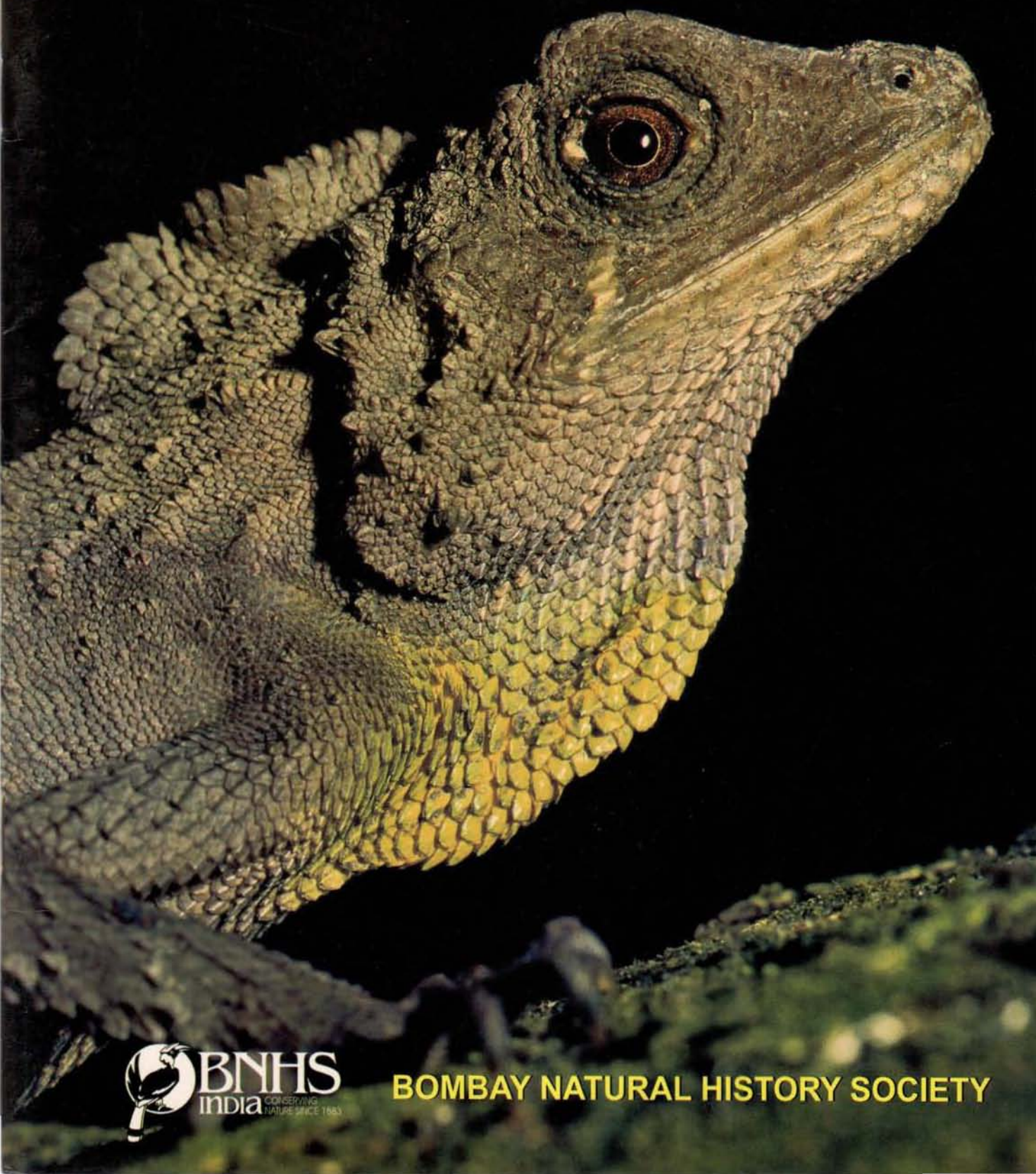


HORNBILL

DISCOVER THE LIVING WORLD

OCTOBER-DECEMBER, 2006



BOMBAY NATURAL HISTORY SOCIETY

Declining Spot-billed Pelicans

SPOT-BILLED PELICAN (*Pelecanus philippensis*)



Photo: A.I.Siddiqui, NPCIL

The Spot-billed Pelican is one of the three species of pelicans recorded in India. It is a 'breeding resident', while the other two, the Great White Pelican *P. onocrotalus* and the Dalmation Pelican *P. crispus* are winter migrants to India. The strongholds of the Spot-billed Pelican in India are in the North East (Assam) and southern India (Andhra Pradesh, Karnataka and Tamil Nadu).

Formerly common across much of South Asia, it has been reported from China, Pakistan, India, Nepal, Bangladesh, Sri Lanka, Myanmar, Vietnam, Laos, Thailand, Malaysia, Cambodia, Philippines and Indonesia, the Spot-billed Pelican has undergone widespread declines and its world population till recently was estimated at around 11,000 birds. The only known breeding populations are now confined to India, Sri Lanka and Cambodia.

The BNHS survey (2000-2003) has estimated that the population of the Spot-billed Pelican in southern India (Andhra Pradesh, Tamil Nadu, Karnataka and Kerala) ranged around 2,850 to 3,700 birds, which was significantly higher than the earlier estimates. Along with the recent population estimate of around 3,000 birds for Assam, the current population in India is around 6,000-7,000 birds

However, the situation is not rosy as pelicans and their habitats faced a number of serious problems, such as hunting of adults, poaching of eggs and young, conflict

with fishermen, loss of support to 'village pelicanries' from locals due to various factors, loss of nesting trees, electrocution from power lines especially in case of village pelicanries, disturbances to breeding sites from tourists, and the threats to pelicans from the crisis of the human population growth resulting in placing huge demands from humans on wetlands leading to their exploitation, alteration, degradation, pollution or physical loss. Spot-billed Pelican can be seen in and around the Exclusion Zones of Madras Atomic Power Station at Kalpakam and Kudankulam Nuclear Power Project (both in Tamil Nadu).

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

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



Kudankulam Nuclear Power Project



Nuclear Power Corporation of India Limited

(A Government of India Enterprise)

Vikram Sarabhai Bhavan, Anushaktinagar, Mumbai-400094. Website: <http://www.npcil.org>

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A programme so successful, that more villages are adopting it.

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Let us stop being arrogant!

A COUPLE OF MONTHS AGO, I read an interesting article in *The Times* (October 12, 2006), published from the UK, by Lewis Smith. It had a provocative title, '200,000 years for all trace of Man to vanish from the Earth'. I am surprised that the Indian newspapers did not pick this article! They generally do publish some interesting articles and news published in other parts of the world. The article is based on a report in *New Scientist*, a popular scientific magazine published in the UK.

The article tells us that if humans were to completely disappear from Earth, the population of endangered species would start recovering, further proving that humans are the main culprits for endangering Earth's extant species. The next positive impact would be the end of light pollution, within 24 to 48 hours! Air pollution (nitrogen and sulphur oxides) would reduce within three months, and within ten years, methane, another killer gas, would disappear from our atmosphere. Will it not be wonderful to live in a world without having to breathe polluting gasses? But we will not be here then!

Within 20 years of Man's disappearance from Earth, plants would over-grow on rural roads and villages, and the despicable GM crops would disappear totally and be replaced by natural wild crop species. During the next 50 years our depleted fish stock would be fully recovered, and nitrates and phosphates in freshwater would be gone, bringing back the natural nutrient cycle of our waterbodies. Within 100 years all our wooden buildings would decay, eaten by termites and other insects. The buildings would become a part of the natural nutrient cycle. In the absence of Man, his mega-dams, the pride of arrogant engineers and short-sighted politicians, would collapse. Within 50 to 100 years, urban streets and buildings would be covered by natural vegetation, much like the famous city of Angkor Vats of Cambodia which was covered by forest within a span of 400 years before its 'discovery' in 1860 by Henri Mahout, a French colonist.

According to this *New Scientist* report, our huge metal monsters would take much longer – 200 years – to collapse. Our ravaged coral reefs would take at least 500 years to recover. It will take about 1,000 years for carbon dioxide levels in the atmosphere to go back to pre-industrial levels. Just imagine, within 200 years of our industrial development we have changed carbon dioxide levels to an extent that it would take 1,000 years to bring back its natural level. No wonder, we face climate change today.

Glass and plastic would take 50,000 years to degrade completely. I personally feel that the greatest disservice that we have done to our Earth is producing non-degradable waste in the form of plastic. In Nature, nothing is wasted; in fact the term 'waste' does not occur in the lexicon of Nature. Everything is recycled. Nature has evolved animals that reduce even the strongest bone to soil. A tree when living provides oxygen and leaves, nectar, flowers and fruits to innumerable creatures. Even when it dies and eventually falls, it provides food for microorganisms, termites, ants and nesting sites for small mammals and birds. As ecologists would know: there is life in a dead tree! A fallen leaf becomes a part of soil thanks to decomposers like ants, termites and bacteria. If we study the nutrient cycle, we would know how beautifully and intricately nature works.

During the last 200 years, after the industrial revolution, we have made innumerable chemicals that would take 200,000 years to disappear completely from the face of the Earth. And, this would happen only if we stopped producing chemicals now! According to this article, nuclear waste would be the last to disappear from Earth. It would remain for up to two million years. Is our nuclear lobby listening?

The article ends dramatically with a dire prophecy "If 50,000 years hence, an alien archaeologist were to land on Earth without Man, it might be quite frustrated by the paucity of evidence that we were here at all." In the

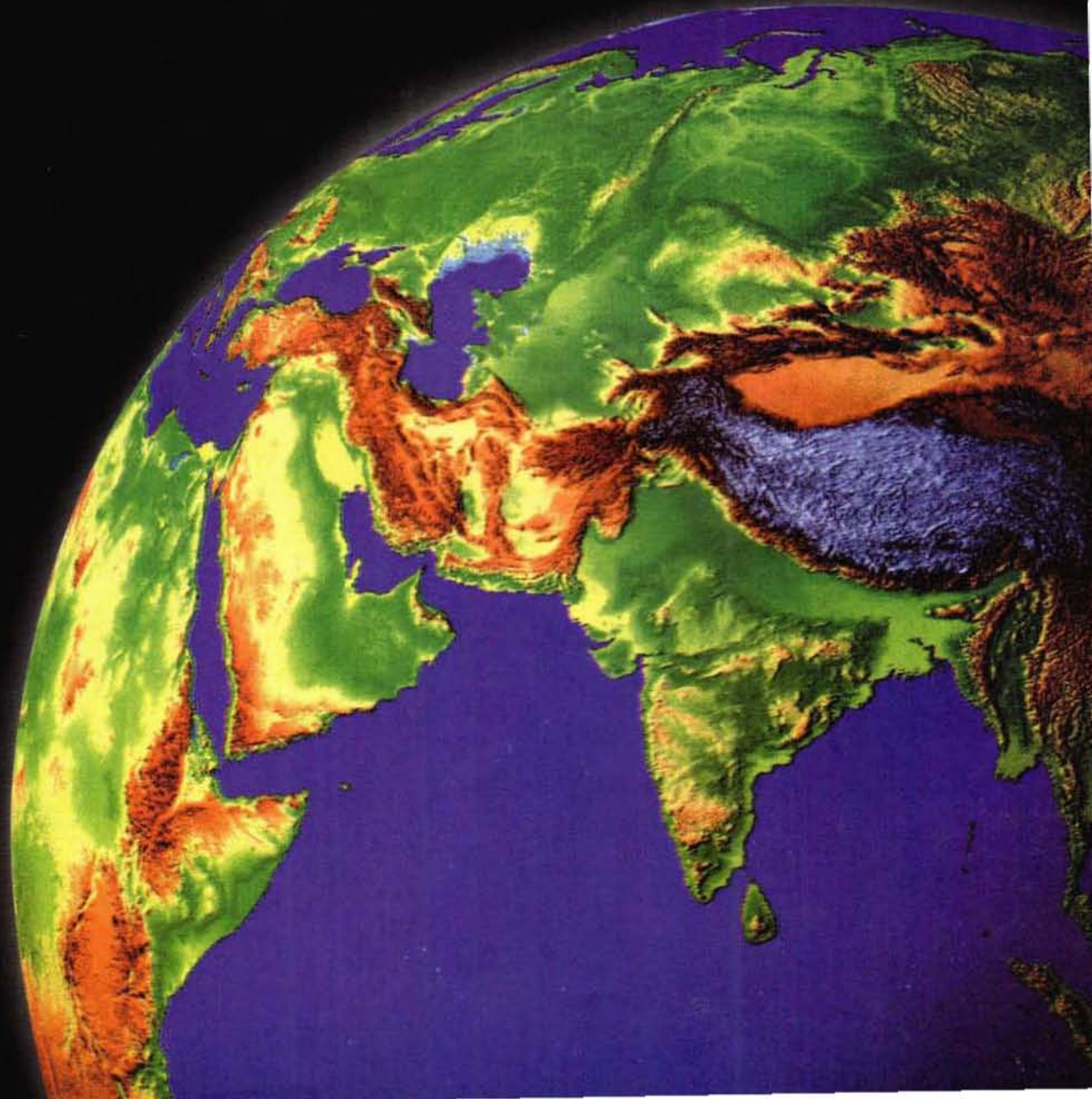
geological time scale 50,000 years is a small time period. Our Earth is 4 billion years old, so 50,000 years is just a blink. But, we humans believe that it is our duty to rule over all the species of the world, change the natural laws of nutrient cycle, modify nature to cater to our immediate needs, and ravage natural areas to cater to our greed. Intemperate and arrogant use of our power has created only problems.

