

HORNBILL

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JANUARY-MARCH, 2008



Black-tailed Godwit - A Near Threatened Bird

Black-tailed Godwit



The Black-tailed Godwit, *Limosa limosa*, is a large sandpiper. It's a stately long-legged Godwit with a long, straight, bicoloured bill, a long, broad, white wing-stripe and a black tail.

Adults have blue-grey legs and a very long straight bill with a slight upward curve and pink at the base. The neck, breast and belly are brick red in breeding plumage, off white in winter. The back is mottled grey.

They nest on the ground, usually in short vegetation, laying 3-6 eggs.

The Black-tailed Godwit is a migratory, wading bird that breeds in the Palearctic (Mongolia and Siberia) and is a winter migrant to India.

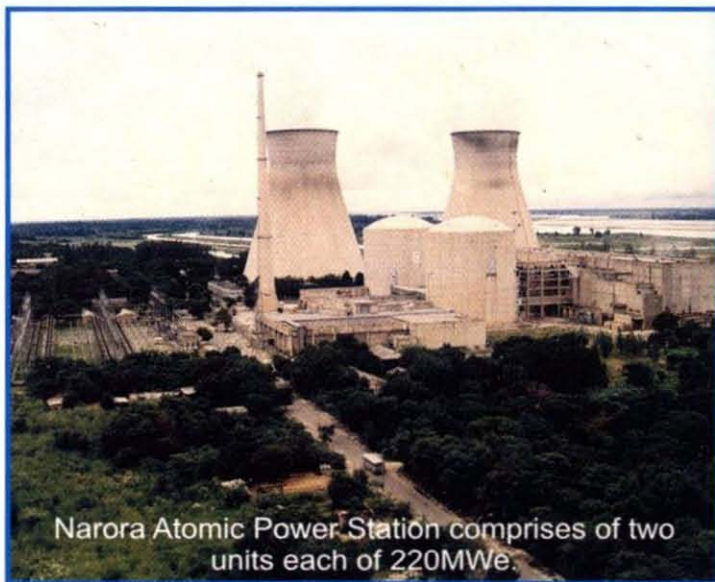
These birds forage by probing on mudflats or in marshes. The diet includes a variety of invertebrates such as insects and larvae, earthworms, crustaceans, molluscs, spiders, spawn and tadpoles of frogs, and fish eggs.

In 2006, BirdLife International classified this species as globally near threatened due to a decline in numbers by around 25%, due to alteration in habitats over 15 years.

Black-tailed Godwit can also be seen in and around the Exclusion Zones of Narora Atomic Power Station, Narora, U.P.

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 the nuclear plant. While only a fraction of this area is used for the plant structures, the remaining is used for green-beltting. Large numbers of bird species have made EZs their homes. The programme also includes training of local volunteers, public awareness campaigns to sensitize members of public on environment, improving habitat, particularly of avifauna.

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



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Chasing Butterflies across Himalaya

Isaac Kehimkar

Have you ever chased butterflies? If not, you will probably once you have read the author's amazing experience of chasing butterflies in the Himalaya.

Summer Blooms

Ashok Kothari

Trees express their joy differently from us. Look around for it's the season when they put on new leaves and flowers.



Others...

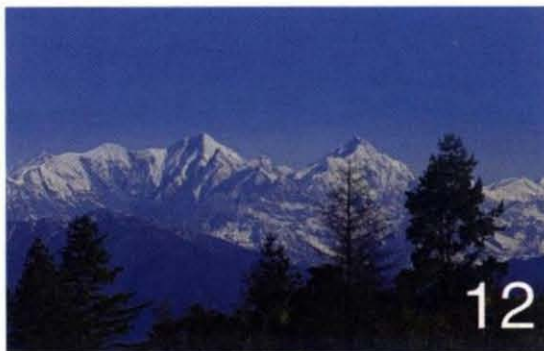
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Exploring the Wild – with a different eye

Varad B. Giri

A different perspective is what is needed to ensure that that trip to the national park or sanctuary you make the next time is eventful.



Undermining a biodiversity hotspot – The lower Subansiri Hydroelectric Project

Neeraj Vagholikar

A development project at the cost of a biodiversity hotspot cannot be ignored, as it is a serious threat for the entire ecosystem.

If I had Rs. 128 crores !

On February 9, 2008 I read in the *Mumbai Mirror*, a tabloid of the Times of India group, that the Brihanmumbai Municipal Corporation (BMC) had informed the High Court that it would spend Rs. 128 crores to set up shelters for stray dogs in Palghar and Wada, near Mumbai. In the affidavit to the Court, the BMC had spelled out that a five acre plot would be developed at Palghar, at Rs. 33 crores, which will house about 20,000 dogs. About Rs. 100 crores would be spent on developing a 25-acre plot at Wada, where 57,000 dogs will be housed. No one knows the number of stray dogs population in Mumbai at present. The number varies from 77,000 (BMC figures) to as high as 7,00,000 (NGO figures touted in the media).

While I will not go into the merits and demerits of such a huge expenditure on stray dog welfare, I want the readers of *Hornbill* to know what I would do if I am offered this amount.

The world population of the Great Indian Bustard could be as low as 500. Presently, it is considered Endangered by the IUCN, but if nothing is done to stop this decline this species will be Critically Endangered or probably extinct in the next 10-15 years. A small population of less than 30 individuals is surviving in the scattered grassland plots of about 636 ha near Nannaj, Solapur district. For the last 20 years, I have been trying to get a plot of 434 ha adjoining the 636 ha protected plot so that the bustards can have a compact block of about 1070 ha to breed successfully. Private land owners are willing to sell their unproductive land. The total cost of this land was about Rs. 60 lakhs, ten years ago, it must surely be more now. The Forest Department does not have the money or willingness to purchase the land. I would spend about Rs. 1-2 crores to purchase this land and donate it to the Forest Department to develop it as a bustard breeding grassland. I would spend another Rs. 5 crores to purchase land of 1,500 to 2,000 ha in Naliya, Kutch district to add to the 400 ha grassland plot, which is not sufficient for 15-20 bustards that are found there. I will spend Rs. 10 crores to start *Project Bustards* to protect the remaining two resident species of bustards, the Bengal Florican, now considered Critically Endangered, and the Lesser Florican, whose number could be as low as 2,000 in the whole world. Readers can get more details about *Project Bustards* from the BNHS website (www.bnhs.org).

The Greater Adjutant is a globally endangered bird species, with perhaps less than 600 surviving individuals in India. They breed on tall trees, sometimes in the middle of towns and villages in Assam. Every year between 50 to 60 chicks fall down due to storms and rains. For three years, Green Guards, a local environmental NGO, successfully rehabilitated fallen chicks in Nagaon town, but soon their funds ran out so this rehabilitation scheme had to be stopped. Instead of wasting funds on stray dogs, I would spend about Rs. 5 crores for the next ten years to rescue, raise and rehabilitate the fallen chicks of the Greater Adjutant. I would also spend funds to raise awareness and start a scheme to support people who protect large trees on their private land where this endangered bird can nest successfully.

The Black-necked Crane is an iconic species of the high-altitude lakes of Ladakh and Tibet (China). Although its global population is about 11,000 individuals, mostly in Tibet, in India we have about 50-60 birds, with about 15-16 breeding pairs. Every year, 50-60% chicks of the Crane are killed by stray dogs. The local Buddhists do not like killing of any animal, particularly dogs, so I will first start a campaign to inform them why humane elimination of stray dogs is necessary to protect the Cranes. I will also use the funds to start a campaign with the army and border security forces to eliminate stray dogs around their settlements, as stray dogs are not only a menace for the vulnerable chicks of the Cranes, but also to marmots, gazelle and other threatened species of Ladakh.

Annual floods in Kaziranga bring misery to wild animals and anxiety to the forest officials who are doing an excellent job in protecting threatened species such as the Rhinoceros, Swamp Deer, Wild Buffalo and Tiger. Earlier, during floods the animals would move to the safer Karbi Anglong



Hills, but now they have to face the increasing traffic on the National High No. 37, human settlements and tea gardens. There are only three or four effective corridors left between Kaziranga and Karbi Anglong Hills, some as narrow as 500 m. I will use at least Rs. 15 crores to purchase some strategically located private land to add to the existing corridors to make them larger and more effective for the movement of wild animals. I will also spend about 10 crores to make barriers and speed breakers on this road, thus saving thousands of lives which are untimely ended under speeding vehicles.

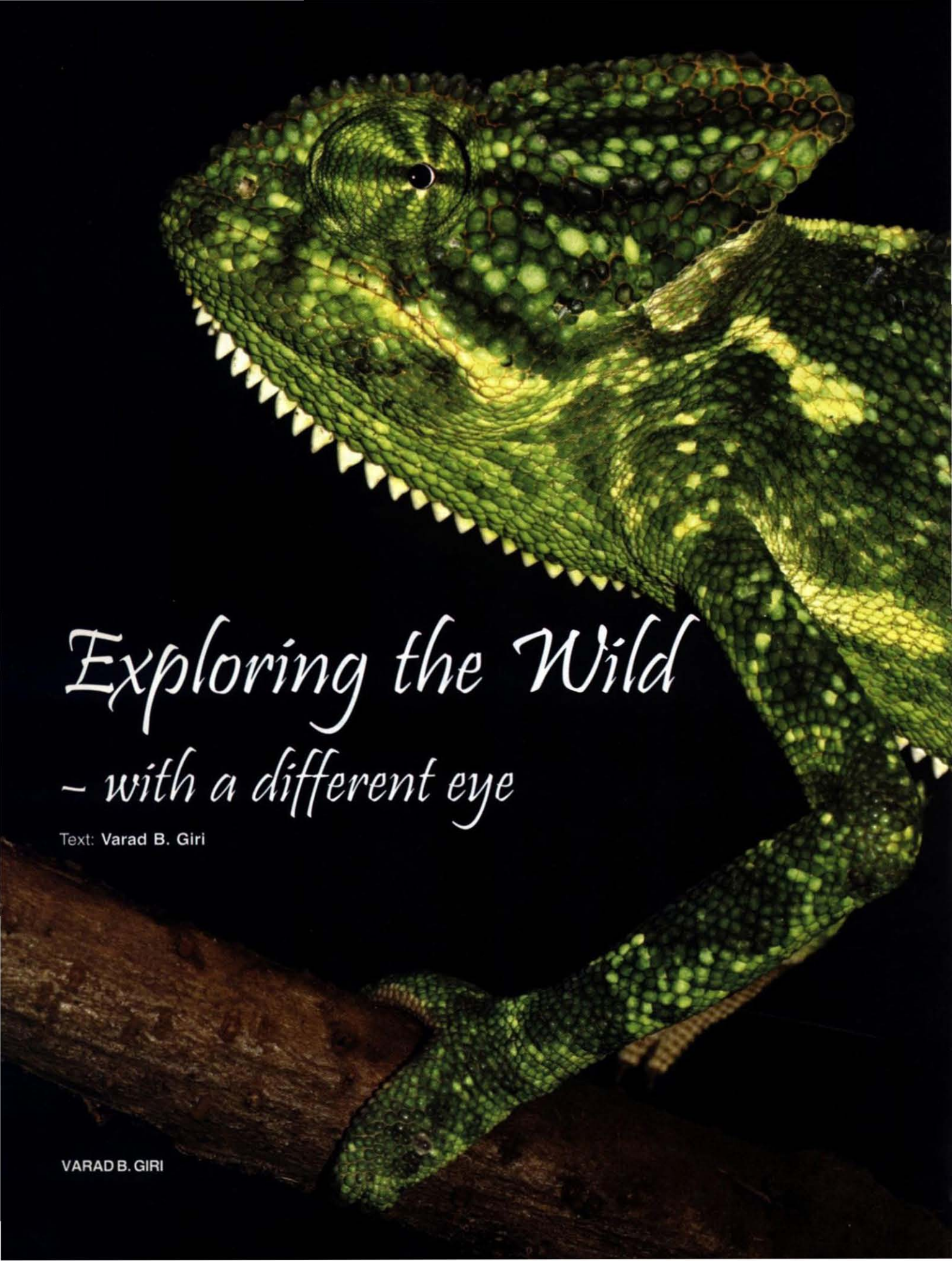
The Wildlife Trust of India (WTI) has brought out a very useful book *RIGHT OF PASSAGE: ELEPHANT CORRIDORS OF INDIA*. Most of these corridors are being encroached, leaving no options for the Elephants but to move through crops fields and human settlements, some times resulting in destruction and death, both of humans and Elephants. I will use between Rs. 30 and 40 crores to enhance and develop some of the most critical corridors identified by the WTI.

The Gangetic Dolphin is an affectionate and harmless animal of the Ganga and Brahmaputra river systems. Hunting, over-fishing of its prey, dams, weirs, dynamite, and pollution has eliminated it from long stretches of Ganga, leaving isolated populations, sometimes as low as ten individuals. These small populations have the danger of genetic deterioration through inbreeding. I will quickly start Project Dolphin to save this highly endangered species, with the twin objectives – to study the genetics of isolated populations, and to devise methods for rescue and reintroduction of genetically different individuals. I will also work with the local fishermen to eliminate the use of nylon fishing nets which inadvertently kill many dolphins every year. Perhaps a Rs. 10 crore three-year project will make a difference to the fate of the Dolphin and lives of the poor fishermen.

The global population of Hangul or Kashmir Stag is between 160 to 180 individuals, mostly in the Dachigam National Park, making it the most endangered deer species in India. The other endangered deer is the Brow-antlered Deer of Manipur. While we have healthy captive populations of the latter, there is no conservation breeding programme for the Hangul. As Hangul is the State Mammal of Jammu and Kashmir, and an icon of the Kashmir Valley, it is a great symbol of conservation. If I had Rs. 128 crores, I would spend about Rs. 20 crores in the next five years to study its movements, to start a conservation breeding programme, and to relocate the Sheep Breeding Farm, which is inside the Park.

Rhesus and Bonnet macaques have become a great threat to biodiversity conservation in many areas. For example, Bonnet Macaques wrongly released in the Point Calimere Wildlife and Bird Sanctuary in Tamil Nadu have eliminated almost all tree-nesting birds by eating their eggs and chicks. The Yellow-browed Bulbul, once extremely common is rare to see now. Similarly, Rhesus Macaques are a great threat to the eggs and chicks of birds breeding in the Keoladeo National Park in Rajasthan. As monkeys have cultural-religious importance, euthanasia will not be accepted by our society. Therefore, I would fund research projects to devise simple sterilization methods, which can be used on a massive-scale to control the burgeoning population of monkeys in our countryside.

There are numerous other conservation issues in dire need of funds. For example, saving the last home of the Wroughton's Free-tailed Bat in Talewadi on Karnataka-Goa border, purchasing fragments of evergreen forests (shola) near Valparai in Kerala to save the endemic and uncommon frog *Melanobatrachus indicus*, adding scrub habitat of the Critically Endangered Jerdon's Courser to the Sri Lankamalai Wildlife Sanctuary in Andhra Pradesh, clearing the pernicious weed, Water Hyacinth, from Harike and Bindawas IBAs, removing invasive goats from the Narcondam Island to protect the Narcondam Hornbill, and many more such initiatives. All these projects are stalled due to lack of funds, but who will give money for these conservation initiatives? Let the bustards and dolphins disappear from more areas, let *Melanobatrachus indicus* become extinct, let the Wroughton's Free-tailed Bat and Hangul die out. The priority of the government is to use the tax payers' money to save stray dogs!



