentlest rustle; there was none. A little ahead we saw the skeleton of a prey hanging from a tree, about 10 m above the ground. Ombalan told us that a leopard had carried his kill up that tree about a month ago, and left the carcass behind. It was the last photograph I took, and little did I know then that it could well have been my very last! Shaken and stirred, we moved on.

As we were trekking along a forest path created by elephants, Ombalan heard a sound which none of us had picked up. He asked my brother and me to wait, right in our tracks. And as he went around the dense bamboo bush, he walked straight into the waiting tusker. Inadvertently, he had entered the elephant's discomfort zone, which it construed as an act of blatant aggression. I have been close to

elephants, may be about 5 or 6 times, but always in a jeep. And every time they would warn by taking a few steps towards me, and then making a short, mock charge. But in this instance there was no time and not enough distance for such wild niceties. It charged at Ombalan, and he took to his heels shouting, 'Sir, *odungo!*', which in plain English meant 'run!' Without knowing whether it was a tiger, an elephant, or a leopard lying in ambush, we ran straight ahead, trying to catch up with the guide who was in full steam. By the time we caught up with him, I was the last in the group. As I turned back to look at what we were running away from, I saw a wild tusker aged about 16, barely 20 feet away from me, in full charge. I ran for my life, as fast as my trembling feet could carry me. Five steps later when I turned again, it was just about eight feet behind me, now in full flow.

My survival instinct told me that I had to get out of his way before it knocked me down and trampled me, or impaled me on its tusks. So I dived

to the left and landed on my shoulder like a good goalkeeper, which I was in my school days. I heard four legs coming to a halt behind me; my 'pursuer' was surprised by this unexpected move. Then the tusker went down on its front legs and attacked me with its right tusk, right on my lower back. Just as it was preparing to attack me the second time, Ombalan let out a wild, nomadic scream which unsettled the tusker. It lost its concentration and the tusk went through my shirt near my shoulder, and I fell on the ground again. If the shirt hadn't torn, I would have been impaled on its tusk. Once you are impaled, the natural instinct of the elephant is to take you in its trunk and smash you to the ground. Ombalan's scream continued to reverberate in the forest, and the tusker left me bleeding, and disappeared among the lantana bushes. Ombalan later told me that the attack was so vicious that he didn't expect me to get up.

Digging into the reserves of my will power, I slowly tried to get up.



GANGADHARAN MENON

Elephants cooling off in a water hole at Mudumalai Wildlife Sanctuary

And surprise, surprise, I could! Then I made an attempt to take the first few tentative steps after my rebirth, and I could! Slowly, in deathly silence, we all started walking back. Suddenly, a group of spotted deer ran across our path, and for the first time in my life, the sight didn't stir my soul! I just wanted to get back. And the jungle we had to walk through had four elephants at the last count, including the one that attacked me. Those 30 minutes were like a lifetime. When I reached the resort, my wife Anita was shocked by the news of the attack and the sight of the 8-inch gash that was bleeding profusely. We got into the jeep and drove to a primary health centre in Masinagudi village. The doctor there bandaged the wound; but he said the bleeding will not stop till the wound was sutured.

The attack happened at 2:30 in the afternoon, and we reached Coonor at 5:00 p.m. All along, for 2½ hours, I was bleeding. By the time I reached the hospital, I was drained and exhausted. I held on till I met the surgeon and explained to him all that happened, and then blacked out. I came to at 9:00 p.m. by then the suturing was over and I was on the hospital bed. I discovered there was a TV in my room; and over the next seven days in the hospital, the channel of choice continued to be Animal Planet!

I realized that my love affair with



MANU MENON

The demure Chital, that seemed to have taken the author by surprise

wildlife would continue, even in my second life, and that even a vicious attack by a tusker could not dent my faith in them. This was, truly, an accident. And it could happen to anyone. A jungle trek is not a walk in the park, and every time you walk into the jungle, you are entering the territory of wild animals whose sole purpose of existence is survival. Any threat to that, even a perceived one as in this case, and you risk your life.

All that remains today of that attack is an 8-inch scar, and 3 hairline fractures in my lower vertebrae, which are now healing. Two weeks after this incident, a young elephant was

poached and killed in the same jungles. His young tusks were brutally chopped off and he was left to die there. As I heard the news from my brother Manu, the first thing I did was pray that it is not 'my tusker'. And I called up Ombalan, and discovered to my relief that it wasn't.

'My tusker' is still roaming the forests, and Ombalan tells me that they have named him 'Gangadharan' after me! ■

Gangadharan Menon made a documentary on Silent Valley, referring to the impending disaster of a hydel project coming up there, which played a small part in Silent Valley being declared a national park in 1981.



PS: On the 13th of August, I read an article on the front page of DNA. It was titled 'Are animals getting mad at human beings?' The article noted that across Asia, Africa, Australia and America, there has been a spike in unprovoked attacks by elephants, leopards, bears, and many other species.

According to Dr. Gay Bradshaw, a world renowned Animal Psychologist, traditional explanations

like encroachment and loss of habitat isn't sufficient to explain the manifold increase in the attacks. She and her colleagues believe that entire generations of traumatized wild animals are seething with revenge. They have grown up witnessing the systematic slaughter of their families by humans, and are getting back.

These observations should be taken seriously by wildlife enthusiasts

who venture into the forests. But rather than allow this new reality to dampen our exploratory spirit, it should strengthen our resolve to be extremely cautious.

Every time we enter the hallowed precincts of these beautiful animals, let's pause for a moment. And then tread on those forest paths with a primordial awe and a primeval respect that we have been secretly carrying for millions of years.

Kite flying ya 'Kites' falling?