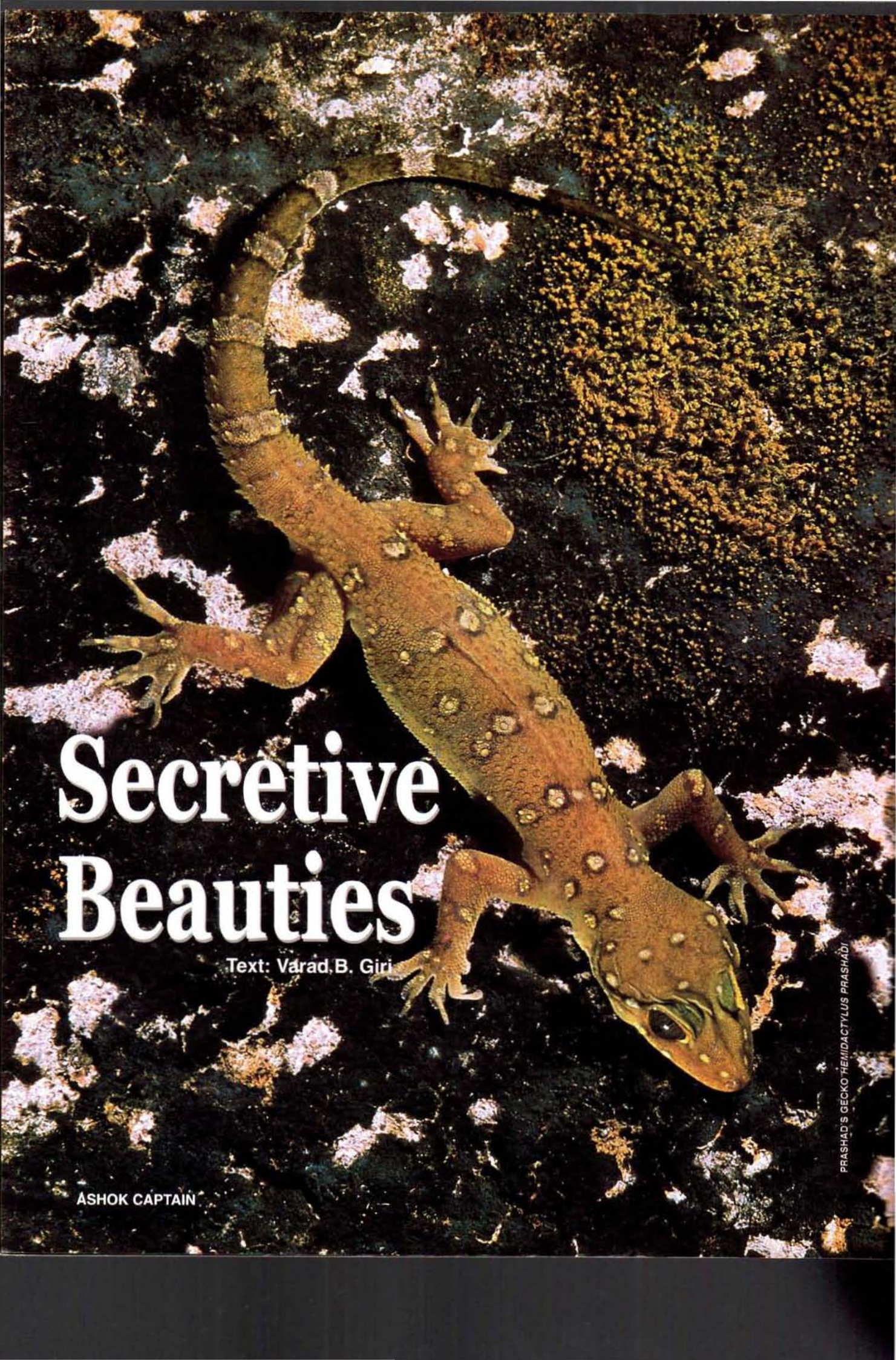
We must respect Nature's laws. Perhaps we should develop a new philosophy, a new religion, new ethics, a new way of looking at Mother Nature: all based on Nature's laws and roles of each living being. We have to develop a new paradigm to respect nature,

from being the exploiter to becoming the protector and wise user of Nature's bounties. After-all we have only one world to live on. Where will we go when all the natural resources are exhausted, Earth's life support systems are destroyed, and climate change brings catastrophic changes?

If we destroy a 4 billion year old life support system, it will take Nature only 50,000 years to remove all traces of our existence. Can we afford to be so arrogant about our power?

Asad R. Rahmani





Secretive Beauties

Text: Varad.B. Giri

ASHOK CAPTAIN

PRASHAD'S GECKO *HEMIDACTYLUS PRASHADI*

Most of us love to look at animals that are colourful, easily visible and attractive! Though less visible, and not beautiful to some eyes, the rest are not insignificant; every organism has a unique role to play in the web of life. Our biased attitude sometimes results in disrespect for such 'invisible' groups, while a few 'high-profile' or so-called 'charismatic' animals get a great deal of attention and funding. Much is known about these animals, but we do not tire to gather more information.

I often ask people whether they love lizards. And pat comes the answer, "Eeeeeeee, how can one love lizards?" Many recoil just at the mention of reptiles and amphibians. To think of them as friends is impossible when one does not even want to talk of them, though some make a few exceptions, such as tortoises and sometimes snakes. Why are we repelled by lizards? I've asked myself this question on a number of occasions. Is it because lizards appear disgusting and dirty, or because they are considered poisonous or venomous, they are colourless...? Yes, lizards definitely do not fit into the standard definition of beauty, but look closely and like me you too may one day find these beautiful denizens of our planet stunningly beautiful.

Sheer inquisitiveness had set me on my search on lizards. This search slowly turned into a passion and eventually my repetitive 'search' led to 'researching' them. I began reading more about them and observing them in the field. My first encounter with a beautiful lizard in the Sanjay Gandhi National Park (SGNP), Mumbai, steered my career towards herpetology. My good friend and colleague, Mr. Vithoba Hegde and I, then a Research Assistant in the Collections Department of the Bombay Natural History Society (BNHS), used to accompany Dr. V. Shubhalaxmi to make nocturnal surveys of moths in the SGNP. On one of these surveys, we arranged the night traps and were waiting for moths to arrive. A while later, we decided to take a short walk in the surroundings. It was late winter; there was dry leaf litter on the ground. A few steps later, we heard a rustling sound. We moved closer, and saw a medium-sized lizard crawling among the leaf litter. It was brownish with yellow bands and was literally invisible in the leaf litter! When I tried to catch it to get a better look, it made a 'quacking' sound and started running. Somehow we managed to catch it, and after a better look and some photographs, we immediately released it. I was amazed by its beauty and agility. Literature and specimen references from the Collection of the BNHS, identified this lizard as the Deccan Banded Ground Gecko *Geckoella deccanensis*. This incident started my voyage into the world of lizards and I soon began unravelling some of their 'secrets'.



Green Crested Lizard *Bronchocela cristatellus*, the bright green colour of this arboreal agamid from Nicobar Island camouflages it from predators

The Deccan Ground Gecko *Geckoella deccanensis* is an uncommon ground dwelling gecko from the northern Western Ghats

VARAD B. GIRI

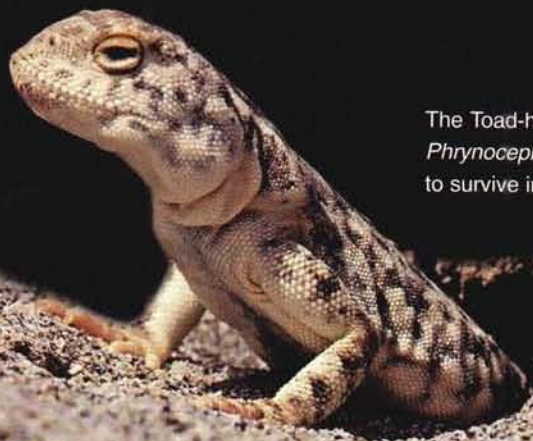
Lizards evolved around 200 million years ago. They belong to the largest order of reptiles, the Squamata. They are the descendents of dinosaurs. Snakes also belong to this order, but lizards are the oldest members. Apart from the presence of limbs, they can be differentiated from snakes in having eyelids and ear openings. In lizards, the scales are generally smaller and overlapping or granular. In some species, the scales are rough and in some glossy. One of the most important characters that lizards possess is clawed digits, which aid in climbing and walking on the ground. They have beautiful eyes; the pupil is circular or vertical.

Lizards are found in virtually every environment, from tropical to temperate, although the greatest diversity is associated with warmer climates. In altitudinal distribution, they range from sea level to 4,000 m above sea level. Lizards can be terrestrial, fossorial, arboreal, and are known to be associated with specific habitats, such as caves, freshwater and even sea coasts and estuaries. A majority of Indian lizards are forest-dwelling. A few are human commensal species also.

Lizards have adapted to suit the wide variety of habitats that they are found in. The lizards which take shelter under rocks or in crevices are flattened dorsoventrally. Their limbs

are also well-developed and with large claws. This body form allows them to squeeze into crevices or under rocks. Arboreal forms, especially tree dwelling forms, are compressed laterally. They have well-developed legs with sharp claws. The subterranean or burrowing forms are elongated and cylindrical. The limbs are not well-developed or may be absent in burrowing forms.

Apart from this, there are other adaptations that allow lizards to live comfortably in their acquired habitats. Lizards that live on trees have feet that are specially adapted to climbing. The best examples in this group are the tree living chameleons. They have toes that face in opposite directions, an adaptation that together with their long tail, enables them to firmly hold onto the branches.



The Toad-headed Agama *Phrynocephalus* sp. is adapted to survive in arid lands

S.P. VIJAYKUMAR

A few lizards are agile climbers. Many of their representatives live in rocky areas. Some are human commensals and can be seen hunting insects in and around buildings. They cling to the wall surface, defying gravity with the help of well developed pad-like structures below their digits, called subdigital lamellae. The clinging ability of lizards mainly depends on the development of the lamellae and the length of their claw. The desert-dwelling forms of lizards are often equipped with expanded feet, either in the form of pads or with a fringe of scales. This increases their surface area and aids them to move comfortably on the surface of loose sand without sinking in.

There are some 'aerial' lizards too! These have modified flaps of skin along the sides of their bodies. When the lizards are airborne, these flaps open and act like a parachute. This enables them to carefully glide down from the high branches, to make a soft landing.

Unlike snakes, lizards have well-developed ears, which are externally visible in the form of ear openings or tympanum. Thus, they are capable of hearing sounds carried through the air or the ground.


Lizards have a poor sense of smell. Though they are known to produce a variety of sounds, in India, only geckos are known to vocalize.

The tongue of lizards/geckos is unique and distinctive for each family.

The sense of sight is variable in lizards. Among arboreal lizards, the eyes are larger and the eyesight is good. In burrowing forms, the eyes may be reduced in size. You and me cannot see with our eyelids closed, but in some lizards that live under the soil, the lower eyelid has a transparent window that permits vision even when the eyelid is shut.