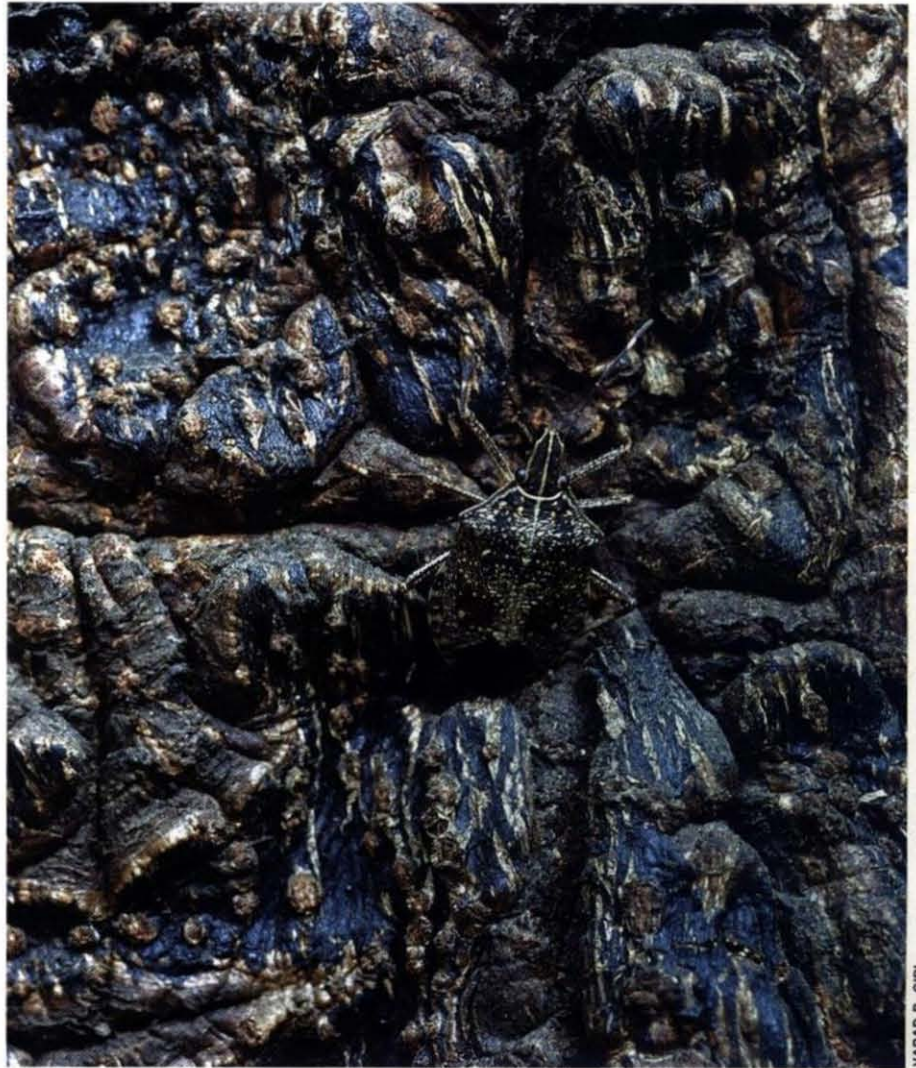
Exploring the Wild
- with a different eye

Text: Varad B. Giri

The last decade has seen wildlife from across the globe being served on a platter right into our living rooms and this has brought a change

in the general perception of wildlife. More people are visiting national parks, sanctuaries and other wild places now, but many a times these 'new enthusiasts' come back disappointed. They did not see in the forest what they saw on TV channels – no trumpeting elephants and roaring tigers, or the stampeding herds of deer. One has to understand that there is more to wildlife than what is seen on the 'idiot box'. The forest is also home to a number of smaller life forms, the backbone of any food chain, and these are in most cases never on the 'to see' list of these 'new enthusiasts'. In my view, if one wants to enjoy nature, look beyond the expected for every component of biodiversity is vital and should be given equal importance. Once you understand this then every moment in the forest will be a learning experience, full of joy, and there will be no place for disappointments.

Our attitude towards a subject is mainly governed by the way we are 'exposed' to it. I still remember my field outings with my first *guru* in field studies, Hemant Dhamake. He was my senior at the Shivaji University, Kolhapur, and known for his bird watching skills, knowledge of snakes, and photography. I would spend most of my free time in his room, reading books and looking at his photographs of snakes and other animals. His room partner, Sachin Mali was good in botany. It was around this time that I started developing keen interest in nature. I started bird watching on the University campus under the guidance of Hemant, and later began to draw rough sketches of birds with their



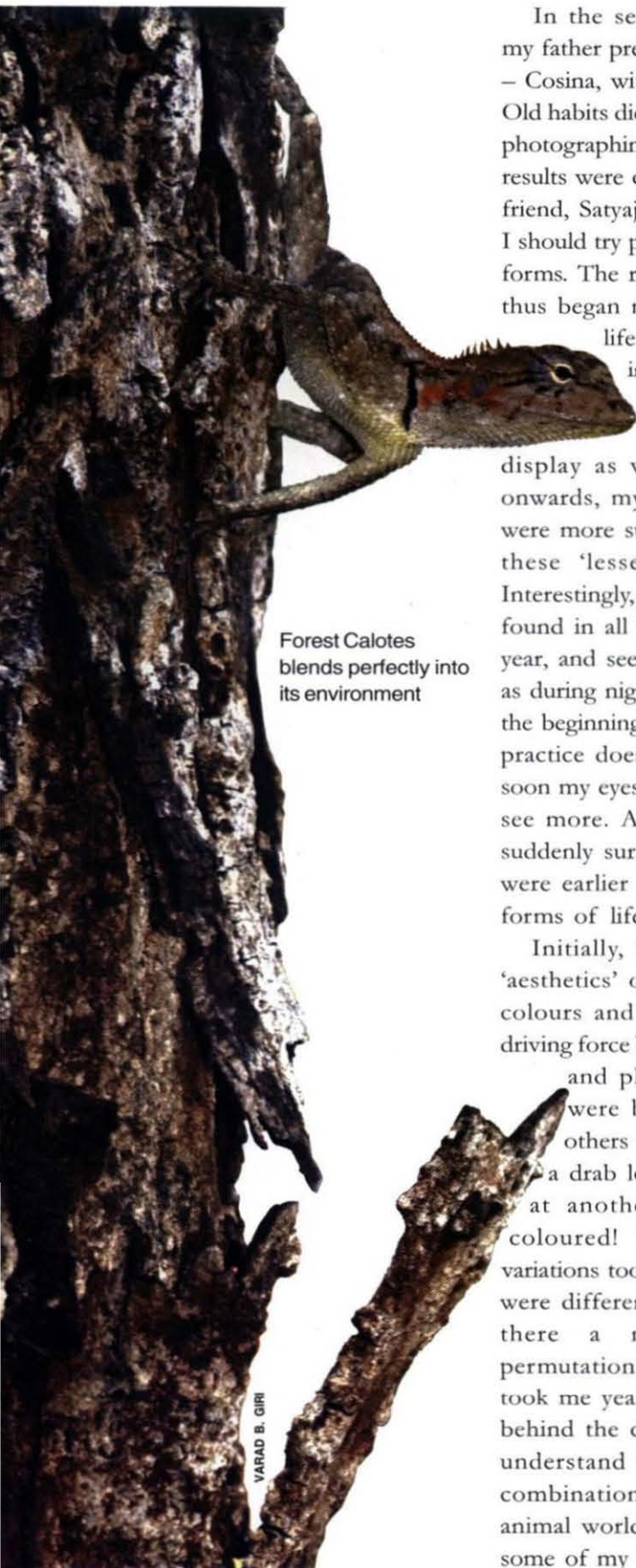
VARAD B. GIRI

Smaller forms like this tiny, beautiful bug are always present all around, but we fail to notice them

habits and habitats. Hemant would take me to the library and teach me how to identify birds with the help of Dr. Sâlim Ali's bird books. This was my first exposure to the two treasure troves that 'metamorphosed' my life – the natural history section of the College library and the Bombay Natural History Society. The two together were, without my knowledge, sowing the seeds for my future of a long association with natural history. About this time, Anil Shingare, a good friend and classmate introduced me to snakes; I would accompany him to rescue snakes in the University campus. The rescue missions and

discussions with Anil laid the foundation stone for my career in Herpetology.

One day Hemant asked me to join him and Sachin for a field trip, and I followed them into the forests of Wasota near Satara, expecting to hone my skills of bird watching and about snakes too. But destiny had other plans; Hemant and Sachin were soon introducing me to a different world, a world of insects, lizards, and flowers. The enormity of the diversity was not only overwhelming, but an eye opener. And for the first time, I realised that there was much more than what meets the eye in the forest.



Forest Calotes
blends perfectly into
its environment

VARAD B. GIRI

In the second year of my M.Sc. my father presented me with a camera – Cosina, with 35-70 mm zoom lens. Old habits die hard; to start with I tried photographing birds with this lens. The results were quite discouraging, until a friend, Satyajee Mane suggested that I should try photographing smaller life forms. The results were amazing, and thus began my journey with smaller life forms. While observing insects and reptiles, I was astonished by their ability to use colours for display as well as disguise. Then onwards, my subsequent field trips were more successful as I could find these ‘lesser’ forms all around. Interestingly, these smaller forms are found in all habitats, all through the year, and seen during the day as well as during night. The only difficulty, in the beginning, was spotting them. But practice does make one perfect and soon my eyes were trained, they could see more. A whole new world had suddenly surfaced in the forests that were earlier drab without the larger forms of life.

Initially, I was obsessed by the ‘aesthetics’ of the lower forms, the colours and patterns were the real driving force behind my passion to find and photograph them. Some were brightly coloured while others were dull. Many a times a drab looking animal would be at another moment brilliantly coloured! There were seasonal variations too, the juveniles and adults were differently coloured. Why was there a need for so many permutations and combinations? It took me years to realise the biology behind the colours and patterns, to understand that every colour-and-combination has a meaning in the animal world. I did find answers to some of my questions, but many still

remain unanswered. There is an amazing world out there, a world full of mysteries, and even today I seek answers to a multitude of questions. Interestingly, these answers are always ‘multidimensional’, for most of the times each answer is the beginning to a new set of questions!

To begin, let us together explore different habitats and spot some of these hidden marvels in our forests. Never after today will you come out of a forest disappointed.

When on a nature trail, look for movement or a different shape on the ground for this is where you will spot some forms that are well suited to merge in the leaf litter or among the grass or any such surroundings. Their coloration and patterns makes them invisible, and thus we easily ‘miss’ them, or shall I say, “We don’t try to ‘stand and stare.’” But with patience and persistence you will spot them.

There are many ground dwelling lizards, like skinks, lacertids, and some geckos, which are generally missed during nature trails. Lacertids are a group of lizards that mostly prefer open or degraded habitats. These diurnal and fast moving lizards take refuge under rocks when alarmed. The species that are seen in the Western Ghats and Deccan Plateau are brownish with yellowish coloured stripes on their backs. They are sometimes seen basking on open rocks, but a little disturbance will cause them to disappear under rock crevices, or run into grass. Try spotting these lizards in dry grass. It’s almost impossible!

The arboreal world is no less exciting, many-a-times the arboreal forms resemble the habitat in which they live. The ones which mostly live on tree trunks acquire the colour of the bark. Have you ever spotted a Bark Mantis, a cryptically coloured insect, which mostly lives on the barks of

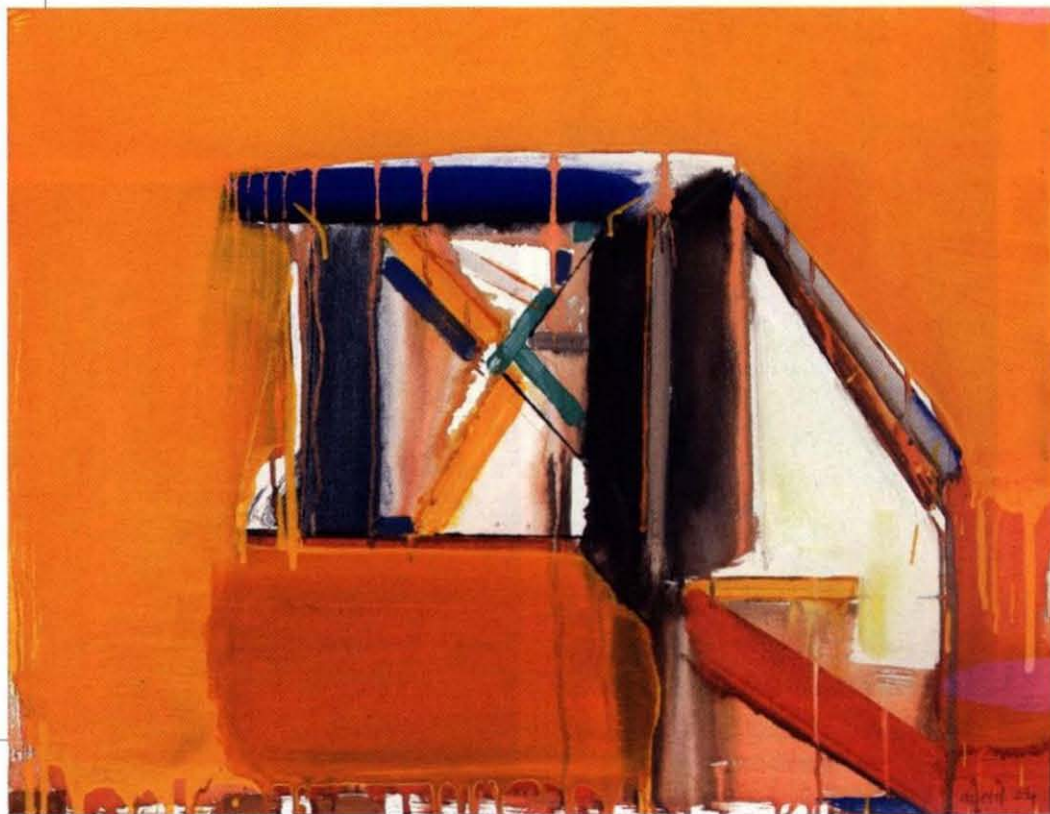
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Prabhakar Kolte, Untitled, Somerset paper (the choice of paper of printmakers worldwide), 21.4" x 18" .

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VARAD B. GIRI

A Bark Gecko is always tricky to spot on a lichen laden bark

trees? Give it a try. During an outing for members of the BNHS, I once asked the participants to spot a Bark Mantis on a tree nearby. When nobody could spot the Mantis, I nudged at a 'bark piece' and it ran to the other side of the trunk. Look closely and you may see a Bark Mantis on a tree in your garden too.

Some bark mimicking forms go a step further, i.e. they are more difficult to spot. If you come across a lichen laden bark when in the forest or in your garden look closely, you may see a Bark Gecko; these are very difficult to spot on lichen laden barks. When in the Western Ghats, look for the

spectacular display of the Draco or Gliding Lizard. They are active in the day and can be seen gliding from one tree to another with the help of their brightly coloured patagia or wing membrane. They are visible only when they are airborne for once they land on a trunk they suddenly vanish. In fact, to a novice it may appear like a falling leaf that suddenly disappears into thin air. The colours and pattern on the back of the lizard are identical to the bark of a tree. If you have the time and patience do follow one of

them, and look at them feeding, the only part that moves when they feed is the head; the rest of the body remains motionless! They search for a line of ants moving on the trunk, and once they have spotted them they acquire a comfortable position close and parallel to this ant line and start feeding.

The Indian Garden Lizard and Forest Calotes are mainly tree-dwelling, diurnal lizards. They are difficult to spot when on a tree trunk as they are predominantly brownish with dark spots. They have the habit of raising



KEDAR BHIDE

A Draco on a bark needs to be looked for due to its cryptic coloration



VARAD B. GIRI

The Common Evening Brown is generally passed off as dry leaf litter

their body on their forelegs, and in this posture they look like a broken twig or bark. Next time you see a broken bark or a twig, in the forest or in a garden, look carefully, for you may be missing something of interest. When on the ground these lizards acquire a different coloration: greenish with yellow and black spots. In fact, they acquire several colour forms to perfectly match their habitat. In the breeding season, however, the red-headed males are quite conspicuous.

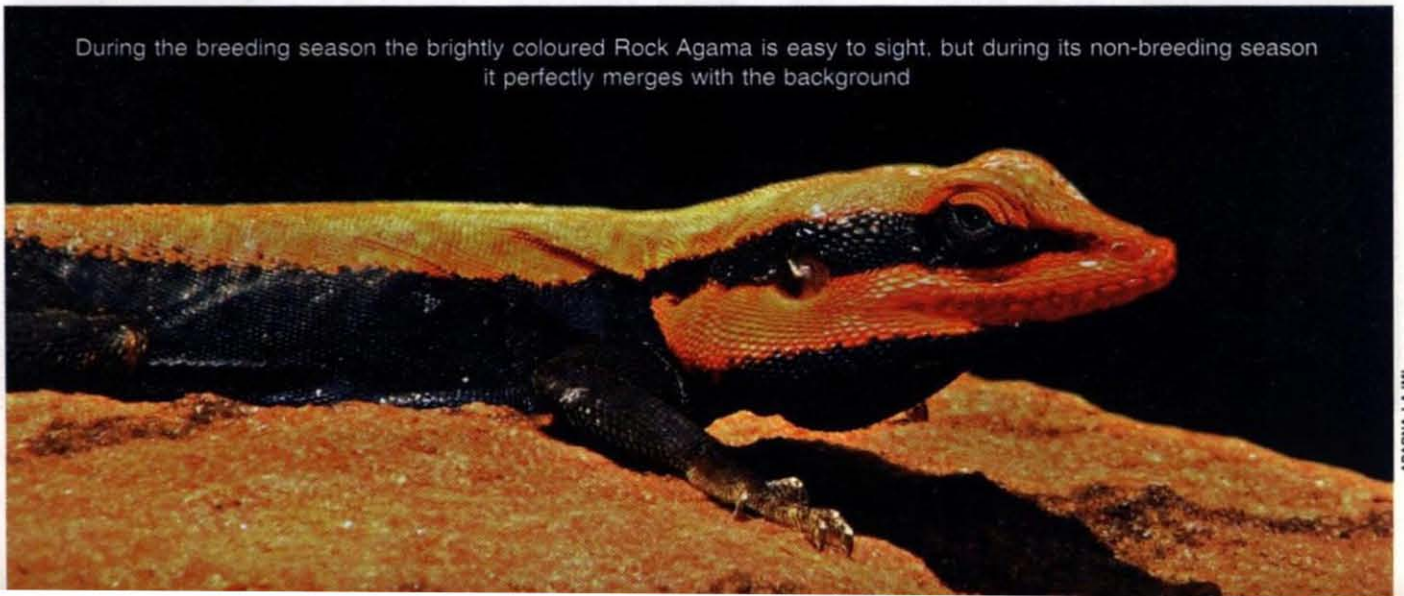
There are certain butterflies like the Blue or Orange Oak Leaf, which resemble, as the name suggests, an Oak leaf. When searching for lizards in dry leaf litter, mostly after monsoon, I would see a brown insect

flying from the ground and disappearing nearby. In the beginning I ignored it, but on careful observation I discovered that it was a butterfly. What I had ignored as dry litter was actually a dry season form of the Common Evening Brown that remains invisible in the dry leaf litter.