Text: **Rajal Thaker**

On January 26, 2001, at around 10:00 a.m., I was at the casualty ward of Sheth V.S. General Hospital, where I witnessed a constant flow of injured or dead patients after the Earthquake. Watching the images of devastation in the media depressed me further, though I am a doctor by profession!

The Kite flying festival of January 2008 brought back the memories of that disastrous earthquake. Only this time the patients were pigeons, kites, owls, flamingos, ducks, herons, crows, vultures, parakeets, and many other species that were victims of the Kite Festival that takes place every year in India. I was one among the 2,000 volunteers for the *Pakshi Bachao Abhiyaan* 2008 organised by the Forest Department, Government of Gujarat, and several NGOs at eight centers across the city of Ahmedabad.

A temporary hospital was set up at Vanchetna Kendra near Vastrapur lake, where there was a constant flow of



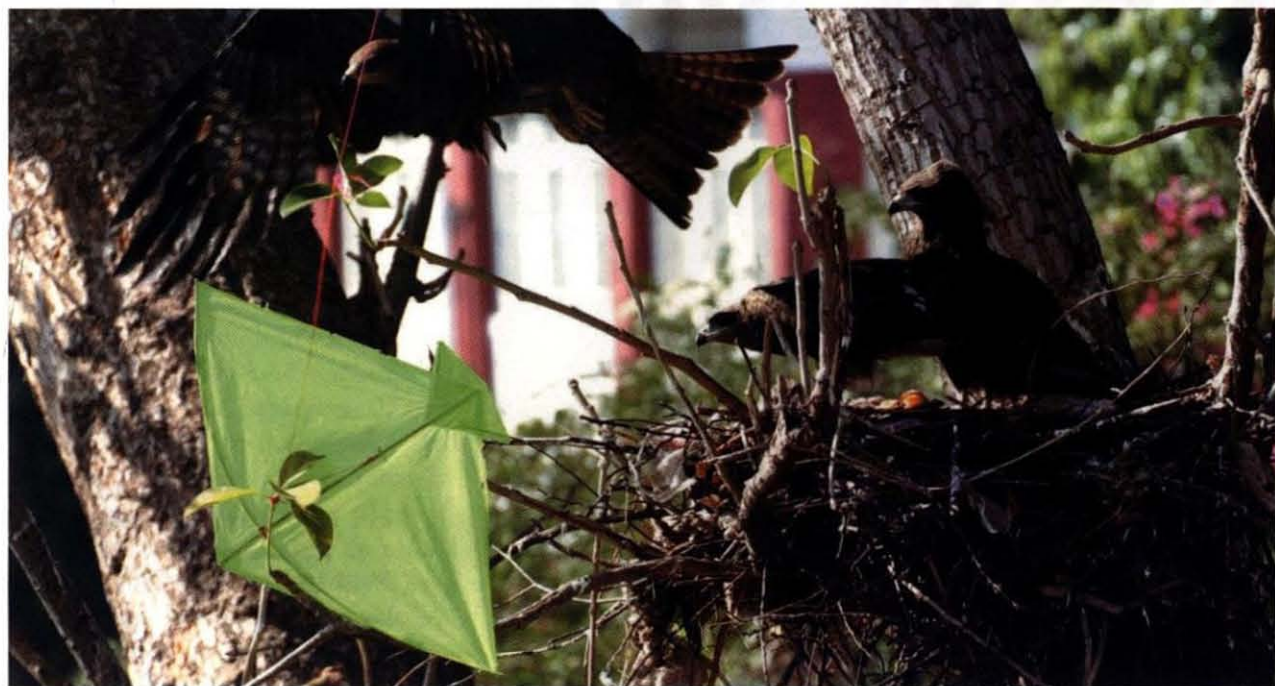
DILIP THAKER

Dr. Rajal Thaker with an injured bird

RAJAL THAKER



The gravity of the wound caused by the treacherous 'manja' can be seen here



RAJAL THAKER

A kite stuck close to the nest speaks volumes about the effects of the kite flying festival in lives of Kites and other birds

injured birds, brought by the volunteers. Each bird was registered with a number and a tag tied around its leg, based on the area it came from, and weighed. Some of the birds could not make it while others were dead when they arrived. The Helpline numbers were busy all the time and we were getting calls from all over Ahmedabad. "The pigeon at Meghaninagar is hanging between the 5th & 6th floor, and is bleeding, please come soon"; "There is a vulture in Bopal, it is bleeding at its wing, please send someone"; "The center at Paldi just received a dead Flamingo that has a deep wound on its right wing"... and the calls were incessant. A total of 766 birds were registered, out of which 200 died, some are still critical (as I write this) and some permanently disabled.

The birds in critical condition were sent to the Operation Theater where nine Veterinary doctors, including doctors from Singapore and Sri Lanka, specialized in Avian Surgery, were doing their job without rest from



RAJAL THAKER

The effects of the terrible manja

morning until 2:00 in the night. Smaller cuts were sutured under Local anaesthesia, but the larger cuts required General Anaesthesia and intubations. I was in tears when I assisted four amputations of wings. The Chinese and the glass powder treated strings (locally known as *manja*) had cut the bone of the bird and it could not be saved unless the wing was amputated. Birds that once flew free in the open sky would never fly again; never see their loved ones again and would have to live a life of disability, thanks to a day of kite flying to celebrate Uttarayan!

Next time when you are bursting with excitement during the kite flying festival, do not forget the painful cry of a bird in agony caused by these very kites! Our joy should not be at the cost of the life of another living being. Banning of glass powered coated *manja* seems to be becoming increasingly essential, but till the demand for such *manja* remains it will be available in the market. And the fact remains that imposing a ban may not be successful until and unless the realization of the agony of these unsuspecting victims, dawns upon us. We all have heard that 'When the buying stops killing will!', so let us stop buying such treacherous *manja*, so that both the wild and man-made kites can enjoy the open sky. ■



Dr. Rajal Thaker, Associate Professor in Obstetrics & Gynaecology, Managing trustee & President of 'NISARG', is working for Health and Environment Education, especially for disabled children.