Lizards are mostly insectivorous, i.e. they feed on insects. But a few are herbivorous and some are carnivorous too. One of my favourite hobbies during my school days was to watch geckos (house lizards) catch insects. It is a long process that ends suddenly. The two geckos in my house used to feed on insects, mainly large moths. As soon as they saw any movement, they would rush towards their prey. After approaching close enough, they would pause and then slowly crawl forwards. This movement was so cautious that the insect remained unaware of the approaching danger. After attaining striking distance, they would dash forward to catch their prey securely in their jaw. Many a times, the prey would turn out to be lucky and escape! Have you ever observed this interesting behaviour? You could think of giving it a try!

The tails, are varied – long, short, stout or prehensile. Some lizards



The Abor Hills Agama *Mictopholis austeniana* is a tree-dwelling agamid from north-east India

VIRAL MISTRY

have a tendency to break their tails, when in danger; this is called autotomy. The lost tail regenerates over time, though. This is a defence mechanism in which the lost tail not only frees the lizard from a predator, the autotomized broken piece of tail often act as a distraction to the



SAMEER KEHIMKAR

The Leopard Gecko *Eublepharis fuscus* like other lizards feeds on a variety of insects

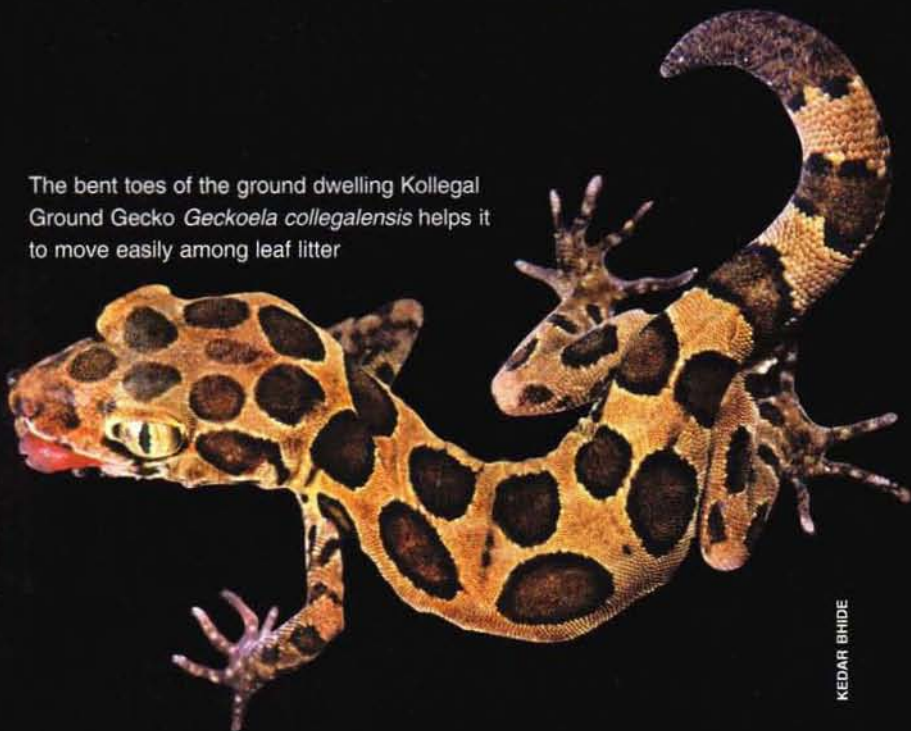
predator, allowing the lizard to escape. The loss of tail, however, results in a loss of fat reserves in several species, or social status within conspecifics, and thereby, a reduced chance to breed. Most lizards are oviparous.

Based mostly on their morphological characters lizards are divided into different groups, and the commonest among them are geckos, agamids, chameleons, skinks and monitor lizards.

GECKOS

What happens when you try to hit house lizards? They run into crevices or behind photo frames on or cupboards. They can comfortably do so because of their body shape, which is flattened dorsoventrally. Their scales are granular or in the form of enlarged tubercles. They are called geckos. Geckos are mostly arboreal and nocturnal, but there also exist ground-dwelling and gliding geckos. Many species of geckos of the genus *Hemidactylus* are commensal to humans and can be mostly seen on the walls in and around houses. In *Hemidactylus*, the lamellae of geckos are very well-developed. In ground-dwelling geckos the lamellae are not

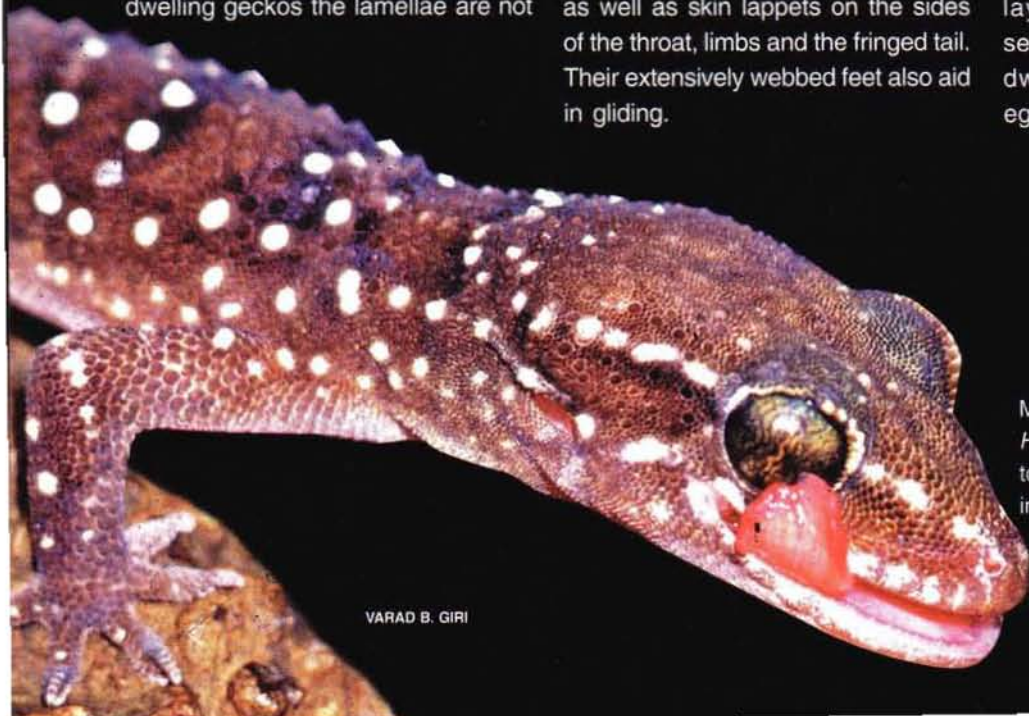
The bent toes of the ground dwelling Kollegal Ground Gecko *Geckoella collegalensis* helps it to move easily among leaf litter



KEDAR BHIDE

well-developed and fingers are bent. Hence some of them are also known as bent-toed geckos. Some ground-dwelling geckos are beautifully coloured, and have patterns of bands or spots. This coloration helps them to camouflage. The Kollegal Ground Gecko *Geckoella collegalensis* is one such beautiful gecko. I have seen this species only once in my life, when it was moving on dry leaves. Gliding geckos can be seen in the forests of north-east India. They belong to the genus *Ptychozoon*. They glide with the help of flaps of skin on the flanks, as well as skin lappets on the sides of the throat, limbs and the fringed tail. Their extensively webbed feet also aid in gliding.

In most geckos, the eyelids are immovable, hence they clean their eye balls with their tongue. But geckos of the Family Eublepharidae, commonly called Fat Tailed Geckos, have fleshy, movable eyelids. These geckos are medium to large sized, slow moving and terrestrial. They mostly live in scrub forests and deserts and feed on invertebrates. They have stunning colours which make them famous as pets around the globe. In India, there are three species of this kind. Geckos are mostly oviparous. The arboreal forms lay their eggs, mostly two, in secluded places, while the ground dwelling geckos mostly lay their eggs under rocks.



Most geckos like the Termite Hill Gecko *Hemidactylus triedrus* use their tongue to clean their eyeballs as they have immovable eyelids

VARAD B. GIRI


AGAMIDS

Agamids are a group of lizards in which the body is laterally compressed. The scales are enlarged and overlapping. They are the best climbers and are mostly seen on trees, though there are some ground-dwelling forms. These lizards have well-developed legs and long clawed digits, and a long tail. One of the largest and commonly seen representatives of agamids is the Indian Garden Lizard *Calotes versicolor*. One of the striking characters in agamids is the presence of well-developed crests on the head and the body. The males in this species and some of their congeners develop striking breeding colours where the head and some part of body become red. They are territorial and stoutly defend their territory, mostly among males, during breeding season. There are some rock-dwelling forms of agamids, commonly called rock agamas, in which the body is a bit rounded and the scales too are smaller in size.

We have one interesting ground agamid called the Fan-throated Lizard. This species is known for a spectacular display of the fan on the

throat. They are commonly seen in grasslands and are mostly terrestrial. The males in this species are with a colourful fan-like structure on throat. During the breeding season they open these fans which are blue in colour with reddish borders. Whenever you get a chance to visit grasslands in the summer, do look for this stunning behaviour.

This group has an aerial representative and that is Draco or gliding lizard. They are known for their abilities to glide from one tree to another. They do so with the help of the patagium or the flight membrane, which is present between the forelimb and the hindlimb. This membrane is extended by the action of specialised muscles and associated ligaments that act upon the elongated ribs. They are one of the best examples of camouflage; on the main stem of the tree, where they mostly reside, they are difficult to locate. But they have a habit of flashing their yellow coloured throat flap, making them visible to us at times. I saw them in good numbers in the Anshi area in Karnataka. Looking at these lizards showing spectacular displays in air is one of my most memorable experiences.



Indian Garden Lizard *Calotes versicolor* is one of the largest and common arboreal agamid

Agamids are mostly oviparous and lay soft-shelled eggs which are buried in the soil for incubation.

CHAMELEONS

One of the best examples of arboreal forms of lizards is the Chameleon. Their body is laterally compressed. For a comfortable arboreal life-style, they have a prehensile tail and opposable fingers and toes. Striking characteristics include the skin covering above the eyeballs and independently moving eyes. A bony projection on their head, which looks like a head gear, makes them unique. Because of the body form, their movements are restricted. To overcome this barrier, they rely on stealth and use their ability of changing colours for camouflaging, prehensile tail for support and extremely long tongue for capturing prey. The combination of all this, makes them one of the most



RAVINDRA BHAMBURE

The breeding display of the ground-dwelling Fan-throated Lizard *Sitana ponticeriana* is marvellous

AARTI KULKARNI

successful arboreal lizards. Chameleons, like agamids, are also known to lay their eggs in a hole in the soil.

SKINKS

A group of lizards which are mostly burrowing or fossorial are called *Sapachi mavashi* (snake's aunt) by locals in some areas. This name is apt because their body is cylindrical, with small limbs, with overlapping and shiny scales. They are commonly called skinks. Worldwide, this is one of the most species-rich family of lizards. They are mostly diurnal and can be seen actively foraging among leaf litter. Some of the juveniles of skinks have bright red tails. The commonest skink is Keeled Grass Skink *Mabuya carinata*, which is widely distributed in India. Skinks mostly lay their eggs under rocks.