Among tree-dwelling forms, I consider spiders as the champions of camouflage as there are a number of species that resemble bark, flowers, stick, and even other invertebrates like ants and snails. I have a special attraction for crab spiders. Try spotting these small spiders that usually hide inside flowers and hunt insects that visit the flower. I was in Kotigao Wildlife Sanctuary, Goa last year. One

day my friend Paresh Porob, Range Forest Officer of this Sanctuary, suggested that I could get good butterfly photographs in the garden around his cottage. Earlier I had never tried photographing butterflies as I do not have the patience required for butterfly photography. But I decided to take up the challenge this time. I saw a Daniad Egg Fly on a flower. I approached it and got some good images. "Well, butterfly photography is not as difficult as thought it to be!" But as I approached the butterfly from the other side I saw the real reason why the butterfly had not moved to give me good 'poses'. A small, white crab spider was holding this butterfly, which was already dead. The well

During the breeding season the brightly coloured Rock Agama is easy to sight, but during its non-breeding season it perfectly merges with the background



APARNA LAJMI

Exploring the Wild

camouflaged spider had succeeded in fooling both me and the butterfly. The next time you come across an insect sitting calmly on a flower, observe it carefully, you may spot a crab spider busy at its meal!

One does not need to travel distances to catch a glimpse of this 'hidden world'. Members visiting Hornbill House, head office of the BNHS in Mumbai are probably aware of the Kadamb tree in the Society's compound; one day I thought I saw some movements on the bark of this tree. It took me some time to spot a bug. When I looked closely there was not one but many bugs, and each one was a perfect replica of the bark flakes.

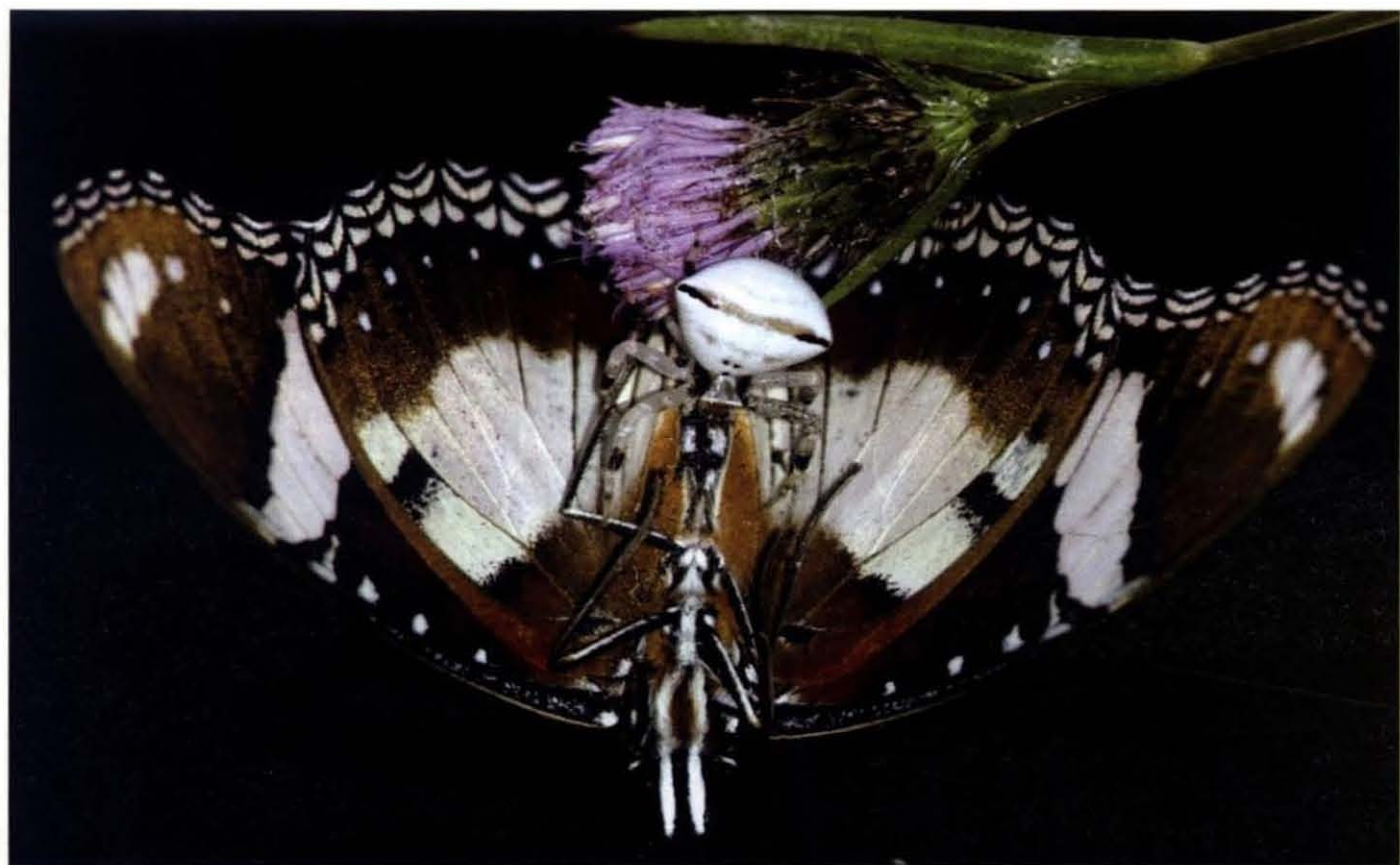
Have you visited places having huge rock boulders? At first glance you may not see any signs of life in such barren habitat, but if you search carefully, you



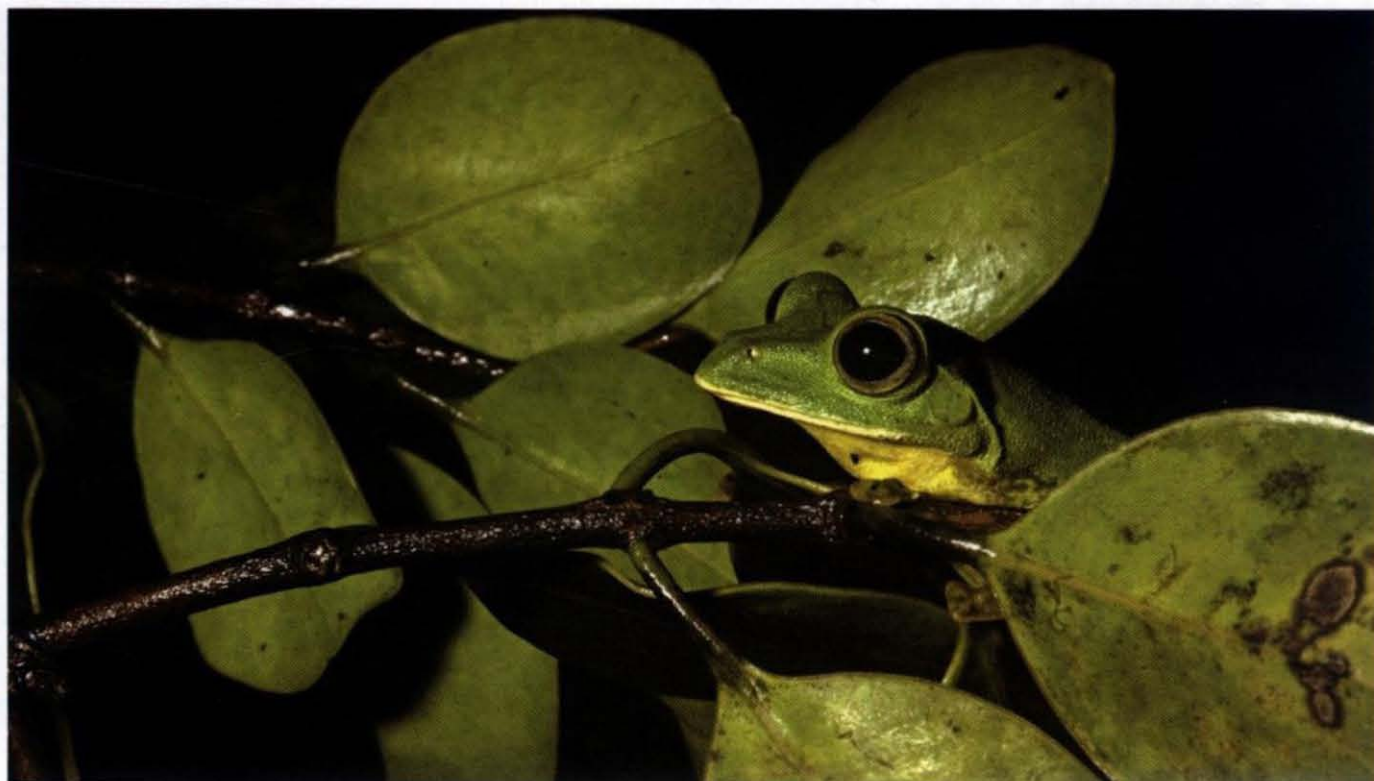
A smart and excellent mimicry of an ant by a spider

may come across a handsome lizard commonly called the Rock Agama. These lizards prefer rocky outcrops and resemble rocks, so spotting them in the non breeding season is a challenge. During the breeding season the males acquire bright colours to become conspicuous – a good example of disguise and display.

It is not just a pair of trained eyes and persistence that you need, a bit of curiosity will also do you good. Once while having tea at a small tea shop along the road near Malwan in Maharashtra, I saw two Red Tailor Ants hanging in midair. I knew that these ants are not known to produce silk like spiders. I approached the ants as they slowly landed and disappeared behind one large leaf. The movement of the ants was not ant-like, this further increased my curiosity; I



A Crab Spider blends well with the flower for its rich meal of a butterfly



VARAD B. GIRI

One needs to look carefully to spot the Malabar Gliding Frog from among the leaves

turned the leaf over to observe this 'interesting ant'. Guess what, there were not two, but only one ant, which was dead, the other was a small spider, a look-alike of the Red Tailor Ant. What marvellous mimicry, the exact colour and two black spots on the abdomen of the spider that looked like eyes. I presume this vague resemblance cost the Ant its life

A few forms are leaf mimicking so one has to be alert while searching among leaves. It was my dream to see the Malabar Gliding Frog, which materialised in my first monsoon survey to Amboli, thanks to my colleague, Vithoba Hegde, who spotted it. During the night the males become vocal and are easy to spot. But by day they disappear among leaves, and spotting them among leaves is almost impossible, as they just look like another leaf.

Leaf mimicry is highly developed in the Chameleon. This arboreal lizard with its laterally flattened body,

predominantly greenish colour (if on tree), and gait becomes a part of the tree. One can see them only when they are outside their natural refuge, mostly when crossing roads. Till date I have spotted this lizard on a tree only once and this too with a little help from a friend Dr. Dharmendra Khandal, who showed me the sleeping Chameleon on tree in the Sanjay Gandhi National Park. No wonder this lizard is considered a master of camouflage!

While relaxing by a small stream or a pond in the forest after a long nature trail, don't just sit there; look into the water, this too is an interesting world with many flourishing life forms, especially during or just after monsoon. If you see movements at the bottom of these ponds or streams, then watch carefully, these may be tadpoles. Tadpoles are aquatic and can be seen in stagnant and fast flowing waters. Some tadpoles feed at the bottom and are darker in colour and

are visible only when they move. Tadpoles of *Microbyla* sp. are surface feeders; they are comparatively flat and transparent with some dark spots. Being transparent helps the tadpoles to become invisible. On the contrary, tadpoles of *Indirana* sp., which are mostly seen on rocks with thin film of water and moss, are darker and have whitish spots – another example of perfect camouflage.

It is said that 'Curiosity killed the Cat', but my curiosity for the 'lesser known' denizens of this planet has done me more good than harm. Get a little curious, for this is just a glimpse, not even the tip of an iceberg, to the 'hidden world'. The small wonders all around you are waiting to be discovered; you just need to seek them with a different eye. ■



Varad B. Giri is Scientist 'B' at the Herpetology Section of the Bombay Natural History Society. To learn more, write to the author at varadgiri@gmail.com

Chasing Butterflies across Himalaya

Text and Photographs: Isaac Kehimkar

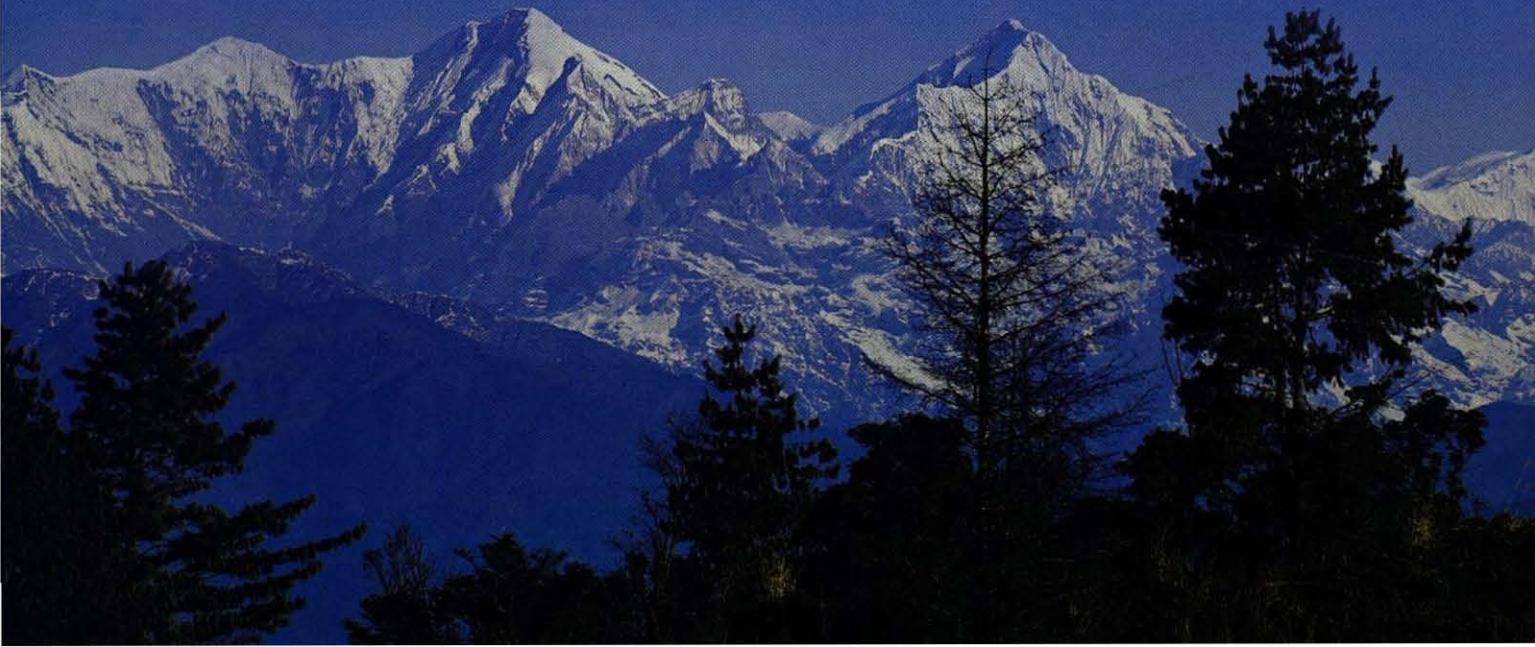
It was a steep up hill climb. Breathless in the rarified air, I inched forward steadying my camera to frame my first image of the elusive Red Apollo – a butterfly of the Himalaya, which flies above 4,350 m. This was my dream butterfly, and I had got this opportunity after several failed attempts during earlier expeditions.

In 1994, I first attempted to frame this butterfly in Kedarnath. I had chased it over a slope, and finally when it settled over a blue Aster flower, I thought I would get a perfect picture. But before I could bag the image, a huge white cloud passed through, and when it cleared the Apollo was nowhere nearby. Next time, I was at Chitkul, the last village on the Indo-Chinese border in Himachal Pradesh, when I saw it again, basking. I could hear my thumping heart. I told myself that here was my chance finally. I approached it gingerly, and when I was close enough it fluttered off, straight to sit on an inaccessible

rock face. I was so angry with myself that I shouted at my driver and picked up a fight with my wife. This time, I was on the world's highest motorable road at the Khardungla Pass at 5,359 m (18,380 ft), in Ladakh. Determined not to miss it this time, I approached slowly as the Apollo basked in the sun, with its wings spread out. Once within the frame, I squeezed the camera button to finally capture my first image of the Apollo. Elated with this achievement I was actually at the top of the world at Khardungla! Photographing butterflies has always been very rewarding in the Himalaya – my ultimate Mecca!