EAT CUSTARD SPARE THE BUSTARD



JAI SUKH PAREKH

Text: Lt General Baljit Singh (Retd.)

“Musharaf permits Gulf Royals to shoot 6,000 Great Indian Bustards” stated the Jan Marg frame in the *Chandigarh Tribune* of November 29, 2007. It took a while for the enormity of this disturbing report to sink in. And then, a whole range of issues connected with bustards and falconry came rushing to the fore.

The sport of hunting game-birds by setting trained falcons upon them is believed to have originated in China some 4,000 years ago. Among the pre-eminent practitioners of falconry were Ghenghis Khan and Alexander the Great. The latter was initiated to the sport by the Persians and he in turn introduced it in Europe where it thrived till the Middle Ages.

Hunting with falcons arrived in India with Babur and vanished with the last Mughal, Bahadur Shah Zafar. Interestingly, how much the sport had captured the fancy of mankind becomes evident from a 17th century painting by Willem Schelinks auctioned by Sothebys in December 2007, in London. It was estimated to fetch £ 60,000. However, once an art historian identified the five figures in the foreground as Emperor Shah Jehan tutoring his four sons in the art of falconry, the painting went under the auctioneer's hammer at £ 378,000!

Not so long ago, there were 22 species of the bustard in the world. Of these, only six species were found in Asia, three each on either side of the Hindu Kush mountain divide. Except for one species, which inhabits Australia, the balance 15 live in the Ethiopian region of Africa.

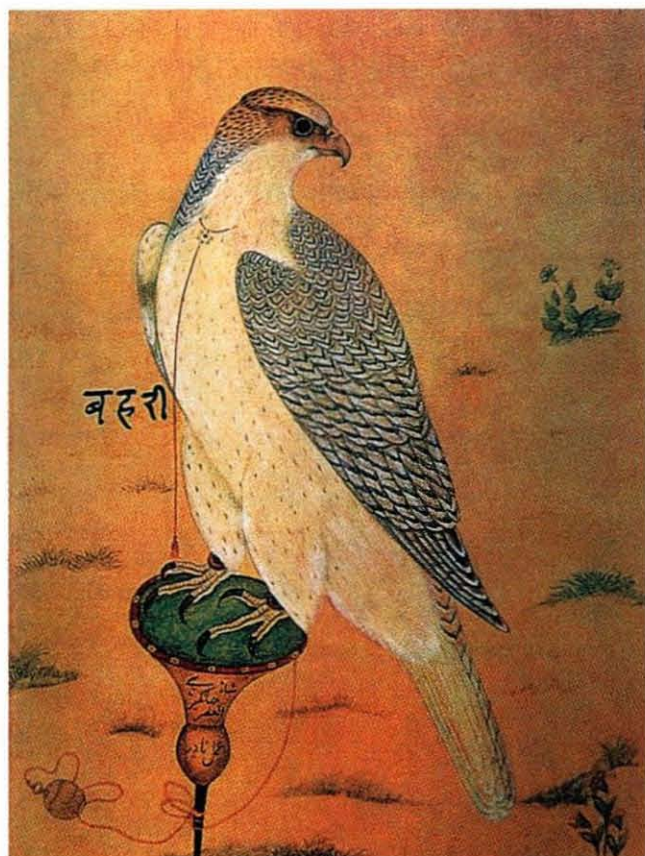
The three species south of the Hindu Kush breed and live in India; and one of them is the famed Great Indian Bustard (GIB), which is also the largest of them all in the world. But the sad fact of life is that today this majestic bird stands driven to the brink of extinction. According to the latest counts, Dr. Asad Rahmani, Director, BNHS, placed its world-wide population in September 2007 at below 500 birds. That makes the GIB also the rarest among all other bird species inhabiting the Indian subcontinent.

Some Indians, and especially the school children, have made valiant efforts to save the GIB. Back in 1972, when the Saudi Royals were provided diplomatic immunity to cross over from Pakistan to Rajasthan in pursuit of the Houbara about 1,000 school children gathered at India Gate. Each child draped over his apparel the poster "Eat Custard. Spare the Bustard", in bold capital letters. And they walked in total silence, first, to all the Gulf Region embassies, and then to Mrs. Indira Gandhi's residence. Once there, the youngest child made a bold decision; he took off his poster and gracefully handed it to Mrs. Gandhi. She responded at once, revoking the diplomatic immunity granted to the Saudi Royals to hunt the Houbara in India, then and there! Fortunately, that decision has remained in place ever since.

Will the other Mrs. Gandhi now save the less than 500 surviving GIB and the Bustard habitat in India by putting an end to the on-going degradation, destruction and diversion? She will earn international acclaim too, because the IUCN (a UN body) had vide Resolution CGR. RECO33 urged the Govt of India to do just this way back in November 2004. But to no avail.

Hunting the Houbara Bustard with falcons survives in the Gulf Region to this day. The fanciers of the sport are the princes of the House of Saud and other Chiefs of the Gulf Emirates. Their prized quarry comprised the Houbara or the Macqueen's Bustard. All of them bred in Central Asia, north of the Hindu Kush.