MONITOR LIZARDS

The largest among all are the monitor lizards. Apart from their large body, they are very swift and are one of the active predators of small mammals, birds and some times even bird eggs. Their skin is granular and claws very well-developed. Members of the genus *Varanus* lay their eggs in holes in the ground or in ant hills. They are known for their

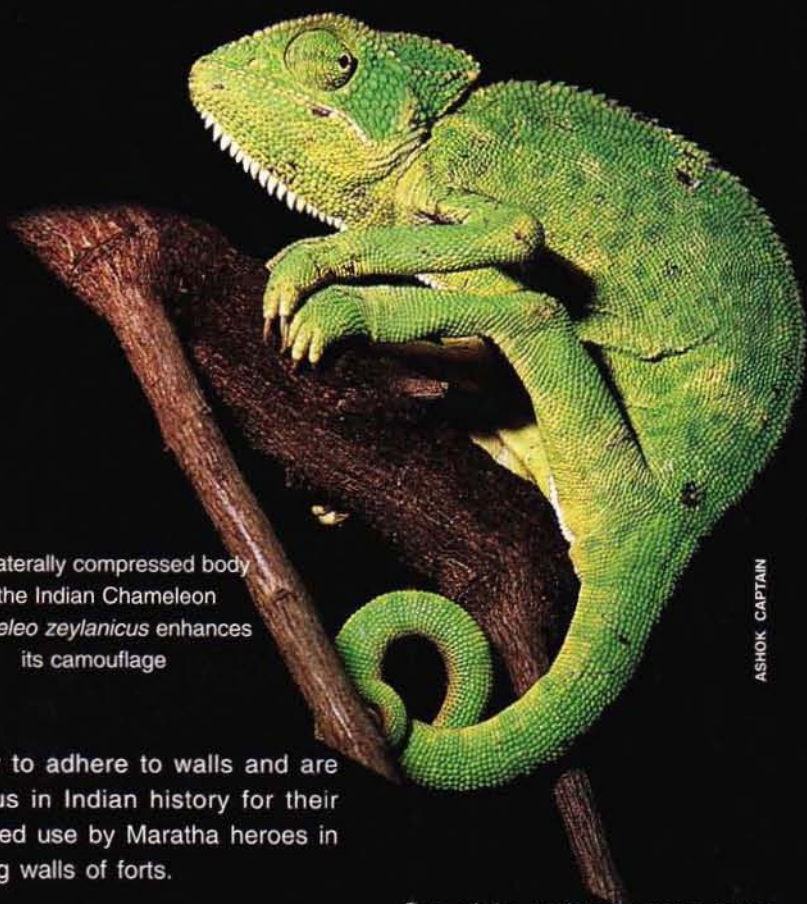
The laterally compressed body of the Indian Chameleon *Chameleo zeylanicus* enhances its camouflage

ability to adhere to walls and are famous in Indian history for their reported use by Maratha heroes in scaling walls of forts.

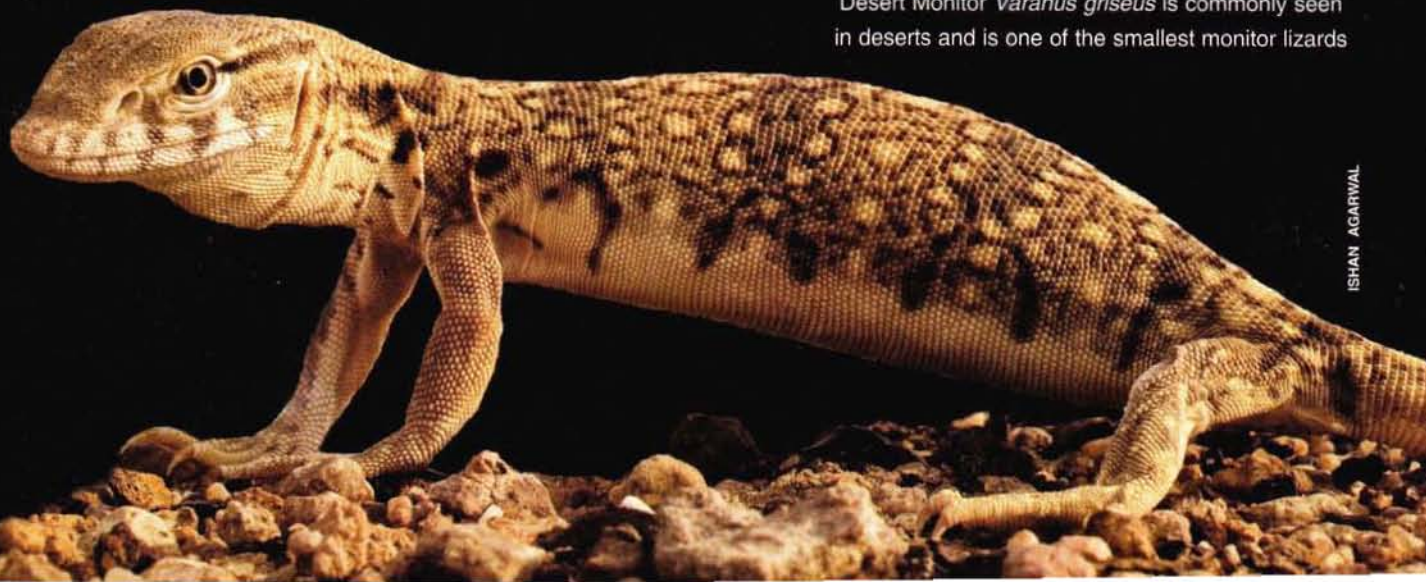
This is just an introduction to the world of some common lizards. There are innumerable forms that are not so common but equally beautiful and colourful. There is a lot more to learn about lizards. Very little study has been done on lizards; many questions are yet to be answered. So let us all initiate a dialogue, to try and unravel the mysterious world of these misunderstood and disliked reptiles. Maybe we could begin with the common house gecko.

One of the major concerns is the ill-treatment of lizards due to their appearance. Most of us encounter a limited variety of lizards, like the house geckos or garden lizards, and conclude that lizards are dull and colourless. This is a myth, for there are brightly coloured lizards too. Lizards have acquired these specialised characters through a long evolutionary process, which are indispensable for survival. The colours – dull or bright – help them in camouflage, making them difficult

Desert Monitor *Varanus griseus* is commonly seen in deserts and is one of the smallest monitor lizards



ASHOK CAPTAIN



ISHAN AGARWAL

to be spotted by their predators.

Another concern is the myth that lizards are venomous or poisonous. No venomous lizard is known from India. Only two species of poisonous lizards are known the world over, both are from South America. I have been bitten by many lizards when observing or photographing them and without any ill effects. I have never heard or seen a person affected by lizard bites in India.

If you take into perspective each aspect, and look at the condition in totality, you will realise that there is no reason to be repulsed by lizards, because the fears are not concrete or real. So let us begin the process of knowing them with this juvenile Fan-throated lizard alongside. ■



DILIP KUMAR DONGATE

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



FACT FILE



VARAD B. GIRI
Foot of ground dwelling gecko with undeveloped lamellae



ASHOK CAPTAIN
Foot of arboreal gecko with well developed lamellae



ASHOK CAPTAIN
Geckos – Dorsoventrally flattened body, granular scales, well-developed legs, with or without well-developed lamellae, pupil mostly vertical



RAGHAI NUEKARMI
Monitor Lizards – Rounded body, granular scales, well-developed legs with large clawed digits, pupil circular



S.P. VIJAYKUMAR
Agamids – Laterally compressed body, overlapping scales, well-developed legs, pupil circular



VIRAL MISTRY
Skinks – Rounded body, overlapping but glossy scales, legs smaller, pupil circular



KATIE BAGLI

Eaglenest Sanctuary

A NATURALIST'S PARADISE

Text: Katie Bagli

Nestled in the Dafla Hills of the Eastern Himalaya, just beyond Bhutan, in western Arunachal Pradesh, is Eaglenest Sanctuary. Spread across 218 sq. km, the pristine forest of this Sanctuary supports a diversity of flora. In a short span the flora in this region telescopes from the Indo-Malayan (tropical) to sub-tropical to temperate, because of the wide altitudinal range, up to 3,000 m. I was among the fortunate few participants of the first camp organized by the Bombay Natural History Society (BNHS) to this Sanctuary.

We sped past the flat plains of Assam, past bamboo forests and villages of bamboo homes, bamboo fences and bamboo foot bridges across the many streams in a local bus, which we had boarded at Guwahati. At Tezpur, we shifted into jeeps that drove us over army-built roads towards Eaglenest.

We were appalled to see massive trees in the buffer area being felled, to be replaced by mustard fields. The practice of *jhum* – slash and burn or shifting cultivation – has been a method of sustainable agriculture for years for the Buguns and other tribals

that dwell in the north-eastern forests. After harvesting a few crops the land was traditionally left fallow for about ten years to allow natural vegetation to take over, this enhanced the biodiversity. But now-a-days, lack of enough cultivable land, owing to population pressure, and the lure of valuable timber have led to *jhum* being practised on a much larger scale, and the fallow period is only two to three years. This has resulted in highly degraded forests and infertile lands.

When the flat land gave way to forested hills we knew we had entered Arunachal Pradesh. An iridescent

Emerald Dove *Chalcophaps indica* flitted past the rough jeep track, welcoming us to the Sanctuary. 'Eaglenest' was the code name given to this place by the Indian Army when they had their base camp here. Finally, we had entered a prime, tropical, evergreen forest, declared as a biodiversity hotspot. Teak trees, *Terminalia* and Hollong, were interspersed with bamboos and bananas, the latter two being a favourite meal of the gentle but unpredictable giant, the Asian elephant *Elephas maximus*. It was from here that Ramana Athreya had described a new passerine species, *Bugun liocichla* in May 2006.

As if the forest had decided to present to us a spectacle, we got a glimpse of Capped Langurs *Trachypithecus pileatus* swinging away in the thick growth. Further on, our driver, Champa, abruptly stopped the jeep and reversed – he had heard a wild elephant. But the foliage was so thick and the tusker so fast, that we barely got a glimpse. We wondered how such a massive animal could make its way down such steep slopes without slipping.

Eaglenest Sanctuary is indeed a naturalist's paradise – the Indian Army has built roads right into the interior, making the green haven approachable throughout, unlike in Namdapha. However, when the Army went a few steps further and began dynamiting areas in the Sanctuary, a Supreme Court order to stay any work was imposed.

We reached camp late in the evening. A group of six tents and make shift bamboo bathrooms awaited us. By 4.30 p.m. the sun had already set and a warm campfire beckoned us, and kept away the biting cold.

The next day we trekked to Hathi Nalla through subtropical vegetation of *Magnolia*, *Rhododendrons*,



ASHOK KOTHARI



R. SRINIVASAN



KALPANA SHAH



ASHOK KOTHARI

The striking colours of wild berries like *Gaultheria*, birds like Ward's Trogon and other wildlife are what make Eaglenest a naturalist's paradise

Eaglenest Sanctuary



KATIE BAGLI

Tree ferns occur in subtropical forests, and several of these living fossils are now endangered



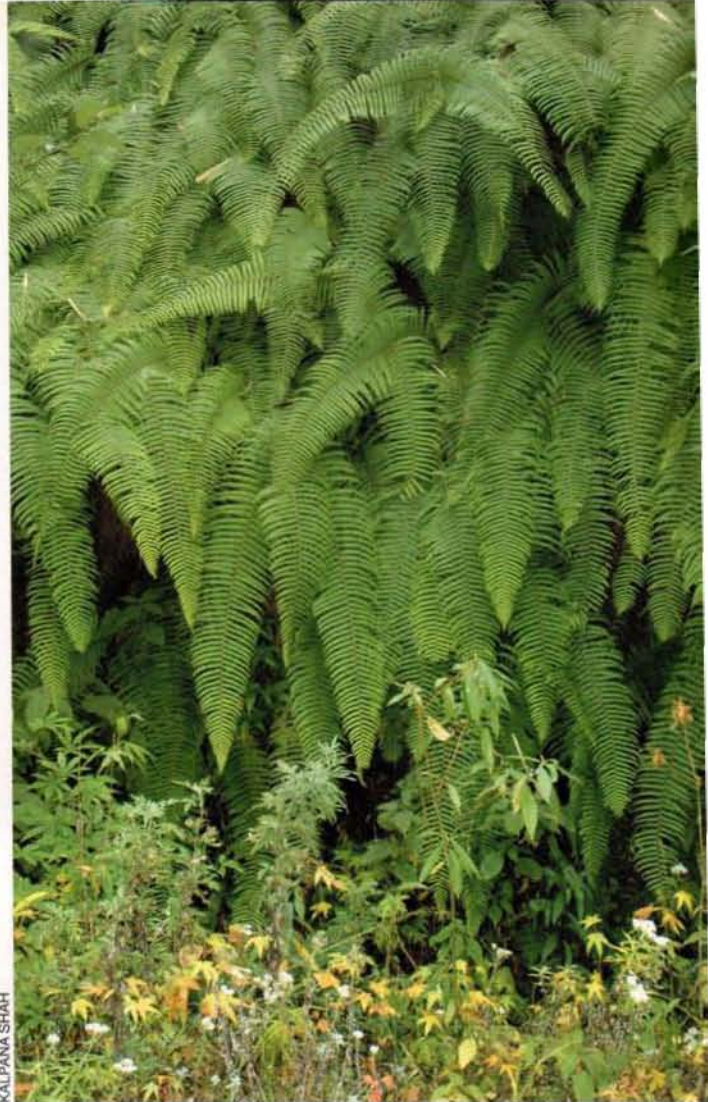
KALPANA SHAH

The sighting of Himalayan Krait *Bungarus bungaroides* after several years was a bonus for the participants

Rapido-flora, Ginger lilies and violet Goatweed, besides bamboos and bananas. Berries of various hues – blue, red, purple attracted the feathered denizens. The Rusty-fronted Barwing *Actinodura egertoni*, Large Hawk Cuckoo *Hierococcyx sparverioides* and Wedge-Tailed Green Pigeon *Treron sphenura* greeted us with their melodious calls. Shashank Dalvi, a young naturalist who is helping Ramana Athreya to document the fauna of Eaglenest, and our guide, had 240 bird calls recorded, some of which he played to call the bird out into the open. Every now and then we came across mixed hunting parties. A noisy flapping of wings was followed by a view of eight Hornbills flying across the azure blue sky. The only raptor



The autumn hues of seasonal flora lend colours to the Sanctuary



Cascading ferns are a common sight along the forest paths

KALPANA SHAH
KALPANA SHAH

we saw that day was the Black Eagle *Ictinaetus malayensis*.