Himalaya in India ranges from Kashmir to Arunachal Pradesh, and then there are the Himalayan kingdoms of Nepal and Bhutan in between, with China on the other side. The entire Himalayan chain of mountains stretch from Eastern Afghanistan to Northern Myanmar, covering approximately 20,00,000 sq. km. As one travels in India from west to east Himalaya, butterfly diversity increases progressively to peak in Arunachal Pradesh. The advantage of being in Western Himalaya is that the tree line is much lower at 3,650 m than in Eastern Himalaya, which is around 4,570 m, which makes the high altitude butterfly species like Apollos more easily accessible in western Himalaya.

The Himalayan mountain range has some of the highest mountains in the world, and profoundly affects the climate and vegetation of almost the entire Indian

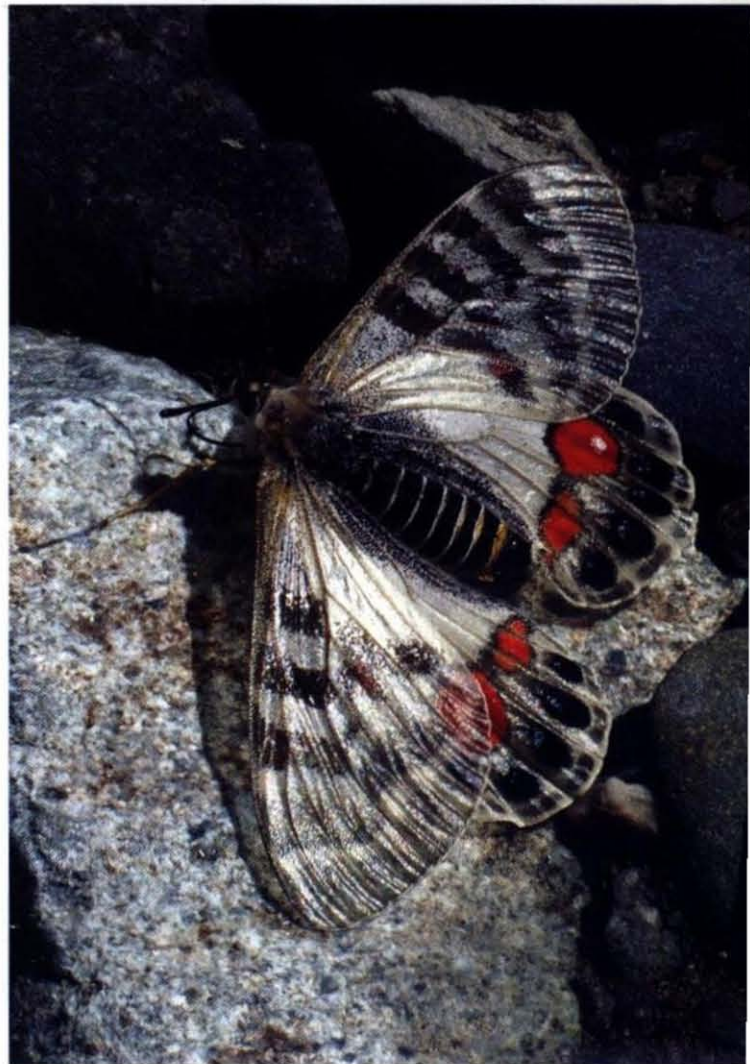




A Jezebel Palm fly (left) may be mistaken for a moment to be a Red-base Jezebel (right)

subcontinent. The Himalayan range has more or less a distinct and most diverse flora from the rest of India, and therefore much of the butterfly fauna here too is distinct. The lower foothills and warmer valleys have subtropical vegetation, and ascending further one comes across the temperate zone, which extends upwards to the tree-line. From the tree-line upward is the alpine vegetation, which occurs up to the zone of permanent snow and ice at the higher reaches. The lower region of the alpine zone has the alpine meadows. Higher up, there are alpine deserts with little or no vegetation due to the peculiar geographic and climatic conditions. With changing vegetation, the butterfly diversity too varies. The altitude at 3,000 m seems to be a critical factor as 90% butterfly fauna occurring above this altitude has Palearctic affinity, which means that butterflies here are closely related to butterfly species found in Europe and Asia, north of the Himalaya. While 90% of butterflies seen below this altitude have Indo-Malayan affinity to butterflies species found in South and South-east Asia and southern parts of East Asia. The Eastern region of the Himalaya is more tropical.

Eastern Himalaya butterfly hotspots are my favourite for the sheer diversity that puts you under its spell. I am totally mesmerised by the butterfly fauna of this region. Sikkim to Arunachal Pradesh is truly a paradise for butterfly watchers, where one comes across rich oriental butterfly fauna. The Eastern Himalayan region comprising of Central Nepal, North Bengal, Sikkim, Bhutan up to Arunachal Pradesh has rich and diverse flora. The geographical position of being the nearest mountain barrier to face the monsoon-laden southwest



The Regal Apollo – one of the exclusive dweller of the Himalaya

Chasing Butterflies

monsoon winds from the Bay of Bengal makes it the most humid part of the Himalaya. The annual rainfall varies from 2,000 mm to 5,000 mm, except for the northern most regions where the rainfall is scanty. The climatic diversity in this region is indeed unique.

Travelling upwards to Sikkim from Siliguri (North Bengal) one starts seeing orchids on tall Sal, *Terminalia* and *Haldina*. When moving in these tropical semi-deciduous and tropical wet forests I find myself in a magical wonderland of butterflies. A Jezebel Palmfly flaps around and for a moment I would mistake it for a Red-base Jezebel whom it mimics, even the Spotted Palmfly flashes its metallic blue forewings to look like the distasteful blue crows. Around the Floss flowers there are several blue crows with glossy blue wings flying together. They confuse me further as I try hard to find which among them are the Striped Blue Crow and Spotted Blue Crow. That is how distasteful species look alike to reinforce their distastefulness on the predator's mind. Yes, that is what the mimicry among butterflies is all about – to confuse the predator with a dilemma – to eat or not to eat. A dry leaf comes to life and turns into a handsome Orange Oakleaf. The gorgeous Common Peacock dusted with iridescent green gold, flashes its hind wing blue patch as it weaves through the canopy. Both Blue Baron and White-Edged Blue Baron are engrossed sharing an overripe fruit among the leaf litter. Great Orange Tip, Commander, Large Yeoman frolic among the sunlit warm valleys. Higher up as the forest becomes more evergreen and moist, you see large climbers hugging tall trees festooned with ferns, mosses and orchids. On the steep slopes there are wild bananas, palms, canes and screw-pine or *Keora* (*Pandanus* sp.) in the humid Teesta valley. A wide range of bamboo species occur at varying altitudes and the majestic tree ferns stand out soon in the moist sub-tropical zone. This is the perfect place to look out for those dazzling sapphires, especially the Golden Sapphire, but the Green Sapphire is equally a pretty little jewel. But photographing these iridescent

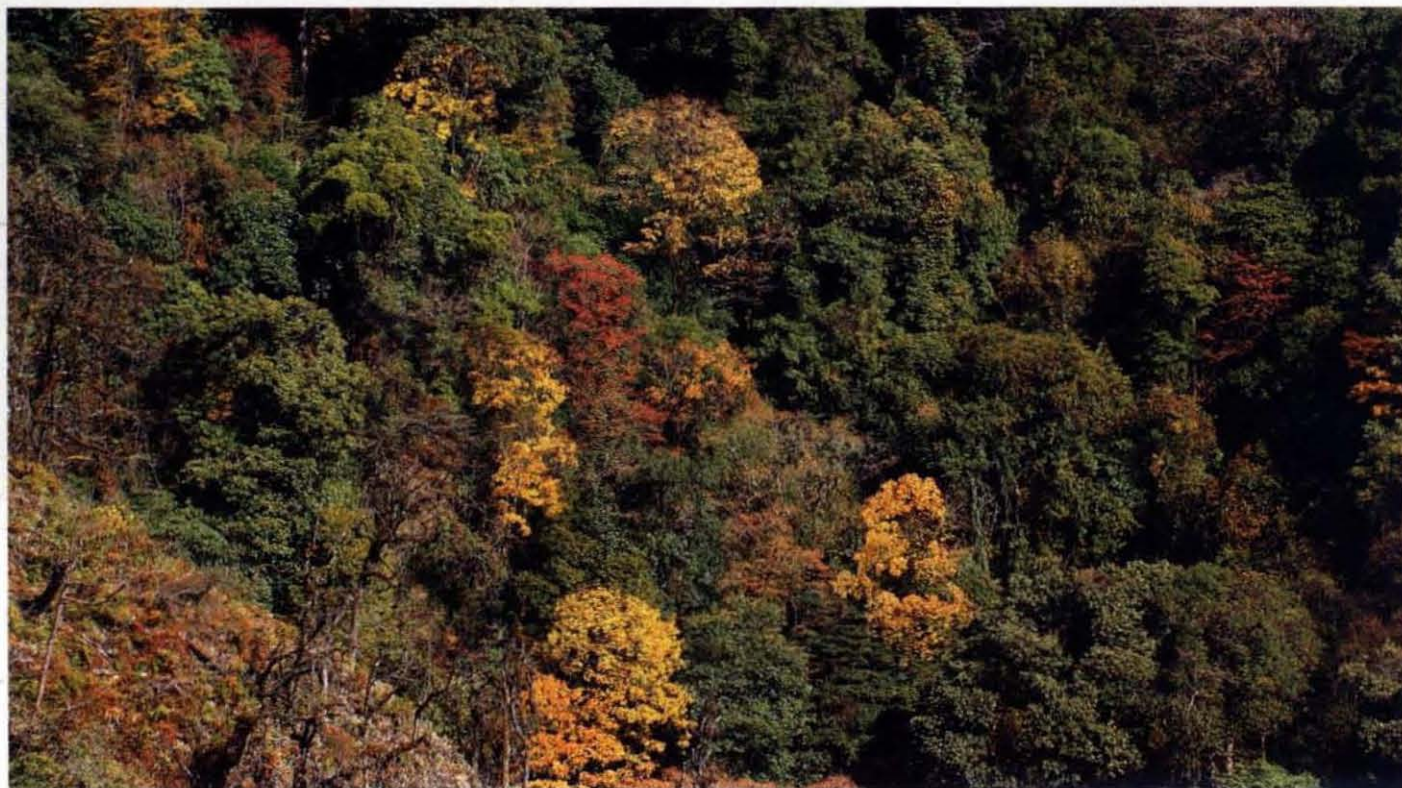


The moist sub-tropical zone is a perfect abode for the Golden Sapphire

butterflies proved to be difficult, as a slight tilt in the camera angle would result in the golden wing turning black. Such iridescent colours are not pigments, but are structural colours caused by the refraction and reflection of light on the specially structured scales having ridges. I found that the golden iridescence appeared better in available light, but then the sharpness may be lost in the absence of flash. Only way to better your techniques is to keep trying. Spending more time in chasing butterflies with camera will certainly make you a better butterfly



The handsome Orange Oak Leaf is a classic example of adaptive coloration



The forest of EagleNest WLS is gifted with butterflies of all forms, sizes and shapes



White Dragontail's thirst for salts is well taken care by mudpuddling

photographer as you begin to understand butterfly behaviour, and other intricacies of butterfly photography.

I found the zone between 400 m and 1,500 m altitude most diverse and populated with butterflies. The diversity scale comes down as we climb higher. After some hours of a winding climb we are among the oak, magnolias, rhododendrons, laurels and conifers of the temperate forest, and much higher around 3,500 m plus the junipers and rhododendrons grow no higher than your knees. And above this altitude there are the cold arctic alpine meadows. In summer, meadows get carpeted with flowers like poppies, anemones, primulas, gentians and wild strawberry. In this vertical climb with the changing vegetation zones, the butterfly species too change. At higher altitudes among the Rhododendron forests there are butterflies like the Himalayan Sergeant, Eastern Comma, Club Beak, Krishna Peacock, Kaiser-I-Hind, Large Cabbage White, and Indian White Admiral, and on the meadows there are Pale Clouded Yellow, Yellow Swallowtail, Common Blue Apollo and Queen of Spain Fritillary. Among the Apollos, the Common Blue Apollo is the lowest flying Apollo occurring above 3,000 m on the meadows. Surprisingly some butterflies like the ubiquitous Painted Lady, Indian Red Admiral, Dark Clouded Yellow and Indian Tortoise Shell are seen at almost all heights.

Chasing Butterflies

Namdapha National Park and Eaglenest Wildlife Sanctuary in Arunachal Pradesh are another two of my favorites for watching butterflies. These places are teeming with butterflies in every shape, size and colour. You see them on the road clambering over carnivore dung. Walking along the riverside will set off an 'explosion' of butterflies, where hundreds of butterfly take off briefly to soon settle down and resume their mudpuddling as you pass by. It was at Namdapha that I saw thirteen White Dragontails mudpuddling together. I just sat there in the middle of the road to savour this spectacle of little jewels quivering their slender tails as they probed the liquid mud. The thirst for dissolved salts (that's why they mudpuddle) is very obvious here in this region, so much so that a fresh killed snake on the road had drawn a Popinjay and Commander to probe at the road-kill. It's not that they are blood thirsty, they are after the salts in it. And here I almost missed the rare Wavy Maplet mistaking it for the Common Maplet. But for a second look at this golden tawny butterfly with nine dark parallel lines across both wings, when I noticed the sixth line from base of its forewing – the line was wavy. Bingo! It was the elusive Wavy Maplet. These little joys are good enough to cherish in your memories. Eaglenest too is full of surprises and a sure place to see the rare and endangered Bhutan Glory.

But of course all this magic happens while the sun shines. A cloud cover or a drizzling day can ruin your plan, as not many butterflies will venture out. Yes, this region has almost eight months of rains!

Though not as diverse as Eastern Himalaya, Western Himalaya has its own unique butterfly fauna and the terrain has its own specialties. Ladakh certainly takes the cake in hosting a good range of high altitude butterfly species. Western Himalaya ranges from West Nepal through Uttarakhand, Himachal Pradesh to Kashmir and beyond into Pakistan. The region comprising of northern and western Pakistan, and Jammu and Kashmir, separated from the rest of the Himalaya by the Sutlej river is referred to as Trans-Himalaya which means 'beyond Himalaya'. The Zaskar, Ladakh, and Karakorum dominate this region. The vegetation includes subtropical evergreen and coniferous forests, as well as alpine steppe. High in the drier Alpine zone inner mountain ranges, where rainfall is sparse, some of the typical species adapted to survive in harsh conditions are Apollos, Bath Whites, and Clouded Yellows, whereas in the moist Alpine zone above the tree



The 6th wavy line from the base of the forewing helped to identify this rare Wavy Maplet

line around 3,000 m, small fritillaries Blues, Arguses, and Clouded Yellows. Much lower, between 1,800-3,200 m, the region which receives more rains and winter snowfall, butterflies like Common Windmill, Glassy Bluebottle, Beaks, Coppers, Peacocks, Large Silverstripe, Sulphurs, Magpie Crow, Sapphires, Blues, Satyrs, Birdwings, Yellow Swallowtail and several more.

Trekking in the Valley of Flowers in Uttarakhand, I chanced upon a lovely Glassy Bluebottle. I approached it very slowly, while it mudpuddled. I soon realized that this butterfly was too engrossed to take off. And to get an eye-level shot, I threw myself on my belly and shot off two rolls. It was only after I had finished, I found to my dismay that while I was photographing I was rolling in the dried horse dung full of tiny, but nasty ticks. By then the ticks had reached places where they would be causing me much discomfort for the next six months. But every time I looked at the lovely Glassy Bottle images I felt that the tick-borne discomfort was worth the trouble.

Many a times I have hopelessly watched gorgeous butterflies like the Golden Birdwing or Great Windmill sailing in the canopy, wishing that they would come closer within my camera's range on a low flowering shrub or to mudpuddle. I have now trained myself to enjoy by just watching butterflies like most bird watchers do, without the greed to capture their images. But that will not stop me from chasing them. The chase is endless and the fascination grows stronger every time I am among the butterflies in this magical land. ■



Isaac Kehimkar is currently General Manager, Programmes at the BNHS. He has authored a number of books, the most recent being *THE BOOK OF INDIAN BUTTERFLIES*. He is also a Fullbright Scholar.

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THIS FORM MAY BE PHOTOCOPIED AND MAILED TO US

Summer Blooms

Text and photographs: Ashok Kothari

The Late S.P. Godrej, an ardent tree lover always thought that India is next to Brazil in variety of trees. Since time immemorial trees have been revered and worshiped by Indians, in fact many trees are described in Indian folklore. Most trees blossom during 'Vasanta' – a month in the Hindu calendar. Forests, countryside and garden put on new look during Vasanta (spring), inviting a multitude of birds, insects and mammals to enjoy nectar and the fallen flowers. Spring is the season of merriment and trees too join in this merriment in a unique way; they put on new leaves and flowers.