Presently, the Houbara (which is often confused with the GIB) alone survives north of the Hindu Kush. Of all the bustard species, the Houbara is comparatively a prolific breeder. According to W.A. Kermani, Pakistan's retired Inspector General Forests, the Houbara were so plentiful in the 1950s that they could be counted from the roadways "like butterflies in a field". Just four decades later,



Courtesy: MAHARAJA SWAI MAN SINGH II MUSEUM TRUST JAIPUR

A Barbary Falcon on a bird-rest created by Jehangir's court artist, Mansur (circa 1618-19)

unremitted hunting by the Gulf falconers coupled with local poaching, reduced their numbers to about 30,000 birds in all.

The Houbara migrate south from Central Asia in winters and enter Pakistan through the Chaggai district in Baluchistan. The Saudi Royals follow in the wake of the Houbara in their fleet of 130-C aircraft. Mary Anne Weaver of the New Yorker covered one such season and wrote on December 14, 1992:

"Some Sheikhs have built personal airfields and constructed huge desert palaces in Baluchistan some live in elaborate tent-cities, guarded by legions of Bedouine troops some of them even drill their own water holes ... And they put millions of dollars into their hunts ... They also provide Pakistan with some three and a half billion dollars annually in military and economic aid ...

And at the end of the season each year, "the Saudi Royals alone kill at least six thousand of the birds whose meat has alleged invigorating powers." Unfortunately, one feast on bustard meat is not an all time aphrodisiac panacea. Given the current surviving population of the Houbara, this bustard species is in danger of extinction.

Nature Watch



Courtesy: LOS ANGELES COUNTY MUSEUM OF ART

A Falconer (circa 1600-05)

If that eventuality fails to trouble the conscience of the world, may be Mary Anne Weaver's description of the climax of the hunt would hopefully churn up every one's soul:

"The Shahin (falcon) soared for the sun, and came down on the Houbara attempting to break its neck. The Houbara flew on furiously and the Shahin struck again. The two birds spiraled downwards ... the baby Houbara lay exhausted but was still trying to kick. The first thing the Shahin had done was blind its yellow eyes so that it could not run or fly away. Farouq (a camp follower) cut open the Houbara's stomach, retrieved its liver and fed it to the Shahin. He then hooded the falcon and ritually slit the baby Houbara's throat to conform with dietary laws.

Now it is Halal, he said permitted in Islam."

Will mankind remain mute spectator to the extinction of the only remaining bustard species surviving in the north of the Hindu Kush? And of the last 500 GIB in India? And of the other two of India's bustard, namely the Lesser Florican and the Bengal Florican, which though more numerous than the GIB are still far removed from the survival comfort zone?

If nothing else, every one please join me in a silent prayer, "Ya Allah, the merciful! Grant the surviving four species of the bustard in Asia, life on Earth in Perpetuity!" ■



Lt. Gen. Baljit Singh (Retd.) is an active promoter of nature conservation, particularly within and by the Armed Forces, over the last 35 years.

SPOT THE DIFFERENCE



For answers turn to page 42

OBITUARY



Dr. Ravi Sankaran

04-10-1963 to 17-01-2009

Director, Sálim Ali Centre for Ornithology
and Natural History (SACON)

It is with deep sadness that we report the death of Dr. Ravi Sankaran, one of the finest field biologists of India. Ravi joined BNHS in March 1985 as a young man of 22 years. His first field trip was with Dr. Asad R. Rahmani, now the Director of BNHS, to Karera Bustard Sanctuary. Later, they went on a one month survey of the north Indian terai and Assam in search of the Bengal Florican, now critically endangered. In the monsoon of 1985, they went to Sailana Florican Sanctuary in Ratlam to study the Lesser Florican. That was the starting of Ravi's long journey of field work and research, all over India.

As a person Ravi was intelligent and a fast learner, rational, and was known for his quirky sense of humour. His energy for field work was legendary. He would spend 5-6 hours sitting in his small *machaan*, at 10 m, studying the display behaviour of the Bengal Florican in Dudhwa National Park, or walking for hours in rains, counting the Lesser Florican in the grasslands of north-west India. He submitted his Ph.D. on the ecology of Lesser and Bengal floricans. In 1992, Ravi joined the then newly-established Sálim Ali Centre for Ornithology and Natural History (SACON) at Coimbatore. He worked extensively on the birds of Andaman and Nicobar Islands. However, he kept his interest on the Lesser Florican alive, and

whenever he used to get time he would go to the Lesser Florican areas during monsoon. His studies on the Narcondam Hornbill is a masterpiece of ecological and conservation work. His work on the Edible-nest Swiftlet in Andaman is a good example of ecological science and community conservation.

In recent years, he was working in Nagaland with communities for the protection of biodiversity. Less than a year ago, Ravi was selected as Director of SACON. Within a short span of time he made remarkable changes. He had many plans to make SACON an international research organisation in ornithology. Ravi was a very fine speaker and a writer. During a span of 25 years he published more than 80 articles and papers in national and international journals.

Ravi leaves behind a young wife, who is equally talented as him, and a five year old daughter, Yamini.

Perhaps the best way to remember him is for all of us to see that the Lesser Floricans keep on jumping in the grasslands of Sailana, the Bengal Floricans remain in the Damara grasslands of the *terai*, the Megapode builds mounds in the Nicobar islands, the Narcondam Hornbill raises its family in the small Narcondam Island, and the Edible-nest Swiftlet build nests in the caves of Andaman.

Text and photographs: Isaac Kehimkar

Visual Differences

To spot the difference between the model and the mimic check the hind wing margin of these butterflies – the Danaid Eggfly - female (on the left of page 40) has more wavy hind wing margin. The Plain Tiger (on the right page 40) – differs in having three or four dark spots in middle on the upperside of the hindwing. The female Danaid Eggfly also occurs in two more slightly different and rather uncommon colour forms, but superficially she resembles the Plain Tiger in these forms too. Thus, she survives on the distasteful reputation of the Plain Tiger. The male Danaid Eggfly is velvety black with white, oval patches encircled by dark iridescent blue rings on both wings; the female resembles the Plain Tiger butterfly, an entirely different species.