December is not the season for butterflies, hence we were pleasantly surprised to see a large variety – the Purple Sapphire (both male and female), Punchinello, Dark Judy, Circe, being the outstanding ones. Hundreds of tent caterpillars were huddled in their silken homes, where they would probably go into hibernation until the next season in March. That evening we exchanged notes on the day's sightings, and kept ourselves warm by dancing the 'garba' and a Zulu dance around the campfire, under a full moon.

On day three, we progressed to Sessni from Hathi Nalla and thence to Khellong. Noisy gangs of Laughing Thrush mocked at us, while the Yellow-

bellied Flycatcher-warbler *Abroscopus superciliosus* sang a melody. Profusions of Goatweed, Floss flower, Gynura and other flowers attracted butterflies like the Common and Himalayan Jester, Tabby, Red Admiral, Rusty Forester, Chocolate Tiger, Puffin and Yellow Orange Tip. We also saw Labyrinths sipping the organic juices from an unidentified animal's dropping. The highlight of the day was the sighting of the Himalayan Krait *Bungarus bungaroides* – a great rediscovery after several years.

Day four saw us trekking at Sunder View, located at an altitude of 2,465 m, supporting temperate forests that were shrouded in clouds. The tree canopies were a beautiful shade of gold, orange and red, the colours of

fall. Being far colder and cloudier than Hathi Nalla and Sessni, we did not see butterflies, but heard several colourful birds – Rufous-vented Yuhina *Yuhina occipitalis*, Rufous-necked Hornbill *Aceros nipalensis*, Golden Bush Robin *Tarsiger chrysaeus*. Large flocks of the tiny Rufous-fronted Tits *Aegithalos iouschistos* were perched on Ulnus trees that grew on landslides. A Himalayan Black Bear *Ursus thibetanus* had left its mark in the form of droppings.

On the last day of camp we trekked into the valley beyond Khellong – the vegetation being typically tropical and the climate fairly hot – in complete contrast to the previous day. Here, green curtains of enormous ferns, and the exquisite Bamboo Orchid *Arundina*



The Sanctuary made available an unlimited quota of visual treats for the visitors

graminifolia drew our attention, a sight that left us spellbound. A goat-like mammal galloped across our path, leaving us all debating about its identity. From its gait and colour it could have been a Serow or Takin, but there was no way to confirm this. The Red Helen, Poppinjay, Black Prince, Red Admiral, Striped Blue Crow, Chestnut Tiger, Chocolate Albatross flitted about us. Amongst the featherfolk that made their appearance were the Black-chinned Yuhina *Yuhina nigrimenta*, Short-billed Minivet *Pericrocotus brevirostris*, Scarlet Minivet *Pericrocotus flammens* and Red-tailed Minla *Minla ignotincta*.

We bid goodbye to this valley of nature's tapestry, and returned to our base camp. On the way back we came across an almost four metre long King

Cobra *Ophiophagus hannah*. Its skin glistening in the afternoon sun, its body slithering and coiling slowly and gracefully. Everyone was excited and stared in awe from a respectful distance. But our boundless joy was short-lived, for we soon discovered that its head had been smashed by someone not too long ago. We all felt a deep sense of loss – Eaglenest was short by one of its most beautiful and royal inmates – the King Cobra.

Eaglenest appears to be one of the last vestiges of our rich natural heritage. It is imperative that it be conserved. The buffer area around the Sanctuary, which is community-owned, is already degraded. For these economically backward people, food and shelter is far more important than a forest rich in flora and fauna. One

tree felled could mean a lakh of rupees.

It is not too late to promote ecotourism, to train the locals to become tourist guides. Ramana Athreya is trying to streamline a process whereby the income earned from tourists could be spent for the welfare of the local tribes, and to enlighten the Buguns about the drawbacks of non-sustainable development of forests. I hope that this paradise, in a distant corner of our country, remains pristine and flourishing forever. ■



Katie Bagli volunteers for activities at CEC, Mumbai. She teaches Maths and Science to children. Conserving nature is her greatest concern.

It is not so much for its beauty that the forest makes a claim upon men's hearts, as for that subtle something, that quality of air that emanates from old trees, that so wonderfully changes and renews a weary spirit

– R. L. Stevenson



A Monster in the sand



Above: The Monster Cricket is locally called '*Shingra*'

Below: The typical burrow of the cricket on a sandy bank

Text and photographs : Manju Siliwal

In almost all living taxa there exist miniature and giant forms that never fail to catch our admiration, though probably to different extents. It was one such giant, though of a lesser evolved order, that caught my attention during a survey in western Arunachal Pradesh in north-east India – a region that supports a unique and hitherto unknown assemblage of species of lesser evolved orders, such as spiders and other invertebrate fauna.



The sandy bank of the Bhareli river in the Tippi area of Arunachal Pradesh is home to Monster Cricket

I was primarily looking for tarantulas in the foothills along the Assam-Arunachal Pradesh border early last year. Tarantulas live in burrows or crevices in the ground or on trees. One needs to have a trained eye to locate these burrows. A few locals in the Tippi area, just where River Bhareli or Kameng enters the Assam plains, had reported having seen giant insects that lived in burrows in the ground. But their descriptions of the insect did not match that of tarantulas. Still, I decided to follow their story.

Early one morning, we crossed the Bhareli river on a raft, and entered the westernmost limits of the Pakhui Tiger Reserve, one of the well-known protected areas in Arunachal Pradesh, along with me were a few local assistants and Forest Department personnel. The evergreen and semi-

evergreen forests in this part of the Reserve were pristine and undisturbed due to the presence of the river and protection by the Forest Department. Inside the forest, the vegetation was dense, with tall towering trees, many with massive buttresses, much to the discomfort of my neck. The shrubby and herbaceous undergrowth was dense and the thick leaf litter was wet with the previous day's rain.

We spread out in different directions and searched the forest floor, on tree trunks and barks, in tree holes and crevices, and amongst fallen logs for two long hours. We found a variety of spiders, but no tarantulas. A giant wood spider *Nephila* sp. was resting quietly in its large orb-web, heavy with dew drops. The forest floor was covered with wolf spiders, *Lycosa* sp. busy in their early morning hunt,

and several other spiders – crab-spiders, comb-footed spiders, jumping spiders, funnel web spiders, cob-web spiders and species of *Lynx*. Disappointed at not finding tarantulas, we decided to return and headed straight for the riverside, cutting across the forest, and from there downstream in the direction of our raft.

The water level of the Bhareli was much below normal, as the snowmelt had not yet begun and the monsoon was still a long way off. Short stretches of sand bank along the riverside lay exposed, and a few of these sandy stretches were at least 20 to 30 m wide. The sand was fine grained and had a distinctive ash grey colour. While walking along one such stretch, one of the local assistants pointed to a burrow in the sand and said that a large insect lived in it. The shape of the



The underside of the Monster Cricket was more imposing

burrow entrance and its location indicated that it was definitely not a tarantula burrow. Tarantula spiders normally make burrows with some vegetation cover around, the entrance is usually circular and lined with silk. Curious, we began to excavate, slowly and gradually we dug up to a foot, but the burrow appeared to extend still further. At that moment we saw something leap out from within the burrow and disappear. We soon found an insect, not very far, perfectly camouflaged in the sand. At first I thought it to be a grasshopper or a locust, but its body structure and long antennae indicated that it could be a cricket ... a giant cricket! I had never seen anything like it before.

This giant, like I had suspected, was later identified to be a species of *Schizodactylus*, commonly known as Dune or Splay-footed or Monster Cricket. It measured about five to six centimetres in length. The cricket with its large beady eyes and thick stout legs, heavily decorated with spines, was quite imposing in appearance; definitely a 'monster in the sand'. Another noticeable and distinctive feature of this giant was its curled wing tips. The adaptive significance of this is not known, but is believed to be a primitive character. The tibia of all the legs had prominent spines, and the tarsus had four lateral lobes (digits) with a big curved claw, like a floral arrangement. The tibia assists the

cricket to leap far on the sand and also to dig. I found the appearance of the underside even more imposing. The mandibles were sharp and robust, suggesting a carnivorous diet. If not handled well these mandibles could cause a painful bite.

There were more burrows of the Monster Cricket in the sandy stretch, located well away from each other, suggesting that they were territorial. The crickets were aggressive towards one another and when two crickets were brought together they got entangled, and pushed each other on the sand like human wrestlers, until one finally gave up and jumped away.

One of the local assistants was meanwhile busy digging the burrows and collecting crickets in a bag. These I learnt were destined for the dinner table. The crickets are a much sought-after delicacy amongst the locals, who know them as 'Shingra'.

According to the local assistants, these crickets were found mainly in these sandy stretches and only seen during the summer. This is also probably the time when they breed, and possibly come here to lay their eggs in the burrows in the sand.

When I returned to the area, the monsoon was at its peak, Bhareli was in spate and the turquoise green river that I had seen during summer had turned muddy brown. The sandy banks had disappeared and so had the 'Monsters in the Sand'. ■

Monster crickets belong to Family Schizodactylidae and are restricted only to the Old World. They are represented by two genera, *Comicus* and *Schizodactylus*. *Comicus* is found only in Africa, while *Schizodactylus* is known to occur widely from Myanmar to Turkey and is represented by six species, three of which: *Schizodactylus minor*, *S. monstrosus* and *S. tuberculatus* are known to occur in India, and are well known from the drier western parts of the country. A new species *S. brevinotus* was described in 2002 from Nepal.

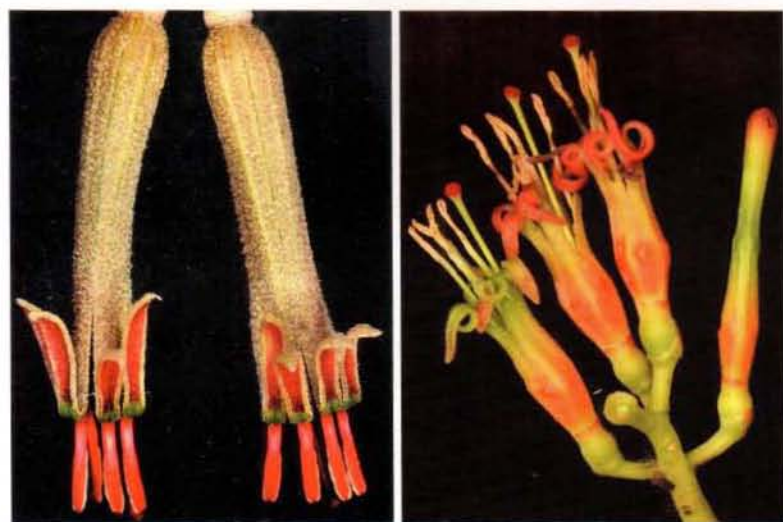
Manju Sillwal is an Arachnologist and specializes in the taxonomy and conservation of tarantulas. She is currently involved in assessing the status and distribution of tarantulas throughout India.



Loranthus – the exploding flower



Loranthus (left) and Viscum (right) are partial parasites



Loranthus flowers have striking colours to attract nectar-feeding birds



The expelled seed attaches to another host to begin a new cycle of life

Text and photographs:
Shrikant Ingalthalikar

My gardener's concern was justified when he showed me the parasitic Loranthus hanging from the Cork tree in my garden. Evidently the tree was losing some of its liquid nutrients to the 'sucker' Loranthus. So what? Nature has made both plants to grow that way!