Yellow Silk Cotton

Cochlospermum religiosum

More common in dry hilly regions of India, this deciduous tree sheds leaves by January and remains leafless till April. In March, brilliant yellow flowers appear for a few weeks.



Indian Coral Tree *Erythrina variegata*

By December the tree loses its foliage and soon dazzling scarlet flowers appear in clusters. The odourless flowers attract a large number of birds, insects and even squirrels for the nectar, thus assisting pollination. In Sri Lanka, the leaves are eaten in curry. The trifoliate leaves are believed to represent the 'Hindu Triad' – Brahma, Vishnu and Mahesh.



Sacred Barna *Crateva magna*

A deciduous tree of moderate size grown all over India, but is indigenous to Kerala and Karnataka. The leafless tree flowers during April and May, or just after emergence of the new leaves.



Rakta-Kanchan *Bauhinia purpurea*

This popular garden tree grows in the foothills of Himalaya. It is often planted in gardens for its large, showy, and mildly fragrant flowers. Flowers have five narrow slightly twisted petals in shades of purple or pink. The buds and flowers are made into curries and pickles.



Kanchan *Bauhinia variegata*

Bauhinia was named in honour of the botanist brothers, Jean Bauhin and Caspar Bauhin. Linnaeus remarked that "the two-lobed leaves are growing from the same base recalling the noble pair of brothers." A small tree found in dry and hilly regions of India. Flowers seen from January onwards in winter months vary in colour from shades of purple to white. The flower-buds are sold fresh in the Lahore bazaar as vegetable.



Pride of India *Lagerstroemia speciosa*

This handsome tree flowers during the warm days of April and June. The crumpled flowers, also called as Crepe flowers for their wrinkled appearance, are mauve, purple or pink. It is the State Tree of Maharashtra.



Flame of the Forest *Butea monosperma*

The local name Palash has been derived from Plassey where the famous battle of Plassey was fought and where Palash trees were abundant. During Holi people in some parts of India prepare a coloured dye from Palash flowers for the festival of colours. It was a vedic custom to wean away calves from cows by striking them with a Palash stick. Orange-vermillion, scentless flowers set the landscape ablaze during January and March.



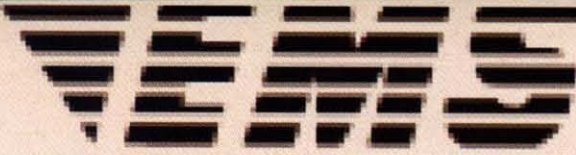
Indian Laburnum *Cassia fistula*

This deciduous tree sheds leaves around February-May and soon large graceful clusters of bright yellow flowers hang from its branches. Long cylindrical pods that hang from the branches give the tree its Latin name *fistula* meaning pipe. The pulp in the pods is a mild laxative, but monkeys and bears eat it without any ill effect.

Many of the flowering trees which bloom in the spring could not be included due to constraints of space. Notable among them are the Ashoka, Kumbhi, Red Silk-cotton, Nagkesar and Tree of Heaven from the neighbouring Myanmar. Also, Rhododendrons from the Himalayan region, which flower during this time, are not given.

Ashok Kothari is a practicing Doctor in a suburb of Mumbai. He is closely associated with the BNHS as an Executive Committee member and the Chairman of the Library sub-committee. He has co-edited 'Sálím Ali's India' and 'Treasures of Indian Wildlife', both BNHS publications. Recently he has authored 'A Celebration of Indian Trees'.





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भारतीय डाक



Himalayan Blue Poppy

The Apr-Jun 2007 issue of the *Hornbill* carries on its cover an exquisite colour photograph of the Himalayan Blue Poppy. Looking at it, a thought crossed my mind that readers of the *Hornbill* might perhaps want to know where, when and by whom was this flower first discovered for science? And later even introduced in the gardens of European homesteads?

Believe it or not but this beautiful flower was first glimpsed by an amateur naturalist in the course of an ugly and an unprovoked war against an ill-matched adversary. While exposure to battle tends to brutalise the psyche of some combatants, in others it arouses the instincts for the aesthetic and the supra-natural. Capt. F.M. Bailey belonged to the latter class.

The British Expeditionary Force to Lhasa (1903-1904) had entered Tibet from Jelep La in Sikkim and took the route Yatung-Gyantse-Chaksam (the ferry over the Tsangpo) and on to Lhasa. Having cleared the only entrenched opposition en route at the Gyantse Jongcum-monastery, thirteen days later they were briefly halted again by snipers at Karo La 4,876 m (16,000 ft above msl).

And it was on July 17, 1904 that "they had camped by the over-hanging glacier just short of Karo Pass, in a meadow known as the Field of Milk, laced with tiny rivulets whose banks



were covered with shoots of a flower which a decade later was identified and named by F.M. Bailey: *Meconopsis betonicifolia baileyi*. A more beautiful or awe-inspiring camp site could not have been imagined" wrote Charles Allen, a century later in his book *DUEL IN THE SNOWS* published in 2004! No one could have better described the serene beauty of the Field of Milk than Allen, as in the company of his wife he actually trod over most of the route preparatory to writing the book.

Half a century prior to Allen's book, reminiscing in his retirement Lt. Col. F.M. Bailey (affectionately called Hatter Bailey, that is, mad-as-a-hatter!) had written in his book *NO PASSPORT TO TIBET*, published in 1957, in which he credits his friend Capt. Kingdon Ward for collecting the seeds of this poppy thus: "we collected several new butterflies and among the flora we observed was a blue poppy which when Capt. Kingdon Ward later brought the seed was to become a favourite among seedsmen under the name of *Meconopsis baileyi*".

Now where Bailey's collection of butterflies in Tibet is concerned, it was described in detail in the *JBNHS* Vol. XXIII pp 532-46 by Brig W.H. Evans, the 'Father of Indian Butterflies'. Coincidentally, both officers belonged to the Indian Army's Corps of Engineers. Brig Evans too was blooded on the battle fields but in France, won the DSO (Distinguished Service Order) for bravery and despite permanent damage to one lung and one knee lived to a ripe old age, working to the last day in an honorary capacity at the British Museum of Natural History, London, and authored definitive books separately on the butterflies of Europe, the Americas and Australia.

Wonder why from the current nomenclature of the Himalayan Blue Poppy '*Meconopsis aculeata*', Bailey's name has been dropped? It is a great pity that in doing so, this beautiful flower has been robbed of a certain mystique and romance attached to it. Would this brief account entice some young scientists of the BNHS to walk the Chumbi Valley and up to the Gyantse Jong to update the lists of flora, fauna and lepidoptera compiled by the late Cpts Bailey, Walton, Hingston and Col Sir Francis Young Husband in 1903-04!

Lt. Gen. Baljit Singh
Chandigarh

ABOUT THE POSTER

We regret to publish this horrifying image of the bleeding Rhinoceros as Centerspread in our magazine. This is our serious attempt towards making people aware of the grave consequences of animal poaching. This dreadful act of peeling the Rhino horn led to a sad and agonizing death of the animal just a few minutes after it was photographed.

The exaggerated value attached to rhinoceros horn, and the superstitious



beliefs entertained regarding the magical power of the blood and other parts, and even the urine, of the animal have made it vulnerable; these animals stand in danger of extinction unless they are strictly protected.

The cruel act of animal poaching for the sake of wildlife trade should thus be stopped and necessary actions should be taken by the Government to save such vulnerable species. ■

Great Indian onehorned Rhinoceros
Rhinoceros unicornis



Lower Subansiri Project Undermining a biodiversity hotspot

THE LOWER SUBANSIRI HYDROELECTRIC PROJECT

Text: Neeraj Vagholikar



BITTU SAHGAL/SANCTUARY

Subansiri river valley - The 2000 MW Lower Subansiri hydroelectric project seriously impacts biodiversity-rich ecosystems on the Assam - Arunachal Pradesh border

The 2000 MW Lower Subansiri project, the largest hydroelectric project in India till date, is currently under construction on the Arunachal Pradesh-Assam border. The north-east has been identified as India's 'future powerhouse', and Arunachal Pradesh is slated to be the major contributor. Over a 100 large dams are planned to be built in the State to generate about 56,000 MW of electricity for export to other parts of the country. Many of these projects will involve the destruction of biodiversity-rich ecosystems in a region which is part of two global biodiversity hotspots, Indo-Burma and Himalaya. The Arunachal Pradesh government wants to tap around 11,700 MW from the Subansiri river basin, through at least 17 large hydel projects. The Lower

Subansiri (LS) Project is the first mega project to be taken up in the river basin, and has been in the news for the past seven years, primarily because serious social and environmental concerns have been subverted while granting permissions to this Project. We have tracked this Project closely over the years and this article primarily focuses on the wildlife issues.

Subansiri: river, forests, wildlife

The Subansiri river is one of the principal tributaries of the Brahmaputra river and forms one of its largest sub-basins. A major portion of the river's catchment is in Tibet and some areas in India lie above the snow line. Around 60% of the catchment area lies in India, and except for the upper stretches this portion is clothed with forests. The river basin is inhabited by tribes such as the Nyishis, Tagins, Apa Tanis, Hill Miris, Gallongs, Sulungs and some other small tribal groups in Arunachal Pradesh. In Assam, the river basin is home to the Mishing tribe and other Assamese communities.

The dam site of this project being built by the National Hydroelectric Power Corporation (NHPC) is 2.3 km upstream of Gerukamukh village in the Dhemaji district of Assam, around 70 km from north Lakhimpur. The Project is using over 4000 ha of forestland, out of which 3,436 ha will be submerged, largely in Arunachal Pradesh, by the 116 m high dam. A renowned naturalist from the north-east, Dr. Anwaruddin Choudhury says: "The project area is in the midst of a rich biodiversity zone and part of contiguous forests comprising: Kakoi, Dulung and Subansiri Reserved Forests (RFs) in Assam, and Tale Valley Sanctuary, Tale Reserve Forest (RF) and Panir RF of Arunachal Pradesh." The Subansiri and Dulung RFs have been listed by the Bombay Natural History Society (BNHS) and BirdLife as the Subansiri Important Bird Area (IBA) as per international criteria. The project office complex, labour colonies and boulder

mining in the river is impacting an elephant corridor downstream of the dam site.

According to Bikul Goswami, angler and naturalist associated with the north Lakhimpur based Green Heritage, "The Subansiri is one of the most crucial rivers in India for the long-term conservation of the Golden Mahseer. The dam will permanently obstruct the migration of the three mahseer species found here. It will have detrimental impacts on riverine and *beel* (wetlands) fisheries downstream, as the water flow regime will be affected. The seasonal inundation of the *beels* by the river, which helps in the nutrient cycle of the local aquatic ecosystem will be interrupted. The altered flow regime will also impact the downstream dolphin habitat in the Subansiri."

Shoddy environmental assessments

The Environmental Impact Assessment (EIA) report is a vital document in the process of environmental decision-making. In the LS Project, the report was poor on various aspects: biodiversity, environmental risks, downstream impacts, impact on livelihoods of local communities, such as the Mishing tribe. It is ironic that for a project proposed in one of the world's biodiversity hotspots, one of the weakest links in the EIA report is the biodiversity aspect!

An expert committee of the Indian Board for Wildlife (IBWL) [now the National Board for

Wildlife (NBWL)] noted in September 2002: "The EIA and project documents reveal several shortcomings in the analysis of the Project's impacts on biodiversity. Before taking a decision of such magnitude, it is essential that we are provided with accurate, detailed, scientific information from reputed sources." Based on the recommendations of the NBWL expert committee, the MoEF commissioned the Zoological Survey of India (ZSI) and the Botanical Survey of India (BSI) to do an additional study. But while the expert committee had asked for the complete impact zone to be studied, the MoEF asked for only 42 hectares of the Tale Valley Sanctuary to be studied! To add to this the content of these reports also had serious shortcomings. For example, the ZSI report says: "It is envisaged that the *auqa* (*sic*) fauna of the project area will be highly benefited by acquiring the vast and long water body. The dam reservoir may serve for fisheries development. ... The long and vast water body thus created by the reservoir will be happy haunt for aquatic creatures." It is well known that native aquatic species whose habitats are fast flowing rivers do not find the still waters of a reservoir as a "happy haunt"! While reservoirs may benefit exotic species that are introduced for fisheries, very often such introduction has proved to be detrimental to the native species.

NEERAJ VAGHOLKAR



Downstream wetlands play a crucial role in the livelihoods of the local people

Lower Subansiri Project

Clearances and violations

Some of the clearances LS required were: environmental clearance under the EIA notification, 1994; forest clearance under the FCA, 1980; clearance from the NBWL as a portion of Tale Valley Sanctuary is to be submerged. The additional biodiversity studies done by ZSI/BSI were presented to the Standing Committee of the NBWL on May 6, 2003. Several members highlighted the fact that the studies did not fulfill the mandate of the NBWL expert committee recommendations, and moreover were poor in quality. Therefore, they argued that clearance could not be granted. A subsequent application in the SC by conservationist Dr. L.M. Nath, referring to the May 6, 2003 meeting of the NBWL had the following to say of MoEF's response: "...during the deliberations of the meeting of the IBWL, the non-official members were informed that if the Lower Subansiri proposal is not cleared, a reconstituted IBWL would be able to clear it in six weeks." Apparently under severe pressure, the NBWL cleared the Project on certain conditions. Minutes of the meeting were manipulated by the MoEF to reduce the effectiveness of some of the conditions imposed by the NBWL. The Project was soon granted Stage I forest clearance in June 2003, and environmental clearance in July 2003.

However, there have been repeated and ongoing violations of the SC order and other environment and forest laws in the project. For example, conditions imposed by the SC include:

"(ix) The NHPC will also ensure that there is no siltation down the Subansiri river during the construction phase ..."

"(x) Under no circumstances, the excavated material will be dumped either in the river or any other part of the National Park/Sanctuary or the surrounding forests ..."

In spite of these conditions, there has been indiscriminate dumping of muck and debris in the river, which has been observed and documented on several occasions. We have brought this issue to the notice of the government since 2004, and have also written about this in the national media at various points of time. But blatant violations have been ongoing continuously. This clearly shows a complete disregard to environmental and forest laws, and the environmental and social security of the downstream areas in Assam.

There have also been other serious violations of the Forest (Conservation) Act, 1980, such as occupation of forest land for which permission has not been granted. A January 2006 monitoring report by the MoEF regional office regarding compliance with conditions of environmental clearance concludes that *"the project compliance does not come under the category of satisfactory compliance."*

In a presentation on Lower Subansiri at an international conference in Portugal, Hydro 2004, NHPC has made several tall claims about their commitments for wildlife protection in the Lower Subansiri project based on their Environment Management Plan. For example, they say about 'animal protection': *"... six check posts will be installed along the major construction sites like dam, power house,*



An anti-dam protest in the downstream areas by the People's Movement for Subansiri Brahmaputra valley

labour camps and other areas that are important from environmental angle. Each check post will have four guards. One Range Officer would be employed to supervise the working of all the check-posts and ensure that poaching does not become a common phenomenon in the area. Two jeeps and two wireless sets at each check post will be provided. Apart from inter-linking of check posts, the wireless link will also be extended to Divisional Forest Office and the local police station for proper monitoring of the whole system ...” Although the project received environmental clearance in 2003 and final forest clearance in 2004, this elaborate infrastructure is not operational on the ground as of March 2008. But construction work is going on full swing! Members of Green Heritage have seen and photographed labour at the dam site with poached wildlife.

One of the conditions of environmental clearance granted in July 2003 was: “A comprehensive one year study on biodiversity and habitat conservation with reference to the submerged area should be undertaken. Efforts should also be made to identify the migratory routes of wildlife in the vicinity. The project authority should submit the report within one year to this Ministry for approval.” This detailed study should have actually been done before granting clearance, but it was asked to be done as a post clearance study. But the MoEF clearly stated: “The project authority should submit the report within one year to this Ministry for approval.” Therefore, the study should have been completed by July 2004. It is shocking to note that this study has been commissioned only in August 2006, three years after it was supposed to be started and two years after it was supposed to be completed! In the meantime, work was going on full swing. The results of this study being available in 2004 were crucial to decide further action on environmental management or certain aspects of project design. How can project authorities and the government treat biodiversity studies in a global biodiversity hotspot so casually?

After much agitation by local groups in the downstream areas in Assam and the issue being raised in the Parliament, the Union Power Minister made the following statement on Lower Subansiri in the Lok Sabha in August 2006: “...To allay the apprehensions of the NGOs and to restore the confidence of the local people, on the suggestions of the Government, NHPC is in the process of awarding a study, by involving the local people, for a fresh and transparent scientific



KESHOBA KRISHNA CHATRAKHARA

Dumping of muck and debris in the Subansiri river in violation of Supreme Court orders

assessment of the downstream impact of the project...” While the government has acknowledged the need for a fresh study and NHPC has commissioned a study recently, there is great cynicism about the utility of this study as work has not been stopped till this study is completed. The valid fear is that the results will only be used to make some cosmetic management measures, rather than evaluate viability of project based on the fresh studies. This is no surprise as the Project has at all stages experienced this *fait accompli* style of environmental decision-making and governance, making a mockery of the whole process.