Why do they look similar?

Certain plants like *Calotropis* are poisonous, and most herbivores avoid these plants. But some butterflies like the Plain Tiger have evolved to digest plant poisons during the caterpillar stage, and also store these poisons to become distasteful in the caterpillar stage as well as in pupal and adult stages. Their distastefulness is advertised by bright warning colours, bold contrasting patterns or combination of both, and moreover, such butterflies fly much slower to emphatically advertise their inedibility. They do not even attempt to escape when captured, as they are also tough enough to survive attacks. Predators, like young, inexperienced birds soon learn to keep off from these butterflies after their first distasteful encounter of strong heartbeats, followed by retching and vomiting, caused by the plant poison stored in the butterfly's body. However, there are some butterfly species that do



A male Danaid Eggfly

not have the capacity to digest and store plant poisons. Instead these butterflies have evolved to mimic the distasteful species and survive on their model's distasteful reputation. They not only look like the distasteful species, but they even have similar slow flight pattern that makes their mimicry complete. This type of mimicry is called Batesian mimicry, named after Henry Walter Bates, an English naturalist and explorer. The success of Batesian mimicry depends on the occurrence of more models than mimics in the same area. As the predators encounter more of the real, distasteful models, the association of warning coloration with the actual unpleasant experience is deeply imprinted on the predator's mind. With every distasteful model attacked, the chances of the mimic's survival increases.

Mimicry is not a conscious effort on the part of creatures, but is a process of selection of favourable genes and elimination of unfit ones. A species might evolve over several generations, before the imitation is perfected. Suppose at some point in time a mutant individual is born with a colour closer

to that of a distasteful far-off related species. Hungry birds feeding on its brothers and sisters may avoid it. And so, it lives to breed and pass on this protective resemblance until, through a selective process, spanning successive generations, the mimics refine themselves to such an extent that they easily pass off for their models. Meanwhile, those individuals which turn out to be poor mimics are more likely to be preyed upon. In this way, those butterflies which are not confused for the model are 'corrected', leaving only the perfect copies. One of the typical examples of perfect copy is the Danaid Eggfly female who mimics the Plain Tiger. It is a classic case of female limited mimicry. This kind of mimicry has probably evolved under predatory pressure, since a female is more vulnerable while searching for food plants to lay eggs, and while laying eggs. ■



Isaac Kehimkar, a Fullbright scholar, is presently the GM, Programmes, BNHS. He has also authored THE BOOK OF INDIAN BUTTERFLIES and many other well known books.

The world is proud of its scientific advances, especially of the new age. The results of some experiments have excited not one, but all. However, it is increasingly frustrating to see issues conveniently swept under the carpet – the ecological footprint of scientific research, and poor Environmental Impact Assessment of major projects. In a recent contribution to the journal *Trends in Genetics*, biochemist Hervé Philippe takes a semi-quantitative approach to these matters. Then, he points out that scientists (even those that do not work with environmentally hazardous agents) by doing their job – research and disseminating its results to the scientific community and the public – use up natural resources (and produce waste) at a level well above the average citizen of our planet (this level has come to be known as the ecological footprint). Here I am presenting an interesting case study on how projects, even science based projects, are being conceived without any regard for ecology.

The India-based Neutrino Observatory (INO) is an effort aimed at building a world-class underground laboratory to study fundamental issues in physics. The project is a collaboration between twenty-four institutions, and the biggest experimental particle physics project undertaken in India, with a budget of over 900 crore rupees. Its primary goal is to study the properties and interactions of weakly interacting, naturally occurring particles called neutrinos. As neutrinos pass through matter almost undisturbed, the observatory is to be built deep underground, ensuring that all other particles and rays are naturally filtered out by the rock around. The 100,000 ton ion detector has to be at least a thousand meters underground; and INO has chosen to do this inside Singara hills in the Nilgiris.

Boon to Physics? But Bane to Nilgiris

Text: Rushikesh Chavan (*With thanks to The Shola Trust*)



TARSH THEKAEKARA

The ill fated hill

Singara hills fall in the Nilgiri Biosphere Reserve (NBR) – India's first Biosphere Reserve, established in September 1986. It does not follow any political boundaries and is spread across three states – Tamil Nadu, Karnataka and Kerala – covering about 5,500 sq. km. There are six protected areas within the Reserve. Four major rivers originate in this region – the Bhavani, Moyar, Kabini and Chaliyar. The great topographic and vegetation diversity of the NBR is characterized by: more than 3,700 plant species, of which several hundred have

medicinal, industrial or food uses, and 684 vertebrate species (among which 156 are endemic) have been registered. The underlying rocks in the Nilgiri Hills are archaic dating back to 2000 million years BP. The NBR is also representative of some of the oldest hills in India, which were uplifted somewhere around 40 million years BP.