I recollected how desperately I had explored the forests in Sahyadri for these intriguing plants. Now I had the opportunity to watch its habits right from the comforts of my bedroom.

In a few days another curious looking parasite appeared on the earlier parasite! The new parasite was *Viscum capitellatum*, a kin of the celebrated Christmas Mistletoe. The excitement of watching two parasites in good harmony was overwhelming. *Viscum capitellatum* grows only on *Dendrophthoe*, a common genus of Family Loranthaceae. Such infestations are called epi-parasitism. The fruiting of *Viscum* matches that of *Dendrophthoe* to facilitate epi-parasitism.

Parasitic plants of Family Loranthaceae are widely distributed in the wooded areas of tropics. Most of these are small shrubs growing on other shrubs or trees, except for *Nuytsia floribunda* in Western Australia, which is a tree. The Sahyadris, north Western Ghats of India, have twenty species of Loranthus and six species of Viscum.

Loranthus are 'partial' parasites and grow on trees with soft and cracked bark. Their branches emerge from bulbous out-growths on the host tree. The special pincer roots of this parasite penetrate into the storage tissues to draw nourishment.

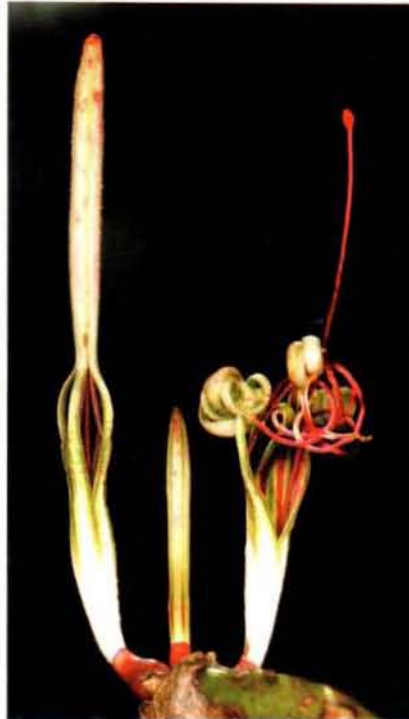
Loranthus flowers are striking red and have attractive shapes that attract nectar-feeding birds like flower-peckers and sunbirds. The flowers are borne in interrupted clusters along the branches so that the birds can reach them easily. They are narrow, tubular with four to six petals. The nectar is available at the base of the flower and is accessible only to specialized nectar-feeding birds.

Ornithophily is pollination of flowers by birds. A mutually beneficial relationship between Ornithophilous flowers or bird-flowers, such as Loranthus, and nectar-feeding birds have in some cases evolved highly specialized adaptations in both the flower and the bird. It may be appropriate to say that the birds are 'employed' by the flower. Their job is to disperse seeds for the propagation of new plants.

The ornithophilous adaptation exhibited by the Loranthus flowers is extraordinary. The mature buds of the flower fail to open unless a bird, exclusively a specialized nectar-feeder, either pecks at the bottom of mature buds for nectar or inserts its bill into the buds slits triggering the loaded petals to explode and smear the pollen onto the bill and the forehead of birds. This pollen is received by other flowers when the birds visit them for nectar.

The short beak of flower-peckers does not allow them to enjoy the nectar as much as sunbirds; their feast lies in the berries that follow. The berries are glossy and bright red, and attract birds.

The seed dispersal mechanism of Loranthus is more interesting than its pollination mechanism. Loranthus seeds have a knob-like pad attached near the base called 'haustorium' that carries a globule of extremely sticky adhesive. The torpedo-shaped seed is gulped by the bird with the haustorium



Mature buds of the flower explode open when specialized nectar-feeders, squeeze it with the tip of their bill and smear pollen onto the bill and forehead of birds.



trailing behind. In some cases, when the bird does not peck the seed the right way, it gets attached on its beak. The bird then has to rub the beak on the bark to transfer the nuisance seed to a host tree.

The shape of the seed appears to be 'gastro-dynamically' designed, as it passes through the digestive system of the bird within less than 30 minutes. When the bird purges out the seed, the haustorium and the adhesive emerge intact as in the berry, and gets attached to the branch of a new host tree. The adhesive hardens and holds the haustorium securely onto the branch. The new parasite emerges from the embryo while the haustorium functions as the root. Stiff suckers slowly penetrate the soft bark of the tree to reach the fluid carrying tissues to begin another life cycle.

Some Loranthus seem specific in choosing their hosts, usually trees with cork-like bark. But that choice is made by the bird and not by the parasite. The Loranthus seeds cannot be prevented from getting attached onto branches of the same plant. New shoots can appear even on the mother plant itself.

Now the Cork tree in my garden gets an extra meal from my gardener. The generous Cork tree carries the Loranthus on its shoulder, which in turn fosters the *Viscum capitellatum* on its branches. The symbiosis between birds, parasites and the host adorns my garden as I watch all of them with great content. The auspicious Mistletoe above my bedroom keeps evil away, and brings me fortune and kisses too! ■

Shrikant Ingalhalikar is a life member of the BNHS. He is the author of 'Flowers of Sahyadri' and is now documenting 1,150 plant species in 'Additions to Flowers of Sahyadri', his new field guide.



Quest for the Neelakurunji

Text and photographs: Kamolika Roy Chowdhury

It all started with a phone call from my mother about two months back while I was still in office. “The Neelakurunji is in bloom once again after 12 years and can be best viewed from Munnar. Can you find out more about it?” she said. I was clueless as to what she was talking about. Promising to check out more about the flower, I hung up. My search on the internet revealed that Neelakurunji *Nilgiranthus kuntiana* (inset) is a shrub with bluish bell-shaped flowers that blooms once every twelve years, dotting the entire Nilgiri range. Nilgiris which literally means ‘blue mountains’ gets its name from the Neelakurunji flowers. The plant grows to a height 30-60 cm, and can grow well beyond 180 cm under favourable conditions. Sporadic flowering begins from May and June every twelfth year and it is in full bloom by mid-September

to early October. Interestingly, another flower of the same family Karvi *Carvia callosa*, which bloom once in seven years is due for flowering in 2007. Sporadic flowering has already begun in some parts of the Western Ghats.

The first record of the blooming of these flowers dates back to the 19th century when this phenomenon was observed by the Cockburn family, who were coffee planters settled in Kotagiri in the Nilgiris. Neelakurunji used to then cover a major part of the Western Ghats and the entire Nilgiris during its flowering season. Unfortunately, over a period of time large numbers of plantations and human dwellings have replaced them.

After several enquiries, I found out that Rajmalai in Munnar, Kerala would be the ideal and one of the easily accessible places from where the flowering could be best viewed. Since I had never been to Kerala before, I decided to take a much needed break from work and grab the opportunity to not only see the Neelakurunji, but also to visit God’s own country for the first time.

I planned a 12-day visit to Kerala. My mother and German friend, Sussanne Gutberlett (also a BNHS member) decided to accompany me. My first halt was Cochin; after a day’s stay and some sightseeing in the city, we started for Munnar.



Munnar, 150 km from Cochin, is a 5-6 hours' drive. After crossing the backwaters of Ernakulam, we headed towards more hilly terrain and passed through miles of forest. Barring occasional traffic on the road through the forest, there was very little habitation around. All the way to Munnar, the forests on both sides of the road were flush with multi-coloured wild flowers, including blue ones, which left me guessing as to whether they were the Neelakurunjis that I had come to see.

We reached Munnar at about 6 p.m. when dusk was just setting in, with faint rays of the sun peeping from behind the clouds. After checking into a hotel, and after having a hurried dinner, we retired early that night. The interim between the night and the next morning was full of excitement and anticipation.

With numerous questions and apprehensions in mind, we set forth on our journey. The Eravikulam National Park is 17 km from Munnar. It was a pleasant drive, with tea gardens on both sides of the road. I was excited and thrilled to the core to think that I was so near to my quest. At last, we had reached our destination.

Once inside the Park, we had to travel in a bus provided by the Park authorities. The view of the Park from inside the bus was absolutely breathtaking, with towering hills bordering the Park and the deep valley below. As the bus moved slowly up the winding tar road, I caught a sudden movement in the hills and looked carefully, only to catch a Nilgiri Tahr bounding up the hills. I felt ecstatic and was immediately reminded of Jim Corbett. He often made references to mountain goats or 'ghoorals' in his jungle stories, but I had never seen one. Here was a close cousin of the 'ghooral' called the Nilgiri Tahr. In the rocky terrain and the grasslands, the Tahrs are completely camouflaged.

After being driven 1-2 km inside the Park, we were asked to alight from the bus, and from then on we were on our own. The forest guards there instructed us to

keep to the tar road. A little later I understood why. Straying into the bushes would have been unpleasant, as there were leeches lurking around the bushes. After walking through the forest on the tar road for about 5 minutes, I finally got a glimpse of the flowers that had brought me this far to Kerala. It was a wonderful sight. The entire grassland was dotted with tiny blue flowers and it resembled a bluish purple carpet. The scenery there could have been the composition of a beautiful picture post-card. The blue sky against towering barren and rocky hills, part of which were glistening like snow with the sunshine reflecting on the waterfalls flowing down the rocky walls of the hills. And a little below the hills were green grasslands with shades of blue and purple, with the Tahr majestically posing in the grass. The Nilgiri Tahr continued to graze oblivious to us, often in herds of three to five. Some would even come as close as a metre. It is such a beautiful feeling to be trusted by a wild animal.

There was bright sunshine around, very uncharacteristic of Munnar as it is reputed to have very unpredictable rains. The flowers had made an indelible mark on my mind. Looking down from the topmost point, I could see part purplish, part mauve grassland below. The very thought that I would have to wait for another 12 years for them to bloom was quite saddening.

However, the very existence of the Neelakurunji is being threatened, with more and more areas coming under cultivation and plantation. Fears are being expressed by experts that by 2018, when the flowers are due for the next blooming, there might not be many patches where flowering might be witnessed and this, friends, has become an issue of concerns. ■



Kamolika Roy Chowdhury is a member of the BNHS. She is interested in nature and is an amateur wildlife photographer.



ABOUT THE POSTER

Nilgai is one of the common antelopes of the Indian plains. It is protected under Schedule III of the Wildlife Protection Act 1972. In some areas it has increased to almost pest proportions, sometimes inflicting heavy damage to crops resulting in resentment by agriculturalists. Irrate farmers protect their crops by fencing the fields, sometimes intentionally maintaining traps to kill these horse-like antelopes. High Nilgai population density areas should be managed scientifically.

Nilgai
(*Boselaphus tragocamelus*)





◀ Flat and green, the **Hooded Grasshopper** is almost invisible among the foliage, and it also sways like a leaf with the moving leaves.

▶ Funnel shaped flowers of the **Pagoda flower plant** are tailor-made for certain pollinators with long proboscis that can reach for the nectar and pollinate.

Wonders of Wildlife



◀ The largest moth in the world has only a fortnight to live. With no stomach, the **Atlas Moth** has only one mission – propagation of its own kind.

▶
Dragonflies indicate the health of wetlands. The gold and black pattern on the **Picturewing** certainly makes it a pretty dragonfly.