Back in NBWL's court

Two of the conditions imposed by the NBWL and reiterated through the April 2004 order of the Supreme Court of India are not acceptable to the government of Arunachal Pradesh (AP). These relate to the declaration of a sanctuary or national park in the catchment area, and restriction on construction of upstream dams on the Subansiri. The state government is concerned about the impact of the proposed protected area on the rights of local communities and the loss of the opportunity to build mega dams upstream of Lower Subansiri. Since early 2005, the AP government wrote several letters to NHPC to suspend work till this issue is resolved, but work

Lower Subansiri Project

has continued as usual. The AP Government filed an application in the Supreme Court in May 2005 requesting it to consider waiving or modifying two conditions, which it finds unacceptable. The Supreme Court has now put the ball back in the court of the Standing Committee of the National Board for Wildlife to consider waiving/modifying certain conditions which it had imposed. The Standing Committee is currently examining the issue. But even before it can give its opinion and the Supreme Court examine the matter, NHPC has in a recent press release dated February 1st 2008 mentioned that the 1600 MW Middle Subansiri and 2000 MW Upper Subansiri are amongst projects taken up by the company in Arunachal Pradesh.

While a legitimate space needs to be available for the state government and power company to express their views and concerns on conditions imposed on any development project, conservationists are seriously concerned with the timing of when this has been brought up. The project has got clearances to be built in an ecologically sensitive area based on some stringent conditions. NHPC kept quiet initially and started work. Later, the state government approached the Supreme Court for relaxing the conditions. But through all this, the NHPC has continued work on the project, obviously to establish a case for *fait accompli*. This subverts the whole clearance process and can set a dangerous precedence. Why was the NBWL not approached immediately if conditions were not acceptable?

“The Arunachal Pradesh government’s concerns about the impacts on rights of local communities in the proposed sanctuary/national park could be addressed by the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, which requires that no acquisition of rights or relocation from a sanctuary or national park can take place without the consent of local communities. Depending on the classification of land and nature of rights exercised by the people, other categories of protected areas could also be explored in addition to a sanctuary or national park to implement this condition.”

In the ongoing litigation in the Supreme Court the Ministry of Power, NHPC and the Arunachal Pradesh state government have tried to portray the decision of the erstwhile IBWL to disallow dams in the upstream stretches of the Subansiri river as being unreasonable. With the government unfolding plans to plumb all of the river systems in the Brahmaputra

basin with a juggernaut of large dams, it is not at all unreasonable to restrict construction of large dams and allow the upstream stretches of the Subansiri to flow free in the interest of riverine ecology, biodiversity conservation and downstream concerns.

Alternative power planning

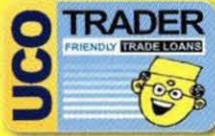
One of the reasons for the shrinking space for addressing social and ecological issues for large projects such as Lower Subansiri is the strong perception amongst many quarters that each of these large projects is critical for meeting India’s energy security. Girish Sant of Prayas Energy Group, a leading organisation working on public interest power sector issues says: “Development needs increased energy services. But demand forecasts that planners make are usually an overestimate and there is a bias towards centralised large projects to meet this highly inflated demand. This is not the least cost way of getting the required services. With increasing conflicts over siting of new power projects, we urgently need an alternative approach towards power sector planning – such as Integrated Resource Planning (IRP). Such an approach can have substantial environmental and social benefits as energy services can be delivered with a sizeable reduction in the number of new power plants required by the country. IRP considers a mix of supply side and demand side solutions while giving equal importance to both. It includes a combination of cleaner centralised energies, decentralised renewable energies and efficiency improvements, which will together provide energy services at least costs. Several such alternative studies done across the country indicate that new generation capacity required can be reduced by as much as 50% of that reported in the official conventional plan.” Besides demanding accountability in the environmental decision-making process for development projects, we also need to demand such alternative approaches to power planning. Otherwise we will remain mute spectators as power projects such as Lower Subansiri continue to undermine our biodiversity hotspots. ■

This piece is a modified and expanded version of an article which appeared in the Sanctuary Asia magazine, February 2005.



Neeraj Vaghlikar is a member of Kalpavriksh Environmental Action Group.

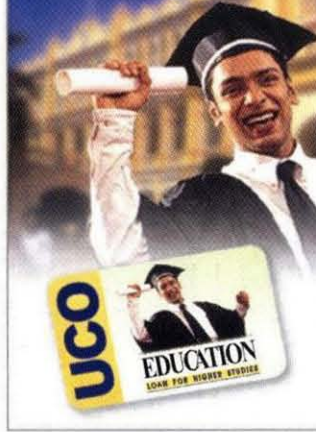
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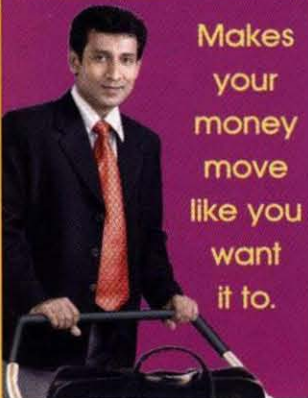
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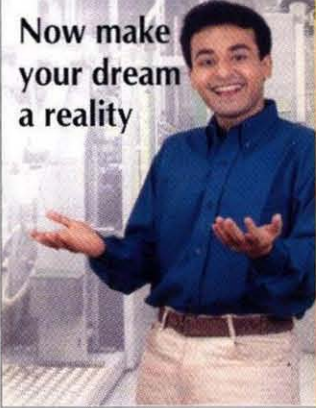
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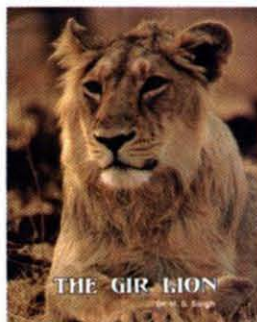
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About Books

Reviewed by Asad R. Rahmani

Despite having a rich first-hand field experience, Indian forest officers are notorious for not writing scientific papers, articles, books or their memoirs, but Dr. H.S. Singh is different. Presently he is the Chief Conservator of Forest in Gujarat, and has many books and papers to his credit. When he was the Director of the Gujarat Ecological Education and Research (GEER) Foundation, he published eight books on wildlife and related subjects, and over a dozen research documents. During his meritorious service in the Indian Forest Service, since 1980, he designed management plans for four protected areas, including the first Management Plan for the Gir Protected Area. He won the Brandis Prize in 1998 for the best article in *Indian Forester*, a journal mainly for forest officials; he was awarded the Chaturvedi Prize thrice. The list of his achievements is long and cannot be accommodated in this space. His present book is a new credit to his successful career.

Although Divyabhanusinh Chavda has written a detailed and well-researched book on the Asiatic Lion (he rightly calls it the Asiatic Lion



The Gir Lion

by Dr. H.S. Singh

Published by Pugmark Qmulus Consortium, Ahmedabad, 2007

Size: 21.5 cm x 27.5 cm

Pages: 320, Price: Rs. 2,000/-

Hardback

and not Gir Lion, as the lion was once found in large parts of Asia), I find Singh's book a welcome addition on this highly endangered and charismatic animal. It is well written, with lucid text and lots of interesting data, vignettes and good pictures. Singh has collected lion-related information from various sources. For example, he tells us that in the Sakkarbaug Zoo, Junagadh, a maximum of 60 kg of buffalo meat, including about 10% bones, was given every week to adult lions. The daily edible meat requirement for an adult male lion was 7.2-7.5 kg., whereas a female consumed 5.8-6.0 kg.

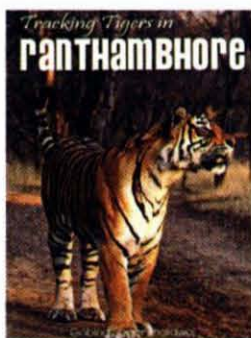
The book is also full of statistics, sometimes of dubious nature, particularly when dealing with population numbers of wild ungulates. For example, the Sambar numbered 600 in 1969, 710 in 1974, 760 in

1979, and 3,770 in 2005 (p. 168). As Singh has rightly written 'the actual official figures may be debatable ... a definite trend of improvement is evident here.' This book further proves that we have to build-up the capacity of our forest staff to conduct scientific and statistically robust wildlife census. At least in high-profile areas such as Gir, such census and monitoring should start on a scientific basis.

The book is large, difficult to handle and the binding is not well done (pages came loose while reading the book). Some extremely useful maps are too small (pp. 75, 227). Many pictures are without captions (pp. 71, 93). Despite these minor mistakes, I find the book full of interesting information on this well-written subject. I will not be surprised if Dr. Singh will get another award for bringing out this book. 🐾

Reviewed by J.C. Daniel

Ranthambore is an island for wildlife, particularly the Tiger, in a sea of humanity, a tourist hotspot. Tiger is the star attraction for tourists and conservationists. Many books have been written on the tigers of Ranthambore, and *TRACKING TIGERS IN RANTHAMBORE* is a superb addition. The photographs are outstanding. The author, a Forest Officer spent three years in the Park as Deputy Director. He has spent his time usefully in scientifically studying his wards, the Tigers. Bhardwaj's introduction to the



Tracking Tigers in Ranthambore

by Gobind Sagar Bhardwaj

Published by Aureole Publishing Pvt. Ltd., Noida, 2008

Size: 24 cm x 33 cm

Pages: 156, Price: Rs. 1,406 (INR), \$ 35

Hardback

Tiger was from the time he was slapped down by a Tiger, which fortunately spared him further damage. It is evident from his studies that Ranthambore is the source for the Tigers of Rajasthan, but as of today

there is no way the population can increase unless corridors for dispersal are available to other possible tiger habitats. Therein lies the tragedy of the Tiger. At 35 dollars the book is a sell. 🐾



HOME IS WHERE THE HEART IS

When the monsoon winds and rain sweep over the Indian subcontinent, a familiar, joyful sound can be heard from the trees – the male weaverbird, busy on a mission to make a 'perfect home' for its partner. This bird builds the most intricately-woven, globular nest, made of grass strands or strips of palm leaves, suspended from the farthest end of a branch. The precarious location of the nest serves to elude large predators.

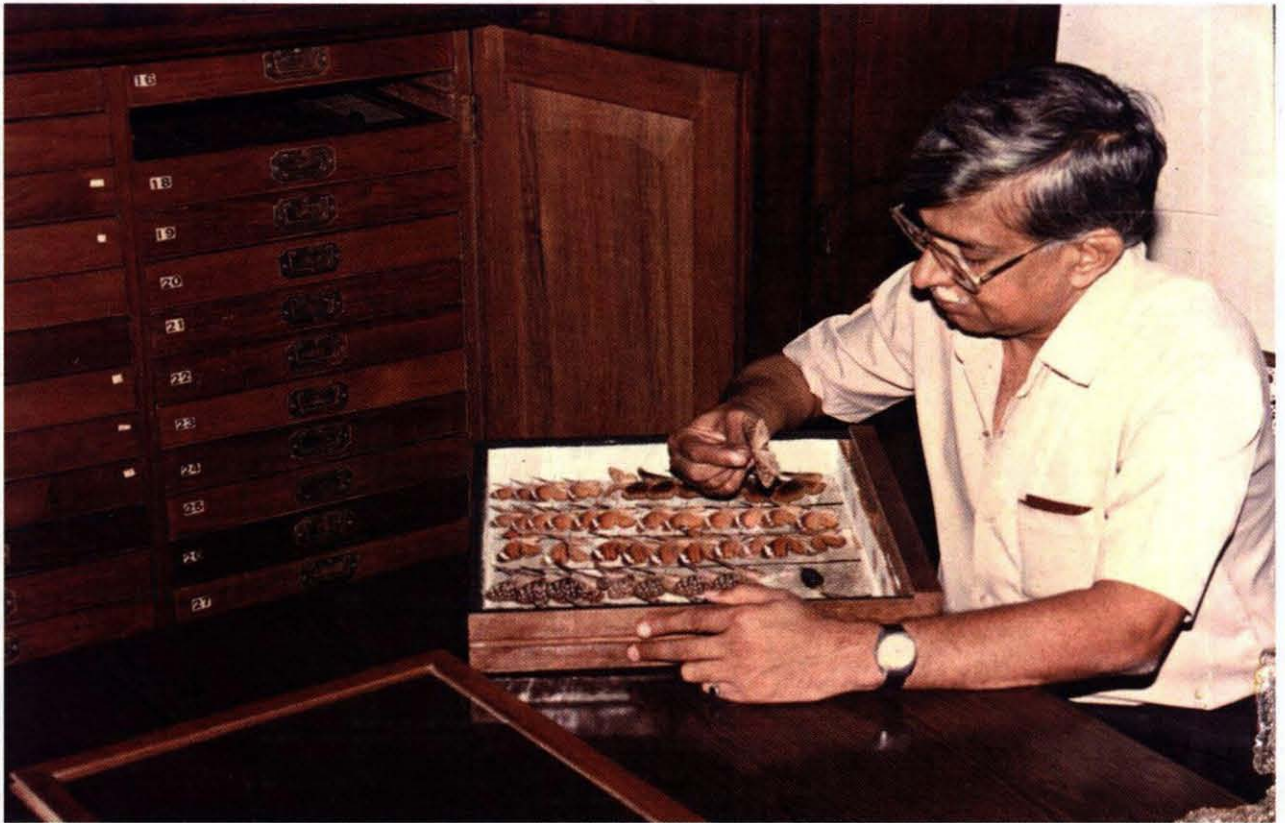
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OBITUARY



Naresh Ramcharan Chaturvedi

25.9.1951 - 9.3.2008



In the sudden demise of Mr. Naresh Chaturvedi, the Society has lost the services of one of its devoted Scientists. Naresh Chaturvedi joined the Society as a Junior Research Assistant in 1975, and was Curator of the Society's heritage Natural History Collections at the time of his death. Naresh's main interest during his 32 years of service with the Society was insects, largely moths and butterflies, and the seventy papers and short notes he wrote were mainly on these groups of insects. He has to his credit one student, who obtained her Ph.D. working on Moths of the Sanjay Gandhi National Park. Naresh was also deeply interested in trees and published a beautifully illustrated book on the 'The Trees of Mumbai'.

The excellent status of the Society's National heritage Collection of mammals, birds, reptiles, amphibians and insects is a tribute to his devoted care of the specimens, some of them nearly a 100 years old.

A mild mannered person with a ready smile, Naresh was in his interaction with people much appreciated by members and staff. To me and to many others among the staff his untimely and sudden death is the grievous loss of a personal friend.

— J.C. Daniel

Enthusiasm, hard work and guidance combined with trust and partnership are good enough to ensure success in an endeavour. Our story is the outcome of a collaborative effort between an enthusiastic nature photographer, a researcher and a renowned expert.

Members of Elements of Nature Conservation Association, a local NGO from Satara, Maharashtra, under the guidance Dr. V.Y. Deshpande, had documented the herpetofauna in different habitats, in Satara district, mainly in the Western Ghats. The data was meticulously maintained with photographs of the species seen during the surveys. On one of these surveys, Dilipkumar had photographed an interesting gecko from a plateau near Satara. Unaware of the fact that this could be a new discovery, the images of a gecko remained in his computer.

Around the same time, Varad was also conducting surveys in the northern Western Ghats to document diversity of caecilians in Maharashtra. On one of his trips, Varad met Dilipkumar and Dr. Deshpande, when Dilipkumar happened to mention about an interesting gecko he had photographed during their survey in the Western Ghats. Looking at the photographs and video clip of the gecko, Varad found the gecko different from the known species from Maharashtra, and insisted on visiting the plateau where the gecko was found. By mid-September, Dilipkumar, Varad and Deshpande along with Rajan More and Yashodhan Parakhe were on a plateau near Satara in search of the gecko.

Interestingly, these plateaus are unique to the Western Ghats of Maharashtra, and during summer, they are just barren rocks with sparse vegetation. Though barren, these

Discovering New Life

Text: Dilipkumar Dongare, Varad B. Giri, Aaron M. Bauer



The beautifully patterned *Hemidactylus satarensis* is a new addition to the list of Indian Reptiles

plateaus are home to many interesting amphibians and reptiles. Saw-scaled Viper *Echis carinatus*, Beddome's Snake Eye *Ophisops beddomei* and Gunther's Snake Skink *Lygosoma guentheri* are known to dwell on these plateaus. During monsoon dense mist envelopes these plateaus, and soon lush green monsoon vegetation takes over the barren plateaus. Thus, the same sun-baked hostile habitat metamorphoses into a bustling breeding ground for the endemic Koyna Toad *Bufo koynayensis* and varieties of cricket frogs *Fejervarya* sp. Above all, these plateaus have been Varad's favourite haunts for searching caecilians – a habitat not known earlier to harbour burrowing amphibians.