The Singara (Segur Plateau) is arguably the only link between the Moyar valley and Mudumalai. The Moyar valley acts as a hub between three major wildlife habitats in the NBR – Mudumalai/Nagarhole Tiger



Source: GOOGLE EARTH

Flanked on either side by the Moyar gorge and the Nilgiri mountains, this region is the only corridor between Mudumalai and the Moyar valley, Sathyamangalam Forests and Eastern Ghats

Major Impacts of the INO Project as per 'The Shola Trust' Report

- There is a flaw in the site selection process. The INO team goes into great detail as to why this site is better than another site in Rammam (Darjeeling) – more stable denser rock, better accessibility etc. But right from the beginning they have been looking at only two sites, both of which are sensitive areas.
- Total debris created by the project will be 2,25,000 cubic metres, or 6,30,000 tons, and the material coming in will weigh 1,47,000 tons. Even if the trucks are overloaded to 10 tons each, this means 78,000 trucks, or 1,56,000 trips, or 4.68 lakh hours of disturbance through a vital corridor, and the Mudumalai and Bandipur tiger reserves.
- The proposed INO project lies in the proposed buffer zone of the Mudumalai Tiger Reserve and lies within 1.4 km of the core zone of the Tiger Reserve.
- Assuming an average consumption of 5 kg per family and a family of four, it would potentially work out to over 6,500 tons of firewood being used annually.
- Crushers are likely to add further noise and dust to the Singara area. There is no analysis of what the decibel levels are likely to be or what the threshold tolerance of any of the species in the area is.
- All development that had happened in the Singur plateau has led to additional work that has increased and sustained pressure.

Reserve, Coimbatore Division/ Silent valley and Eastern Ghats (Sathyamangalam/Biligiri Ranga Temple Sanctuary /Bannerhatta National Park). The Singur plateau is also a significant watershed for the Cauvery River.

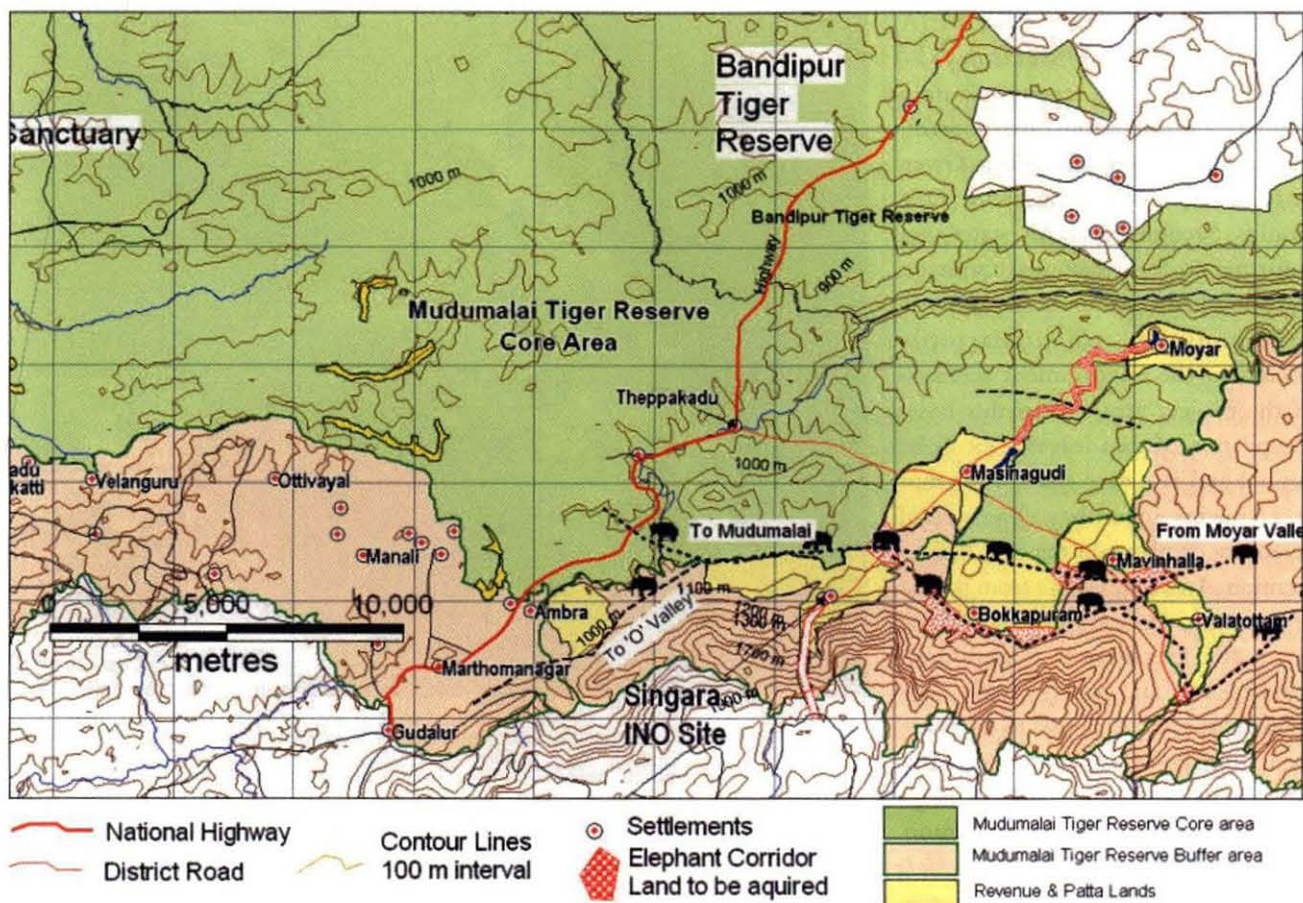
When a mega project like INO is proposed, a thorough Environment

Impact Assessment (EIA) is necessary, which is mandatory for the clearances. Especially imperative when projects are proposed in a critical area like the Nilgiris. However, like practically all projects, EIAs are not up to the mark, and viewed only as a formality of bureaucracy. The proposed INO EIA is no exception ... The EIA carried

out in three months contains no hard data specifically collected to understand the impact, no analysis whatsoever, no population viability study, lots of personal opinions, not backed by facts, and a host of suggested solutions that are shallow and cannot be measured. The basic flaw is that the Rapid Environmental Impact Assessment (REIA) is projected as a comprehensive EIA. In fact, in Section 4.3 the authors admit the lack of thoroughness, 'evaluation matrix is more or less a subjective guesstimate based on the observations and experiences of the investigators, and could not be constructed as a quantitative measurement.'