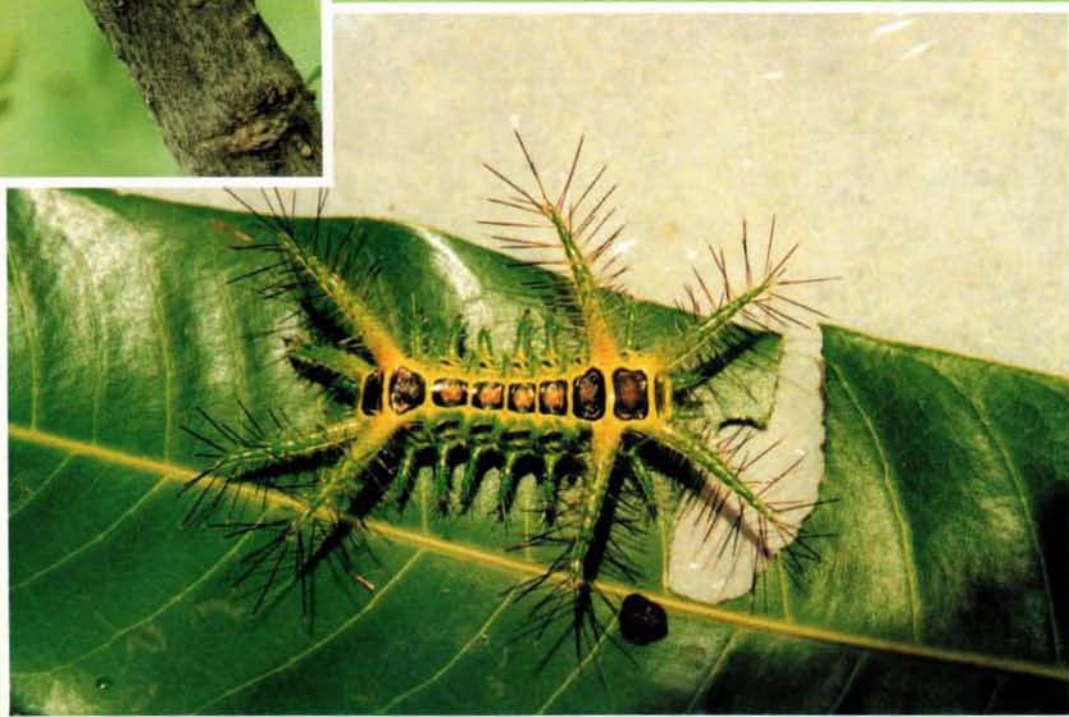


◀
The **Lappet Moth** caterpillar blends well on the Drumstick (*Moringa*) branch, but if threatened, tufts of stinging hair on its back will bristle open to deter the tormentor.

Jamshed P. Irani was Senior Manager, Advertising, Larsen and Toubro. He was awarded the Sâlim Ali-Loke Wan Tho Special Award for his contributions to illustrate Indian ornithology in 2003. He is the only Indian artist to have illustrated ten plates in the ten volume 'Handbook'.



▶
Birds soon learn to keep off from this brilliantly patterned **Slug** or **Nettle caterpillar**, after a brush with its stinging spines.



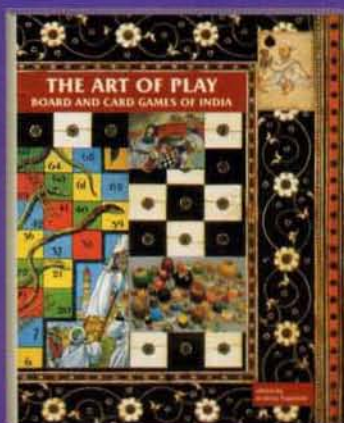
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A Century of Trust



Reviewed by Pheroza J. Godrej

It is the anonymity of the 'Dapuri Artist' on whom, in spite of his painstaking research, H.J. Noltie could not put a name or face that has a gripping effect on the reader who keeps wondering who this talented, but unsung, Portuguese-Indian maestro could have been? Even a slight hint could have provided an adequate opportunity for a curious reader to conjure various backgrounds into which this very adept, but elusive artist could have come from. Noltie's findings, however, have generously provided an interesting insight into Gibson's family background: his father's three marriages and Alexander being the youngest of his father's twenty children. Similar, additional information catches the reader's attention, thus arousing an interest in these delicate botanical drawings, which can quite easily be considered 'botanical works of art'. He has skillfully woven an interesting story around the lives of everyday people, because of whom THE DAPURI DRAWINGS can be enjoyed more than a century and a half later. The natural inclination of the British for documentation, which probably became an integral part of them because of their sea-faring activities and their conquests of enchanting faraway lands, has provided historians with very useful records of the period of their stay in India. The studies that they encouraged in various fields, including Natural History, is a great boon to researchers.

The colour reproductions are a delight to the eye and the different hues of soft, delicately shaded, brilliant and not so bright tints, which only nature can match with perfection, is soothing to the eye and the spirit. The exquisite representation of each specimen borders flawlessness, hence



The Dapuri Drawings – Alexander Gibson & The Bombay Botanic Gardens, by H.J. Noltie, 2002. Mapin Publishing, Ahmedabad. Pages 240. Price: not mentioned. (Size: 33 cm x 22 cm). Hardback

their scientific significance to the study of Botany. One feels easy and at home browsing through this very attractively brought out publication of a manageable size, an excellent coffee table 'specimen'. Tastefully designed and printed, the text is easy to read, without imposing on those with no botanical background. Anyone attuned to the marvels of nature will instantly appreciate the effort put in by Noltie. He delightfully succeeds in giving the reader a feel of the time when the East India Company controlled our Provinces, the bee-like activity of trade and administration. His vast knowledge of art and botanical history effectively lends itself to the making of this a prized publication.

Arriving in India in mid-1825, Alexander Gibson joined the Marine Department of the Bombay Government and was appointed surgeon to the Company's Cruiser 'Discovery'. A major portion of his life which he spent in India as a bachelor almost certainly may have been a lonely one. He is almost convincing in his belief that the single

state should be a prerequisite for a forester, if one wished to do justice to this profession! The frequent travel that he undertook adequately justifies his contention.

Self-taught in the ways of the wild and particularly in forestry practice, Gibson obviously pleased his superiors, who were comfortable in allowing him to retain his position as Conservator of Forests and to, simultaneously, continue to carry on his medical duties. His ability to balance both professions, a rare combination, was remarkable. However, professional rivalry, which even academics are heavily weighed down with, was not uncommon in those days. The ease with which he juggled both commitments to the satisfaction of his employers does not show any regret on his part for having not sought perfection in either one of them – Botany or Medicine.

For an urbanite, who had severed connections from his roots in the country, THE DAPURI DRAWINGS surge images of a childhood spent amidst salubrious surroundings, when one waited for the different seasons to add colour to a relatively somber life. For those retaining both a city dwelling and a rural get-a-way, the gentle and convincing urge to visit the latter strongly comes to the fore.

The principal concern of the British being commerce and therefore the need to produce an adequate supply of teak for the Bombay Dockyard, Gibson's prime interest naturally lay more in the commercial aspects of forestry, and rightly so. He needed to please his superiors in order to get ahead financially. His yearning for the land he was entrusted with never left him even after his retirement in 1860, when he returned to England. It was this attachment that brought him back to Hewra, and the house which was home to him for so many years. He left it finally in 1864.

Most heart-wrenching is the sad fact that the gardens at Dapuri and Hewra do not exist anymore. Hewra got submerged when Yedgaon dam was built in 1976 and the Dapuri estate, which changed hands more than once, is presently used as a workshop by the Irrigation Department. Dapuri was closed down during the time when N.A. Dalzell succeeded Gibson. The saving grace was that this did not happen in Gibson's lifetime. At this point one appreciates the trauma and helplessness that tribals, displaced by dams, feel because of the loss of their homes and livelihood: their very identity with the forests that they had grown up in and which provided them with nourishment and sustenance for the body and soul destroyed forever.

Strangely, but very pertinent to the present day constant felling of trees, which goes on and on in forests, rural and urban areas: one of Gibson's reasons for setting up an Arboretum at Hewra was to try and persuade the 'natives' to grow trees. He sorely laments that, though 'ready to fell a tree' the locals were 'slow to plant one'. A contradiction to the common belief that Indian culture and traditions are steeped in reverence for nature and trees in particular.

Henry Noltie's remarkable knowledge of art and 'field Botany' has gone a long way in making this delightful publication worthy of a prominent position in any library of good standing. To my mind, the investigative work he undertook befits the challenging role of

a detective patience. The patience and cheerfulness with which he doggedly persevered and unearthed so much of the life and work of Alexander Gibson, has paid huge dividends in the form of THE DARPURI DRAWINGS. Along the way, Noltie possibly would have stumbled over similar interesting stories, which he will, hopefully, unmask in future.

Mehroo Dinshaw did well in the manner in which she chose to perpetuate the memory of her husband, a devoted plant enthusiast wherever he set up home. Hewra and Dapuri are no more, but this book will serve as a memorial to these delightfully inspiring gardens, which once provided joy and sustenance to all those who worked therein, including the anonymous Dapuri Artist. ☺

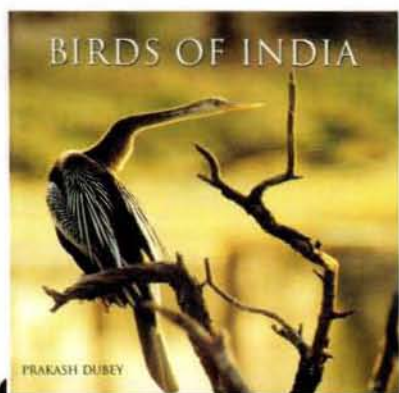
Reviewed by Prakash Gole

BIRDS OF INDIA by Income Tax Commissioner Prakash Dubey is a comprehensive photo album with sparse text written by Katie Dubey. It is edited by J.C. Daniel with species identification provided by G. Maheswaran and I. Kehimkar from the BNHS.

This attractively produced volume showcases India's bird diversity in all its shapes, colours and vivacity. Some photographs are really outstanding and capture the character and mood of the location, e.g. the pictures from Ladakh.

The book has an Introduction by Renuka Chowdhury, Minister of State for Tourism, Government of India. In the Preface the author writes about the difficult art of bird photography, speaks rather eloquently about the importance of birds in our lives and makes a fervent appeal for their conservation. The Foreword is by Ratan J. Tata, a leading industrialist.

Katie Dubey's text takes the reader on a journey through trans-Himalaya



Birds of India
by Prakash Dubey, 2005.
Lavanya Publishers Pvt. Ltd., Mumbai.
Pages 263. Price: not mentioned.
(Size: 25 cm x 24.5 cm). Hardback

and the Himalaya, through different eco-regions, to the south. The charismatic species from each eco-region are briefly described, and their ecology discussed. All these occupy 85 pages of the book followed by almost 150 pages of photographs. The last few pages include a list of bird sanctuaries in India and contact prints of photos of species shown more vividly in earlier pages. The larger

photos do not carry captions, one wonders why? The smaller photos are provided with names of species and short descriptions. The author probably assumes that the reader is already familiar with birds through various field guides and needs only to be charmed by their colours, postures and agility.

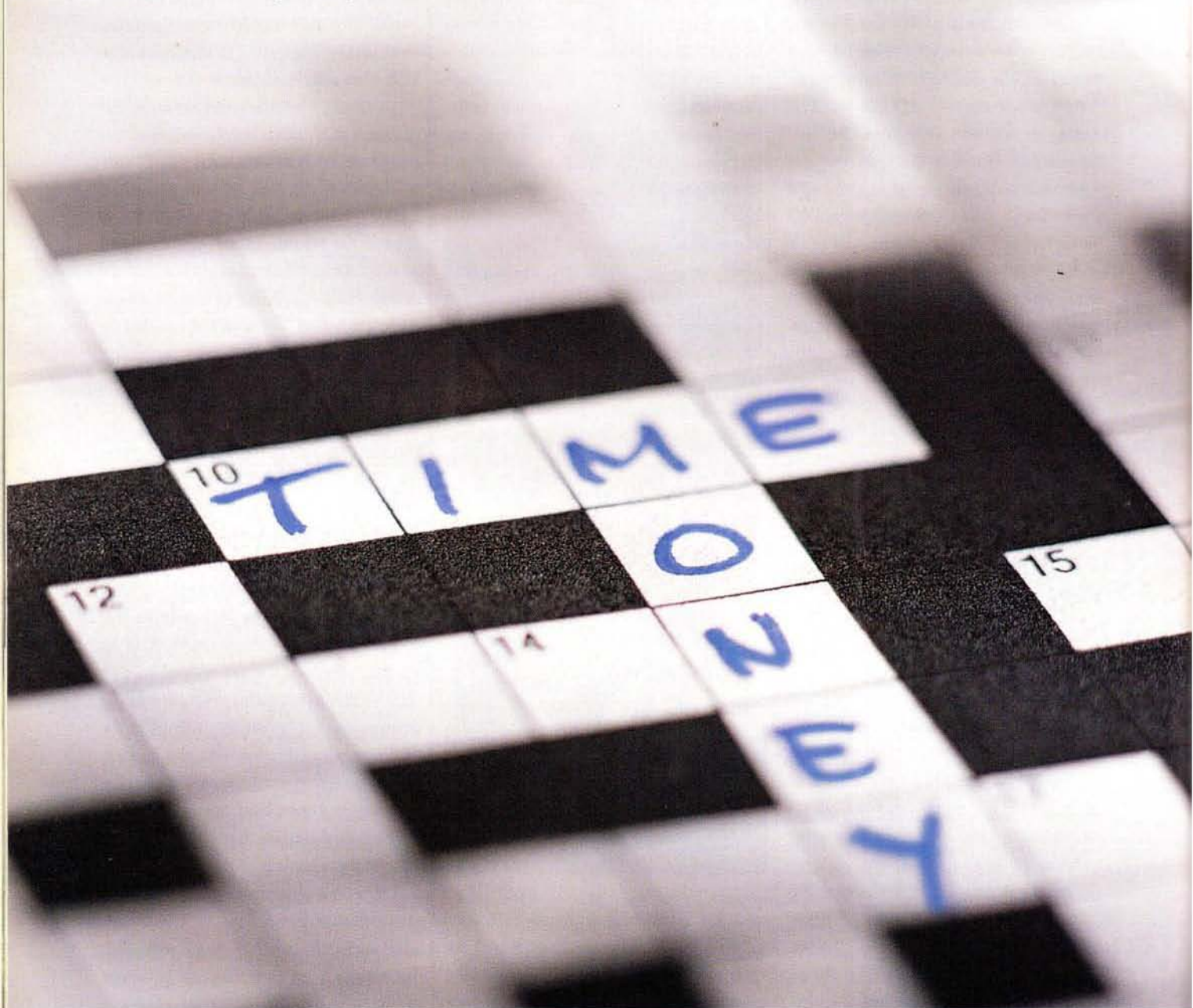
The book has some aberrations and printing errors, but it undoubtedly fulfils its aim of charming the reader. It may be naive to suppose such books actually promote bird conservation!