It was September 2005, and monsoon was still at its peak. The plateau was barely visible amidst the

thick blanket of mist and rain. Varad's team began their search for the gecko. As the gecko was earlier found under rocks, everyone began searching under rocks. Rain battered the team ceaselessly, and search for the gecko went on. There was no sign of the gecko. But it does take time to make a history and this time too it was taking its time. In one of the small heap of rocks, Varad noticed some movement, and he rushed to the spot. Slowly and carefully all the rocks were removed, and with the last rock removed, a small and beautifully patterned gecko stared back at him. Mission accomplished!

This was just a beginning, now came the task of identification, Varad undertook this responsibility. On closer observations, he thought that the gecko was of the genus *Hemidactylus*. The geckos of this genus are easily

Nature Watch

identified as they have well developed lamellae – a leaf like structure below their fingers and toes. The shape and structure of lamellae and the body more or less brought this gecko closer to *Hemidactylus* geckos. Further observations confirmed that the lamellae of this gecko were undivided or only partly divided. The body was slender with a long neck. With help from the FAUNA OF BRITISH INDIA by Malcom Smith, a bible for the identification Indian lizards, Varad concluded that this was a ground dwelling *Hemidactylus*. Now the question was about the confirmation of the species. There were reports of three species of ground dwelling *Hemidactylus* from India, *H. gracilis*, *H. reticulatus* and *H. albofasciatus*. Of these, *H. albofasciatus* is known from some localities in Ratnagiri district, Maharashtra. The gecko from Satara was entirely different from these three species though it shared some morphological characters with *H. albofasciatus*. Then what was it? Was it an undescribed species? Varad had his own doubts about the gecko's identification. For confirmation, as usual, he drafted a paper with all the available information and approached Dr. Aaron M. Bauer, a renowned expert on geckos of the world. Dr. Bauer too had doubts, but assumed that this could be an undescribed species, and asked for more details.

To answer some of Dr. Bauer's queries, Varad conducted one more field trip to the same area in January 2006 along with Dilipkumar and More. The plateau was slowly losing its monsoon cover. With much



The habitat of *Hemidactylus satarensis* during (above) and after (below) monsoon



difficulty the team finally managed to locate one more specimen of the gecko. With more observations, based on two specimens, lot more doubts were now clear, but the picture was not yet clear. For some more clarifications, Varad also contacted Dr. C. Murthy and Dr. G. Maheshwaran of the Zoological Survey of India.

More emails between Dr. Bauer and Varad shuttled clearing doubts on the identification of this gecko. And finally, in September 2006, together Dr. Bauer and Varad submitted a research paper in the Journal *Zootaxa* on this gecko. And thus, one more species, Satara Ground Gecko *Hemidactylus satarensis* was added to the list of Indian reptiles. ■



Dilipkumar Dongare is a nature photographer and photo journalist. He is working as Senior Photographer in Intelligent, Pune.



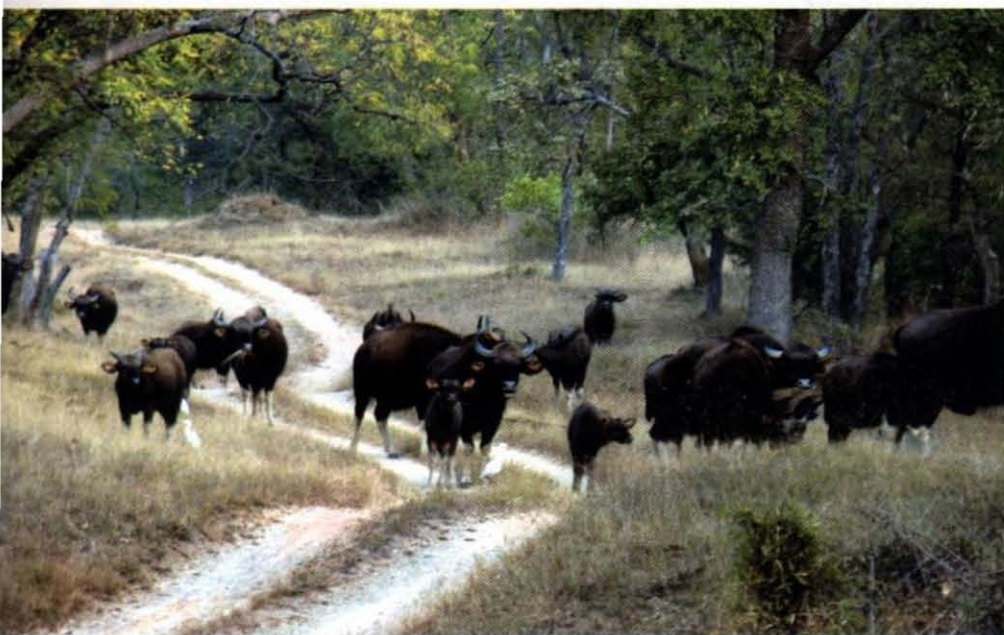
Varad B. Giri is Scientist 'B' at the Herpetology Section of the Bombay Natural History Society.



Dr. Aaron M. Bauer is a renowned Herpetologist and a professor for the faculty of Ecology, Evolution and Population Biology Group in Villanova University, USA. He is a world authority on Gecko taxonomy.

Critical Wildlife Habitats: What's in a Name?

Text: Arshiya Bose, Erica Taraporevala, Ashish Kothari



Gaur in Tadoba National Park

The language of biodiversity conservation in India has suddenly become more colourful than ever before. Within a hour, you can now drive through a 'wildlife sanctuary', turn the road bend into a 'tiger reserve', then minutes later enter a brand new 'critical tiger habitat', then a 'critical wildlife habitat', and finally arrive at the gates of a 'national park'!

'Critical tiger habitats' and 'critical wildlife habitats' are conservation's latest buzzwords. Although, they are just a few months old, they are already creating ripples. Some conservation groups are excited by the prospects these offer, others predict that it will weaken already fragile protected areas.

Similarly, many forest-dwelling communities fear forced displacement from their homelands, others are using the new provisions to strengthen their own conservation practices. Why such widely varying views, and what can be done to use these provisions for strengthening conservation? What do these categories mean? To begin with, some explanations:

- The category 'critical tiger habitats (CTH)' was introduced by the Wildlife Protection (Amendment) Act 2006 (WLPA), Section 38V. These areas are notified within the existing national parks and sanctuaries inside tiger reserves, for the purpose of keeping them 'inviolable'.

- The category 'critical wildlife habitats (CWH)' are to be established under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006, also called the Forest Rights Act (FRA). CWH are defined as 'inviolable' areas notified within existing national parks and sanctuaries. These can be established for any species or habitats.

It is necessary to understand some important aspects of these categories:

1. Neither the WLPA nor FRA explains the term 'inviolable'. However, 'inviolable areas' could be interpreted to mean areas with minimal or no human presence, or areas where human activities are in harmony with wildlife needs.
2. While CWH under FRA cannot be diverted for any other purpose (making this the strongest wildlife provision since Independence), the WLPA permits CTH to be diverted in the name of "public interest" with appropriate approval.
3. Both acts specify that the extent of critical habitats needs to be determined through sound scientific criteria.
4. The rights of forest-dwelling communities within critical habitats must be legally recognized *before* they are modified or acquired if needed. Note that CTHs are *not* exempt from the FRA. If communities live within such habitats, they can claim rights under the FRA, and they will then need to be modified/acquired if need be.
5. In those cases where people's rights



ASHISH KOTHARI

The 'Critical Wildlife Habitats' provision of the Forest Rights Act could help secure all kinds of ecosystems such as the Shola grasslands of Eravikulam, Kerala

are to be modified or acquired, both laws specify that relocation of people has to be voluntary, and can only take place if it is scientifically established that coexistence between humans and wildlife is not possible. For the first time in the conservation history of India, forcible displacement of people from protected areas has been made illegal.

Are Critical Habitats a Conservation Opportunity?

Without doubt, our protected areas (PAs) have been instrumental in safeguarding wildlife and ecosystems, but there has been a fair degree of arbitrariness in their locations, boundaries and the process with which they were established. In this regard, the new laws provide an opportunity to re-evaluate the PA network, identify the most crucial sites for conservation, and redesign the mechanisms with

which to protect them.

Many of our PAs today contain areas with little wildlife significance. Conversely, many areas of crucial importance are outside the PA network. Moreover, we are not certain if our PAs are conserving the entire range of our biodiversity. For example, are some of our critically endangered amphibians getting the conservation attention they need? Are the corridors that are needed for migration and connectivity, adequately secure?

The critical habitats process can be designed for individual species or ecosystems. This process will allow scope for areas that are totally free of human use, to those that actually thrive with human use. Many wetlands survive because of human activities, and have suffered when such use has been prohibited. In the case of Keoladeo (Bharatpur) National Park, BNHS studies demonstrated that a

ban on buffalo grazing led to the rampant growth of *Paspalum* weed, making the ecosystem inhospitable for many species, including the Siberian Crane. In contrast, not all human activities are 'sustainable' and in many cases, uncontrolled human use of ecosystems can result in degradation. In such situations rights can be modified in consultation with the communities concerned.

Legal Uncertainties

— The implementation of critical habitats will not be easy. Both laws are vague on the provisions to identify and establish critical habitats. The Guidelines for Identification of Critical Wildlife Habitats have been issued by the Ministry of Environment and Forests (MoEF) in October 2007. While these contain some good provisions, such as involvement of experts from within and outside

government, and consultations with gram sabhas, they are also worrying from other points of view. For one thing, they were issued even prior to FRA having come into force, and some state governments protested saying this was illegal!

MoEF's advice for identifying CWH, dealt with in one paragraph, is vague and scientifically questionable. It advocates using "species area curves", now considered by most conservation scientists as being inappropriate for such purposes. It defines "umbrella" species to include several unconnected categories including "economically important species"! And there is an assumption that all species need 'inviolable' areas for their conservation, which is scientifically unproven.

Unfortunately, the Guidelines do not even require state governments to consult independent experts when creating CWH. Participation of forest-dwelling communities is not required in all stages of the process, though some steps require "informed consent" or "public hearings". What should have also been specified are processes of collaboration with communities to secure areas most critical for wildlife (see the examples given below).

Of special concern is that the timelines specified to identify CWH (in some cases only 2-3 months!) are extremely tight, and can lead to a shortcutting of what could be thorough, systematic and scientific processes.

The Guidelines do not provide clarity on who will manage CWHs. The FRA provides communities a right to claim forest patches under customary use, for conservation and management. If these happen to fall within a critical habitat, what will be the precise relations between the relevant gram sabhas and the Forest



ASHISH KOTHARI

Women making rope from bhabbar grass at Rajaji NP: livelihood rights have to be dealt with sensitivity when establishing 'Critical Wildlife Habitats'

Department? Communities have been given functions to ensure conservation, but without any binding responsibilities or necessary powers; how will they be able to carry out these functions and be held accountable?

Already, some of this lack of clarity is leading to a haphazard process in many states. Initial news reports suggest that State Governments have rushed to declare CTH, and are hurrying with the process of declaring CWH, without necessarily following the processes laid down in the law.

On the December 31, 2007, 11 of the 17 states with tiger reserves identified and notified CTH. The remaining six did this a few days later. Interestingly, the total area notified as CTH (31,940 sq.km) was almost exactly the area of entire tiger reserves themselves. Perhaps it was the fear of the upcoming notification of FRA's Rules that caused a flurry in wildlife divisions, so CTHs that had been delayed for over a year were suddenly notified within a few days. Some speculation did the rounds that if FRA were to be enacted before declaration of CTH, states would have to go

through tedious and potentially hostile dialogues with forest-dwelling communities. This rationale seems clearly misplaced because both laws require a settlement of forest rights process, and both procedures are almost identical. Additionally, CTHs are *not* exempt from the provisions of FRA.

In January 2008, local communities in Buxa, West Bengal, protested that the Forest Department had declared the whole of Buxa National Park and Buxa Wildlife Sanctuary as critical tiger/wildlife habitat. They feared that they would be forcibly relocated. NGOs in Orissa report that there is great confusion on the ground in places like Satkosia (declared a tiger reserve in January 2008), as forest officials claim to have consulted communities, but the latter say no one has approached them. Similarly, the Forest Department of Karnataka announced that all of its 6 national parks and 21 wildlife sanctuaries would be notified as critical habitats; it is not clear what its intentions are regarding the villages inside them.

One major source of confusion is

that governments seem to be interpreting the term 'inviolable' to necessarily mean devoid of human use, automatically requiring relocation. As explained above, the term could also include strategies of minimising human use to levels compatible with conservation objectives, without having to displace people.

Towards Knowledge-based Processes

In response to this potential for confusion and conflicts, the 'Future of Conservation Network (FoC)' has put forward an alternative set of guidelines that State Governments can use. FoC is a network of ecological

knowledge (modern and traditional). Particular attention must be on threatened species. This should also consider social feasibility, especially in situations where the rights-holder population is large, or the communities involved are culturally or economically vulnerable.

3. The process should be participatory and open to public inputs from the time of identification and planning to implementation. It should involve national/state/local experts, representatives of traditional long-resident and user communities, and government staff.

Kalyana Kendra, Ashoka Trust for Research in Ecology and the Environment (ATREE) and Kalpavriksh.

The discussion focussed almost entirely on common responsibilities for conservation of BRT. One group of Soligas prepared a detailed map of the sanctuary, highlighting key areas for wildlife. They listed 31 ways to conserve and manage the forest. These included: controlled fire, seasonal checks on tourism, complete ban on plastic, control of lantana (currently spreading rapidly), de-silting of water holes, control of leeches and ticks, and a complete prohibition of sand-mining and quarrying. Some of these management steps evoked vehement responses, with clear differences of opinions amongst Soligas themselves. For example, some felt limited fire was good for the forest because it controlled Lantana. Others wondered if such steps were advisable. This was identified as an area requiring further study and ATREE was requested to help. On controlling leeches and ticks, several individuals immediately pointed out that these were as much part of the ecosystem as any other organism, and the proponents had to hastily clarify that they were only suggesting a check on over-population, not eradication of the species!

When asked how they would identify critical habitats in which to apply the above actions, the Soliga's listing was diverse: Muleki Betta, or hills identified for their diversity of medicinal plants; waterfalls and their surrounds, because they inevitably housed high biodiversity; and others. Asked specifically about areas critical for the tiger, they named a few that were as ideal for tigers as they were for honeybees: Vannebare, a hilly area with many caves and honeycombs and Neerdugi and Dodall, both densely



VIVEK GOUR-BROOME

Nyctibatrachus frog – 'Critical Wildlife Habitats' need to be established for a range of species, not only megafauna

and social organizations committed to effective and equitable conservation.

The FoC guidelines highlight the following:

1. To identify critical habitats, a mix of approaches is needed to secure wildlife. These include areas of no human use, minimal use and extensive use.
2. The size of each critical habitat must be based on ecological principles and all available

Already, a few initiatives to move in these directions have begun.

The Soligas, an ancient forest tribe living in the Biligiri Rangaswamy Temple Wildlife Sanctuary (BRT) and the Male Madeshwara Hills of Karnataka began their own process to identify critical habitats in August 2007. A starting point for this was a workshop that brought together 75 Soliga leaders, facilitated by three NGOs, Vivekanandan Girijana



ASHISH KOTHARI

Soliga adivasis in Biligiri Rangan Temple Sanctuary, Karnataka mapping resource rights and what they consider 'Critical Wildlife Habitats'

forested water sources. But they also immediately clarified that they did not want to identify sites only for single species like the Tiger, but for overall biodiversity value. They explained that for the Tiger to survive, areas with high herbivore density were needed, and for this, areas with high grass diversity and productivity were crucial. Then suddenly, someone asked, this is all fine, but where is the money going to come from? The immediate response: they would ask the Forest Department to share its budget, since the Soligas were now going to do what the Department was supposed to be doing all along!

This workshop has been followed up with mapping of what forest land and resources are used by Soligas in the area, and of their sacred sites. The Soliga Adivasi Sangha and NGOs are hoping that the Forest Department will enter into a participatory planning process using all this information, and jointly evolve a long-term strategy for

BRT Sanctuary.

A similar exercise was carried out in October 2007 in Ladakh, for its three PAs: Changthang, Hemis, and Nubra (Karakoram). As part of an ongoing process of settling people's rights, a series of meetings have been held between officials, communities, and conservation/development NGOs (including Snow Leopard Conservancy, Nature Conservation Foundation, Ladakh Ecological Development Group, WWF-India, and Kalpavriksh). People are identifying critical wildlife habitats, as also resource use areas. It is hoped that a follow up workshop in July this year will consolidate this exercise and provide a road-map for sustained conservation and livelihood security in Ladakh's PAs. The example of Rumbak village in Hemis National Park could be emulated elsewhere also. Here the residents have stopped taking their livestock in a part of their traditional grazing areas so that the

threatened Argali or Great Himalayan Sheep can have a safe haven. Their economic loss due to this is compensated for by the enhanced incomes that they are getting from home stay based ecotourism facilitated by the NGO, Snow Leopard Conservancy.