The REIA does not address landscape level assessments. In section 2.2 – Study Area, says 'the study primarily concentrates on the project location, namely i) the proposed Singara portal of the INO, near PUSHEP, and ii) its environs. The area within 5-10 km radial distance from the site of proposed project (referred to hereafter as the environs of the project) was also examined.' This seems to suggest that the effect will be limited to the 'environs', there is absolutely no attempt to understand the impacts at the landscape level. There is no population projection impact of the project on locally found threatened species. So it is impossible to estimate the added risk to various species brought about by the project. In spite of this total lack of analysis, the REIA confidently dedicates eight pages (10%) of their report to mitigation when they have not even clearly established what the threats are.

There are significant flaws in the projected work force. It appears to have been projected with the sole objective of misleading the readers and evaluators into believing that the workforce involved will be minimal. INO-estimate about the size of the



The access road to Singara hinders free movement of elephants and other wildlife and this may increase human-wildlife conflict

workforce and also the total dependants is highly questionable, e.g., they project an average family size of three for the labour force during construction. While this in itself is unrealistic what is even more questionable is how the family size declines to 2.9 in the 3rd year and further on to 2.3 in the 4th and 5th years. This seem like fabricated numbers to back up the promise that the workforce will diminish over time. Irrespective of the numbers, the REIA in section 4.2.8 – ‘Impacts due to the workmen inhabitation during the construction phase’ – it actually devotes just four lines to describing the issue. ‘The construction work for the project involves a workforce of about 100 labourers. The labourers are likely to depend on trees for fuel-wood and if left uncontrolled will cause

tremendous damage to the area. Though temporary residents they are likely to bring livestock and poultry thus, causing more pressure on the environment’. Another key aspect relating to workforce that the REIA ignores, and which is clearly a part of the long term goals of the INO, is the expansion of the facility over time. As per the INO report – ‘It envisages that such an underground facility will develop into a centre for other studies as well, in physics, biology, geology, etc., all of which will make use of the special conditions that exist deep underground.’ The whole of Chapter 12 of the INO report is dedicated to all the other great possibilities underground. Yet the REIA decides to ignore all that, and claim there will be only six scientists resident in the area during the operational phase.

The section 3.5 – ‘Protected Areas and Wildlife Corridors’ does mention the site is adjacent to a wildlife corridor, ‘even though the project (both laboratory and other) facilities are to be located in the Tamil Nadu Electricity Board (TNEB) land, the Mudumalai Wildlife Sanctuary, Bokkapuram Reserve forest and Singara-Mavanhalla corridor are located bordering the project site. Animals intensively use this corridor for movement from the Mudumalai Sanctuary to Singur plateau and vice-versa on the seasonal basis’. Despite this, the REIA does not at any point attempt to assess the effect the project will have on this corridor. The access road to Singara cuts right through this corridor, and all the trucks and other vehicles are sure to have some impact on the wildlife movement.

Conservation Notes

The largest section of the REIA (14 pages 27%) is 'Section 3 – Observations'; it contains data (primary) obtained from other sources, and contains mainly species lists. Given that the study period was only three months, Section 2.2 clearly states that 'information from secondary sources, and published and unpublished reports were consulted to satisfactorily document the environment scenario of the project area'. Even this basic compilation of data leaves a lot to be desired and is a very shallow attempt at a species inventory. The actual inventory of plants in the area fails to mention *Anogeissus latifolia* from the list of common species; this is surprising given the fact that it is common, unmistakable and highly visible. The mammal species list points to the rarely seen Pangolin *Manis crassicaudata*, but fails to mention the Barking Deer *Muntiacus muntjak*, which is common. In fact, the Mouse Deer *Moschiola meminna* is listed as *Muntiacus muntjak*, which is actually the Barking Deer. Further, on the endangered birds list fail to mention the critically endangered White-rumped Vulture *Gyps bengalensis*. The REIA also fails to mention that a part of the Singur Plateau (the Avarahalla area) is an important nesting site for these vultures. The present REIA barely achieved the primary data gathering, which forms the backbone of the impact assessment. By and large the superficial attention given to the species list and the absence of any real impact assessment on how species and corridors are going to be affected and the long-term impact of the project, we can only assume that the EIA is inadequate and no (real) impact assessment has been made.

Every EIA process in the country requires a public hearing and debate, where all the stakeholders are given the chance to raise any objections or



The entire campus is surrounded by forests

reservations about the project. This was not done for this REIA. The assumption here is that since there are no human stakeholders, there was no requirement. It seems only logical that Conservation and Environmental organisations working in the region should have been given the opportunity to voice their concerns before the EIA was completed.

Despite the lack of professionalism and overall incompetence, the REIA all throughout, acknowledges many of the obvious negative impacts that the project is likely to have, such as, 'the sanctuary is critically important to the Nilgiri population, the world's single largest Asian elephant population'; 'Western Ghats, one of the two biodiversity hot-spots in India, is unique in holding various endemic and endangered species'; 'Both these corridors play a vital role in movement of wildlife and exchange of genetic material as they connect Mudumalai Wildlife Sanctuary with Singur plateau and Eastern Ghats, which are vital for the long-term conservation of these

species'. 'This area is frequently visited by the wild animals, and hence, their likelihood of getting affected is high'. Despite the fact that all these common sense statements are negative, the end result of the EIA is 'positive', in that it allows the project to proceed as planned. This seems completely irrational and leaves one to assume that the entire point of the EIA was solely to add another rubber stamp that was required for the project to continue.

Unfortunately, this is not one odd case; this is the case with almost all projects. Sadly, environmental organisations are portrayed by project proponents as anti-development. This is so untrue, the reality is that the resources on Earth and life support systems are under tremendous stress and will not last for long. This short sighted development is only going to worsen the situation and it is not far that all of us will have to face the bitter fact that we have lost the plot. ■

For details on the INO project kindly contact rushikesh@bnhs.org or visit www.nbralliance.wordpress.com

BNHS celebrates World Wetlands Day '09

World Wetlands Day is celebrated internationally every year on February 2, as it marks the anniversary of the Convention on Wetlands of International Importance (Ramsar Convention) in Ramsar, Iran, on February 2, 1971. It was first celebrated in 1997 to raise public awareness about wetlands.

This World Wetlands Day, BNHS organised a number of activities for students under its 'Mangrove' project. A slogan competition, titled 'Save Mangroves', was organised at a school in Dahanu (District Thane), Maharashtra; about 50 students participated in the competition. A mangrove awareness rally, organised at Ratnagiri, Maharashtra, was attended by about 750 students and 30 teachers from ten schools and Gogate Jogalekar College, Ratnagiri. The rally was supported by the staff of Social Forestry Department, Ratnagiri, and Gogate Jogalekar College – the local partners of Project Mangrove. ■



Students conducting the Mangrove awareness rally at Ratnagiri

The fringe areas of Sanjay Gandhi National Park (SGNP), Mumbai, are under threat from encroachments. The Forest Department, following Supreme Court orders, is clearing these encroachments. BNHS, with support from Gaia Conservation Foundation based in Mumbai, has started a project called 'Eco-restoration of the fringe areas of SGNP' with the objective to restore the past glory of these degraded areas. The Project aims to plant trees that have been identified to be a part of the original ecosystem of these areas.

On March 15, 2009, a programme to plant saplings was organised at the Society's Conservation Education Centre (CEC) in Goregaon, Mumbai, to generate awareness. The program included a nature trail, presentation on climate change and biodiversity, and sapling planting by participants at the newly established nursery in CEC. For further details contact the Conservation Officer, Mr. Rushikesh Chavan on conservation@vsnl.net. ■

Restoring fringe areas of Sanjay Gandhi National Park



The participants actively contributed to plant saplings at the newly established nursery at CEC, Mumbai

On completion of 125 years, the BNHS has been organising a number of special programmes, given below is a glimpse of some of these:

BNHS PHOTO LIBRARY



Shri Gopalkrishna Gandhi, Hon'ble Governor of West Bengal releasing the book, along with Dr. Asad R. Rahmani

'Ducks, Geese and Swans of India' released

BNHS has been a pioneer in natural history publications; keeping with this tradition, it released another book, *DUCKS, GEESE AND SWANS OF INDIA* by Dr. Asad R. Rahmani and Mr. Zafar-ul-Islam. Shri Gopalkrishna Gandhi, Hon'ble Governor of West Bengal, released the book at Raj Bhavan, Kolkata, on January 3, 2009. The book will be a valuable reference for ornithologists, bird watchers, forest officials, veterinary professionals and even beginners. The production of the book has been supported by IBCN, BNHS, BirdLife International and Royal Society for Protection of Birds. The book is priced at Rs 1,300/-. BNHS members can buy the book at 25% discount. ■

BNHS Bird Migration Study Centre at Point Calimere

The BNHS Bird Migration Study Centre covering an area of 2,400 sq. feet was constructed on an 1.5 acre land, at Point Calimere, Tamil Nadu. It contains a conference hall, library, laboratory, and staff and scientist rooms. The major contributors are Sanmar Chemplast, Mr. B. Ugamraj Nahar, Mr. P.R. Ramasubramania Raja, Citi Bank and Ion Exchange.

The centre was inaugurated on February 22, 2009, by Mr. R. Sundararaju, Principal Chief Conservator of Forests (WL) and Chief Wildlife Warden, Government of Tamil Nadu. Dr. P.L. Gautam, Chairman, Biodiversity Authority, presided over the function, while Dr. Asad R. Rahmani, Director, and Mr. J.C. Daniel, Honorary Secretary, highlighted the importance of the Study Centre. ■

Rare books exhibition – 'Jewels of India'

BNHS with the Rotary Club of Mumbai Seacoast had organised the 7th Exhibition of Rare Books titled 'Jewels of India' at Hornbill House. The exhibition was held from December 16-23, 2008. Mr. Bansi Dhurandhar, Rotary District Governor, inaugurated the exhibition, while Mr. J.C. Daniel, Honorary Secretary, welcomed the guests with a brief account of the history of BNHS.

The books displayed, from the BNHS library and private collection of Dr. Ashok Kothari, Chairperson, Library Subcommittee, covered subjects such as Indian wildlife, art, natural history, heritage and culture and revived nostalgic memories of a glorious past. Over 3,500 book lovers visited the exhibition. ■



BNHS PHOTO LIBRARY

An engrossed crowd admiring the priceless books

International Conference: 'Conserving Nature in a Globalizing India'

BNHS had organised an International Conference on 'Conserving Nature in a Globalizing India' from February 17-19, 2009, in collaboration with and at the Indian Institute of Science in Bengaluru. The conference discussed the challenges in nature conservation thrown up by the increasingly globalising India, like unsustainable development, pollution, climate change and conflicts over

natural resources. The conference covered topics like biodiversity conservation, community conservation and co-management, science-based species conservation, impacts of tourism, trade and globalisation on biodiversity, conservation governance, and agriculture and conservation. BNHS also launched a DVD consisting of a collection of 100 volumes of its *Journal* at the conference. ■

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AGDEEP RAJPUT

GROWING TOGETHER

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