Similarly, several communities and officials in sanctuaries in Orissa, Tamil Nadu and Madhya Pradesh have begun mapping resource use, important wildlife areas and other land uses.

Some Learning Emerges from the Chaos

The critical habitats process will not be easy. The lack of legal clarity in both the WLPA and FRA will only make the process murkier. More importantly, knee-jerk reactions by NGOs and governments will add to the mayhem.

At this point, it is important to clarify the legal provisions, add necessary interpretations and institutional mechanisms to rules and guidelines, and work out collective and informed processes. The WLPA and FRA have provided us a great opportunity to increase the effectiveness of our PA network, move towards a mosaic of conservation practices that optimise wildlife protection as also livelihood security for the poor, and involve citizens in a more democratic framework rather than the old "fences and fines" approach.

We must do what we can to push critical tiger and critical wildlife habitats beyond just legal terminology on parchment paper. We must translate them into effective and equitable conservation on the ground.

History is giving us the chance. Let's take it! ■



Arshiya Bose has been working on a project to "Track the Ecological and Social Impacts of the Forest Rights Act" with Kalpavriksh since 2007.



Erica Taraporevala is a freelance writer and a member of Kalpavriksh working on issues related to Community based biodiversity conservation.



Ashish Kothari is with Kalpavriksh – an Environmental Action Group. He is also member of the Executive Committee of BNHS.



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'FESTIVALS IN THE FOREST' - A Paradox

Text: **Krishna Tiwari and
Rushikesh Chavan**

Photographs: **Krishna Tiwari**

Krishna Tiwari is presently Project Officer, City Forest in the Conservation Department at the BNHS.

Rushikesh Chavan is presently the Conservation Officer at the BNHS.



Lakhs of devotees visit the Tungareshwar WLS on the occasion of Mahashivratri

It is not surprising to find a temple or other religious structures within a forest anywhere in India. One can presume that they were specifically made there to maintain the sanctity of the forest. In fact, many forest patches surrounding the deity are guarded as sacred groves. This explains the value attached by traditions and culture in India. There usually is a day when deities are remembered and worshiped for their power, and to seek their blessings. Mahashivratri is the festival of Lord Shiva – one of the holy Hindu triad, celebrated by Hindus is one such example. On this particular day, lakhs of devotees all over India visit Shiva temples, many of which are within protected areas, to pray for their prosperity and well-being. Sanjay Gandhi National Park (SGNP) and Tungareshwar Wildlife Sanctuary (WLS) in Mumbai and Thane are no exception. More than two lakh devotees throng the Kanheri Caves, mandirs, and ashrams in these protected areas each year. The mandirs and ashrams one understands, but why

are the Kanheri caves at SGNP visited by the devotees for over a decade remains an enigma.

The Kanheri caves were made by Buddhists and date from around 1st Century B.C. to 9th Century A.D. The earliest are the 109 tiny rock-cut cells, carved into the side of a hill. A congregation hall with huge stone pillars contains a stupa, a Buddhist shrine. Once the caves became permanent monasteries, the rocks were carved with intricate relief's of the Buddha and the Bodhisattvas. Kanheri had become an important Buddhist settlement on the Konkan coast by the 3rd Century A.D. Ironically, the devotees worship these stupas as they look like a *shivling*. Kanheri caves are about seven kilometres from the Borivali gate of SGNP and about 8-10 km from Yeur.

The Bombay Natural History Society (BNHS) along with the support of the Forest Department and other local organisations took up the task of managing the devotees at the SGNP and Tungareshwar WLS. BNHS has been running public awareness campaigns and managing crowds on Mahashivratri through its 'City Forest' initiative for almost a decade. Crowd management is the crucial factor to reduce incidents of forest fires and curtail littering, the major threats to these protected areas.

Arrangements for Mahashivratri start well in advance; the entire event is organised with help from the Forest Department, volunteers and other organisations. Information banners, and Identity cards for volunteers are printed. Lunch arrangements are made for the Forest Department staff, and volunteers. On Mahashivratri Day volunteers

Conservation Notes

gather at the pre-designated meeting points in SGNP from where they are dispersed to strategic locations from where visitors are likely to enter the Park, such as the main gate of the SGNP leading to Kanheri caves, Tulsi phatak, Yeur, and the Sanctuary. The volunteers work from 7:30 a.m. to 6:00 p.m.

When the Park gate is opened Staff of the Forest Department, Police, Archaeological Survey of India, Municipal Corporation of Greater Mumbai, and volunteers are present to rein the unwarranted disturbances in the Park. Plastic bags, cigarettes, *bidis*, lighters, and matchboxes are confiscated from the visitors entering the Park. Vehicles and visitors are checked at the gate before letting them into the protected areas. Fire watchers are posted within the forest at vantage points to watch for fire and incidents of fire reported are extinguished.

The hills at the Yeur Range house illegal ashrams, mandirs and a dargha. Until about 5-6 years ago lakhs of visitors visited the Park through these hills and ventured into the core areas like Tulsi Lake, Kanheri Caves, Yeur, violating laws, damaging and disturbing the forest. Volunteers are therefore also placed at strategic locations from where the devotees are known to or likely to enter into the forest and to persuade them to use the road network. Around thirty volunteers take the responsibility of controlling and monitoring the situation at the Yeur Range hills. All hawkers have been removed from the forest limits. The volunteers keep a vigil in the remotest corners of the Park to keep drug abusers, gamblers and illegal entrants at bay. The situation today is under control due to the continuous efforts of the Forest Department, BNHS and its team of volunteers.

SOME MEASURES TAKEN DURING MAHASHIVRATRI FESTIVAL

1. Entry to the Sanjay Gandhi National Park is allowed only from the Main Gate at Borivali East, between 7 a.m. to 5:30 p.m. Visitors must leave the Park by 5 p.m.
2. Inflammable articles such as matchboxes, lighters, cigarettes, bidis, kerosene etc. are strictly prohibited.
3. Non-biodegradable items like polythene bags or thermocol cups are not allowed in the Park.
4. Music systems, tape recorders, radios or musical instruments are not allowed in the Park. Blowing of horns is also prohibited.
5. No hawkers/vendors are allowed in the Park.

The most encouraging sign over the years is that the level of awareness among the locals has increased; and even more encouraging is the sharp decline in the number of visitors to Sanjay Gandhi National Park. The forest fires have reduced, and so has the amount of garbage.

There is another dimension to the festival and its presence in protected areas, this is an opportunity for nature lovers to come together and celebrate the unity. Many young people get the opportunity to meet renowned naturalists and conservationists. In fact

a few of them are now working full-time for conservation of nature.

Tungareashwar Wildlife Sanctuary, Thane

The Tungareashwar WLS has an ancient Tungar mandir which is visited by lakhs of pilgrims during Mahashivratri. If not controlled the crowds here could have had a severe impact on the flora and fauna of the Sanctuary. There are two entry points to this Sanctuary: the visitors mainly enter from Sativli to visit the Tungar mandir; the other point from Parol leads to the illegal Balyogi Sadanand Ashram, the frequency of visitors from this point is less due to a total ban on entry for visitors and private vehicle by the Forest Department.

Each year the inflow of devotees starts on the night prior to Shivratri gradually increasing through the day till late evening. Hawkers arrive a day prior to Mahashivratri. Entry of vehicles beyond the entrance gate of Sativli is restricted. Some private vehicles belonging to the Temple Trust, Police and Forest Department are, however, allowed to ply up to the Temple. The Forest Department also restricts the entry of the vehicles from Parol, but entry for devotees is open from Parol gate up to the *Sadanand Ashram*.

Like at SGNP carelessly discarded rubbish, the din caused

महाशिवरात्री - जनजागृती मोहिम
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संजय गांधी राष्ट्रीय उद्यान, बोरिवली

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जंगलामध्ये प्लास्टिकच्या पिशव्या वापरण्यास वंदी आहे.		जंगली पाण्यांना खायला देवू नका	
जंगलामध्ये अगरवल्ली, सिगारेट, बीडी, माचिस, लाईटर इत्यादी वस्तू आणण्यास, धुमपान करण्यास तसेच जेवण वनविण्यास सक्त मनाई आहे.			
जंगलास धोकादायक असणाऱ्या वार्हीविददल वनरवात्याला कळवा.			

वनरवात्याच्या जंगल संवर्धन मोहिमे मध्ये सहभागी व्हा.

Association for the Preservation of Environment (APE) FOREST DEPARTMENT GOVT. OF MAHARASHTRA

Banners informing about the Do's and Don'ts are displayed at strategic locations in the Park

due to the *bhajans* and *kirtans* sung by the devotees and forest fires are the major nuisance in the Sanctuary on Mahashivratri. A stricter vigil by the volunteers has assured that disturbances in the Sanctuary are minimal.

Urs, a new addition

Urs is a Muslim festival celebrated in May every year. The celebration of this festival in SGNP was first noticed by the BNHS in 2005, since then the festival is documented and a strict vigil is kept every year on the activities of the crowd that trespasses into the Yeur hills.

The *Mama-Bhanja* and *Masaan dargha*, both illegal, are situated at around 335 m and 152 m respectively in the hills of Yeur Range. The *Mama-Bhanja dargha* is situated on the second highest hill of SGNP. Both the *darghas* celebrate Urs within the forest area in spite of having no official permission from the Forest Department. Visitors through the Park to attend the Urs celebrations. They live in the forest for three days and nights with rations. More than 7,000-8,000 visitors visit the areas, and the numbers are increasing each year. The influx of the crowd is lowest on day one and gradually increases in the next two days.

Tube lights are set-up well in advance using generators all along the way leading to the *dargha*. In fact the entire hill is lit-up and is visible from Thane City! The direction to the *darghas* is marked in white and pamphlets advertising the festival are pasted all along the path. Food is provided to the visitors, and goats are sacrificed for the festival. Some settlements demolished by the Forest Department were reconstructed by the encroachers.

Forest fires are reported during Urs, water holes dry up due to over

usage by the visitors. Disturbance to wildlife due to the loudspeakers and bands, hawkers selling refreshments, tobacco products, water, and crackers light up in the evening are all a clear violation of the Wildlife (Protection) Act, 1972 and Forest Conservation Act 1980, besides the *dargha* is very close to a defence installation. Large amounts of garbage and non-

close to a tribal settlement called Mashyachapada. We could not document the Urs festival here but are sure that full-fledged celebrations are on here too.

The pressure on the Park is very high during such activities. Celebrations of any kind within protected areas should ideally be banned as they violate the Wildlife (Protection) Act,



Urs celebrations inside the Sanjay Gandhi National Park

biodegradable wastes like plastics, bottles are observed; extensive cutting of fire wood for preparing food is also evident. One can only imagine how all this affects the flora and fauna of the Park.

Despite taking a hard stance the Forest Department cannot stop these celebrations. The *Mama-Bhanja dargha* is situated in the core area of SGNP; Leopards are frequent visitors here and have also been spotted by the visitors during the festival. An order to demolish the *dargha* was passed, but could not be implemented due to various constraints and resistance. Who should be held responsible in case of an eventuality in the Park, the Forest Department or the careless visitors?

There is another illegal *dargha* in the Park towards the Mira Bhayander belt,

1972 and Forest Conservation Act (1980).

The Indian gods and deities have always been intricately linked to nature. Most gods have an animal as vehicle or is at least associated with one. Most festivals are linked to changing seasons and crop patterns. The festivals are to remind us of the importance and power of nature. However, the changing trends in celebrating festivals in India indicate that the probable motive behind these festivals and having temples in remote forests has been lost over the generations. In this new era the way festivals are celebrated remains a paradox to the idea of coexistence and sustainable living culture of our great country. If only we could revisit the ethos of our religions we would realize the way to respect nature and our religions. ■



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Networking of Partners

A workshop on the conservation and livelihood issues faced by Important Bird Areas (IBAs) was held in Mumbai from March 1-2, 2008. The state coordinators and members of Indian Bird Conservation Network (IBCN) from all over India participated in the workshop.

The workshop was jointly organized by the Bombay Natural History Society, BirdLife International Asia Region, TILCEPA (the World Conservation Union's Theme on Indigenous and Local Communities, Equity, and Protected Areas), and Kalpavriksh.

The event helped to develop strategy and actions to deal with issues linked with developmental threats, and livelihood dependency on IBAs. ■



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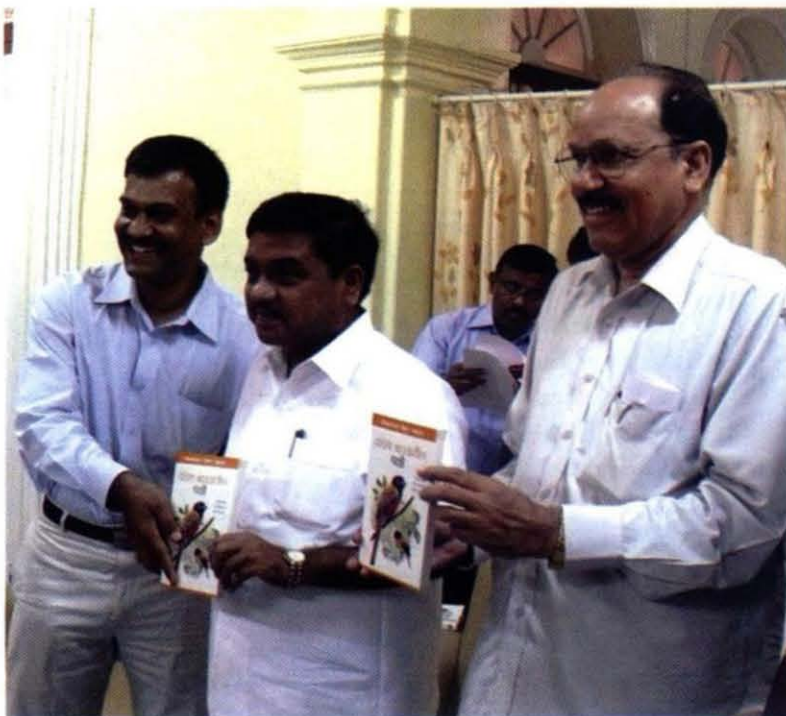
Networking helps construct strategy and action to deal with issues linked with developmental threats

Field Guides on birds released

Field guides are predominantly available in English; the main aim of publications in regional languages is to develop a broad-based support of people from different sections of the society for conservation of the flora and fauna, and their habitats.

The Bombay Natural History Society (BNHS) recently added 'Birds of Southern India', in four regional languages – Marathi, Telugu, Tamil and Malayalam, onto its publication list. These field guides will help equip the amateur bird watchers and front-line staff of the Forest Department with a good quality publication in a regional language.

The Marathi edition of the field guide '*Dakshin Bharatatil Pakshi*' authored by Mr. Richard Grimmet, Mr. Tim Inskip and Mr. Prashant Mahajan was released on January 11, 2008, by Shri. R.R. Patil, Deputy Chief Minister, and Home Minister, Maharashtra. ■



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(From left to right) The author, Mr. Prashant Mahajan, Shri R.R. Patil, Dr. Asad Rahmani, Director, BNHS on the occasion of the release of Marathi Field Guide '*Dakshin Bharatatil Pakshi*'

We are grateful to
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 to support the publication of *Hornbill*

Mission Greenscape 2

With the overwhelming success of *Mission Greenscape* in 2007, the second Art Auction, *Mission Greenscape 2* was held on February 25, 2008, at the Taj Mahal Hotel, Apollo Bunder, Mumbai. The Art Auction was held primarily to raise funds for the BNHS activities in research and conservation education. Thanks to the support that was readily forthcoming from the art community, corporates, professional agencies and professional individuals and a team of enthusiastic staff at the BNHS, the event was a great success. This could be achieved mainly because of the leadership of our Vice-President, Pheroza J. Godrej, who for the second year in succession graciously took on the stupendous task of organizing the auction.

Prior to the main event, an exhibition of the 68 contemporary paintings was held from February 21-24, 2008 at the K.S. Jehangir Nicholson Gallery of Modern Art, NCPA, Mumbai. The preview took



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BNHS Vice-President, Mrs. Pheroza Godrej, took on the stupendous task of organizing the auction

place on February 22, 2008. The artists, whose works were auctioned included Akbar Padamsee, Ram Kumar Ajay De, Surya Prakash, Imtiaz Dharkar, Lalitha Lajmi and Jehangir Jani.

Most importantly, many of our projects, which were kept in abeyance for want of funds, can now be implemented owing to the Art Auction. ■

BirdLife meeting held in Mumbai

A workshop on the 'Local Conservation Groups (LCGs) and Important Bird Areas (IBAs)' was organized jointly by the Bombay Natural History Society, BirdLife International Asia Region, TILCEPA (the World Conservation Union's Theme on Indigenous and Local Communities, Equity, and Protected Areas), and Kalpavriksh from March 3-5, 2008 in Mumbai. BirdLife Partners of nine countries from Southern Asia participated in the event.

The event helped gather the experiences from the region on LCGs, and work on livelihood and equity issues. The actions for strengthening the role of LCGs in IBA conservation were also identified with the help of the workshop. ■



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Active participation of individuals in the society helps to solve a number of matters

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