The author has brought out the main threats birds face today. One does feel that the Government's social and economic policies have much to do with them. If more people, who like the author hold an influential position in the administration, take genuine interest in nature and birds, they will bring about a sea change in attitudes of people in government and private sectors. Ultimately, bird conservation depends on attitudes and policies of those who hold political and economic power. ☺

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Children and Bird Conservation

Since 2001 a flock of Asian Openbill Stork has started gathering at Angina – a village located along the Indo-Bangladesh border in the Kumangang block of South Dinajpur district, West Bengal. The new colony of Asian Openbills is 32 km from the district centre Balunghat, on the bank of River Aaytree, just one kilometre from the Bangladesh border. Every year, around 2,500-3,500 Asian Openbills nest in the village area. In 2006, around 2,900 birds were seen in the village.

I have been visiting Angina to watch and count the birds since 2002. Another reason for visiting the village is to teach the villagers, especially children, bird watching and values of bird conservation.

The Asian Openbills nest on trees in the village, most of which are in the backyard. The villagers never disturb the nesting birds and consider their arrival as a sign of prosperity and wealth. They believe that the birds bring good monsoon, which results in good harvest. They protect the birds from predators like kites and eagles. Sometimes when a young of an Asian Openbill falls from the nest they try to save it. They take care of and feed



the young that fall from the nest and cannot return. About 20 children in particular are greatly involved in protecting the Asian Openbills at Angina. They have made a temporary shelter to keep the birds warm at night, and to protect the helpless young from stray dogs and cats. In fact they also miss school at times and spend the night with them. Their hard work does not always help keep all birds alive, but their desire to protect birds is undoubtedly unique. These children are members of the 'Green' generation of our country.

At an age when most children are busy moulding their future these children are involved in the conservation and protection of Asian Openbills. They have no formal training and knowledge of conservation. Most nature conservation, awareness and education programmes

are designed for only children in the city.

The Centre for Ecological Engineering, an environmental organisation in Malda district, West Bengal is planning to establish a permanent Asian Openbill Stork rescue centre at Angina. The Centre also plans to conduct bird awareness campaigns in and around Angina.

I hope children of Angina become good bird conservationists. We should not forget that we have not inherited this Earth from our forefathers, but have borrowed it from our children.

Arunayan Sharma
Malda



Behaviour of Jackals

I was cycling down a forest road in Rajaji National Park on December 30, 2006, at about 11.00 a.m., when I encountered a pair of Golden Jackals (*Canis aureus*). One immediately disappeared into the undergrowth on my right, while the other continued walking down the road. It stopped frequently to look back to see if I was following. Each time it stopped it turned right, as if to enter the bushes, but carried on until I was about 500 m away from the place of our first encounter. It then trotted into the undergrowth to the right, the same side as the first jackal.

I wonder if the one that disappeared first was a female with pups close by, and the second a male that led me on until it was safe for him to join his mate.

Prater in his *BOOK OF INDIAN ANIMALS* says that the breeding habits of the Golden Jackal are not well known; the above incident may interest the readers of Hornbill.

Sugato Chaudhuri
Uttaranchal



The Story of Jimmy's Malkin

This one is from Henry Williamson's *THE STORY OF A NORFOLK FARM* (1941): "Five times during the ploughing, the harrowing, the cultivating, the rolling and the drilling, the three eggs of the plover had been picked up and set down again, inside a hollow tripod of 3 sticks, to scare the jackdaws and gulls which had followed the work. The male plover had kept guard, swooping at the birds to drive them away, while the hen bird had stood near, running away before the tractor, pretending to pick up seeds and drop them again, always running to lure the monstrous thing from her nest and each time I stopped to pick up the eggs to move them from the wheels of the tractor she had flapped into the air uttered a plaintive cry. It would be a pity if after a dozen times of picking them up and making a new nest a slight hollow lined with grasses on the renewed surface the bird lost her eggs after all. The field was now level and its surface gone little protection now for the black and brown blotched eggs. Surely, I thought keen eyes of gull or jackdaws would spot them and the marauder would drop instantly to pick one up and be

off with it before the male bird could swoop." That is where Jimmy's Malkin would come in useful. The male Malkin would stand guard till the mother got back to her nest (after the tractor had passed), and without the distraction of herself, the two birds would be able to guard the eggs. The first egg laid in the nest had been taken by a crow; thereafter the male bird had kept proper watch. The new lapwing, feeling something missing when she pressed thighs and wings against only 3 eggs, had chosen a small clod of earth to replace the last egg. Once I had the clod removed twelve inches from the eggs, but she found it, pushed it back into place with her beak. I wonder if modern day farmers are as caring. They can't afford to, surely. There are some lapwings in the SRPF camps behind where I live. They rise alarmingly from their nests when they see us (to distract us away).

Cmdr Noel Lobo (Retd.)
Pune



Magpies feeding on Slugs!

During autumn I have noticed Yellow-billed Blue Magpies looking for food on the ground under the apple

trees and probing into crevices in rock walls. It was only today that I saw what they were looking for. Outside my window, I watched five Magpies hopping about in the branches of a small tree looking down at the ground. Then one of them flew down behind some rocks, out of view. The companions hopped lower down to watch. After some minutes, the bird on the ground flew up onto a grass verge within three metres of my window with a large slug in its beak. She then vigorously started to rub the slug on the grass and a mat of moss to remove the slime. After doing this thoroughly for a couple of minutes, during which time the slug was curled up, she carried her prey onto the branch where she started to tear apart the hapless animal.

One of her companions then flew down to the ground and began systematically rummaging in the leaves throwing them aside and probing into the mulch below. Apart from slugs, the magpies must be capturing beetles and turning up insect grubs and moth pupae. I have seen them try capturing small Himalayan Agama Lizards by probing into rock crevices.

Lavkumar Khachar
Himachal Pradesh

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Heights of success —

CONSERVATION AT HIGH ALTITUDES

Text: Pranav Trivedi

The Trans-Himalaya or areas beyond, and to the north of the Himalayan mountain range, present a seemingly stark, desolate and barren landscape. The climatic and geographical conditions in this region are harsh and extreme. Being isolated for nearly half the year and with a very low human population, the region has experienced fewer of the dramatic effects of development and globalization. However, lifestyles are in transition. From here on, it could follow the typical ecologically negligent course of development. Alternately, there are immense opportunities for ecologically responsible progress. Conservation of wildlife in such a

situation demands innovation and skill. One such conservation movement, at high altitudes, is ongoing in the Spiti valley of the Indian Trans-Himalaya.

Human-wildlife conflict in Spiti

The Spiti region is located in the trans-Himalayan region of Himachal Pradesh. Buddhist agro-pastoral communities inhabit this region. These communities have lived in the harsh landscape for centuries, growing barley and peas during the short summer, and herding livestock (mainly yak and cattle).

A research programme on the relationships between these

communities and wildlife, undertaken in the late 1990s and early 2000s, highlighted that:

- High monetary losses were incurred by locals due to predation of their livestock by large carnivores, such as Snow Leopard and Tibetan Wolf.
- People were retaliating by killing the carnivores, or capturing and killing their litters and not allowing the carnivores to feed on the livestock that had been killed.
- Wild prey, i.e. Bharal and Ibex were ten times less abundant than livestock, hence attacks on livestock were expected.



Science for conservation

Based on several years of research on wildlife and its conflict with locals, and an understanding of the community, the Nature Conservation Foundation (NCF) – a non-profit organization set up by young conservation biologists, and the International Snow Leopard Trust (ISLT), initiated a unique conservation programme that involved a three-pronged approach:

- Reduce the loss of livestock, due to hunting by carnivores, owned by local communities.
- Restore the abundance of wild prey species to ensure adequate availability of wild prey for the large carnivores in the region.
- Develop a viable system to compensate for livestock losses.

A plan was devised after much discussions with the local villagers.

Protecting the pastures

A 5-year agreement was signed between the village concerned and the NCF to protect a part of the village pasture from livestock, and all other human activities, except the use of water for irrigation purposes. The first village to sign such an agreement was Kibber – a small village located at c. 4,200 m altitude with 75 households, in 1998. A committee was set up by the villagers to oversee the implementation of this agreement, and a watchman was appointed to protect the pasture. *Tsankar* of Kibber – the first ever ‘protected village pasture’ for conservation purposes, has now been protected by the villagers for over five years.

Livestock being an important part of the economy of the villagers, the Van Tienhoven Foundation came

The locals have for centuries grown crops like barley during the short summer



YASHVEER BHATNAGAR

The Tibetan Wolf and Snow Leopard (facing page) are the major predators in this region

forward to support the Project by providing compensation (for lost grazing lands) for the village, and for employment of locals as guards. A small sum (Rs. 20,000 annually) was paid to the village as compensation for the loss of pasture land. This amount was to be used for development work of the village. Last year, with support from the Prins Bernhard Foundation, the reserve was extended to include the adjoining larger pastures of *Lugdud*, *Sakyadansa* and *Tirzepulu*. Chichhim – another village also signed a pasture

protection agreement with the NCF in 2005, taking the number of protected village pastures to five, totalling an area of about 25 sq. km in the Spiti valley.

Herding the livestock home

The village livestock was herded collectively, and to reduce the loss of livestock while herding, rewards were initiated for better herding. Good herding led to a decrease in livestock lost to predation by carnivores. The protected pastures were now available for wild ungulates



CHARUDUTT MISHRA



and birds, without disturbance from the livestock or herders, improving conditions for recovery of wild prey for the large carnivores in the region.

Insurance as Assurance

A unique livestock insurance scheme was launched to take care of loss of livestock to carnivores. This scheme acknowledged the risk posed by carnivores and provided for cash compensation against actual loss. Premium rates were fixed for different livestock such as yak, cattle, *dzog-dzomo* (cattle-yak hybrids) and donkeys. A minimum monthly premium per animal was 10 rupees and the maximum 30 rupees. The premium was decided on the basis of the value

of the animal and their vulnerability to predation, i.e. a higher premium for insuring adult yaks and lower premium for insuring donkeys. All insured animals were marked with ear tags to enable easy identification. Goat and sheep were not insured, as there were too many which made it difficult to mark them all. In addition, their value was relatively lower.

Arrangements for collection of premium, maintenance of accounts and settlement of claims rested with a committee appointed by the villagers. Any dispute would be resolved through consultations with village elders and the NCF. It was also agreed that a maximum of 60% amount collected as premium could be utilized for compensation, so that the scheme

would endure the initial load of settlement of claims. To date, the scheme has paid compensation for the loss of over 50 animals, 10 of which were identified as being killed by a Snow Leopard.

The scheme ensures that there is little chance of false claims, as villagers are putting in their own money (c. Rs. 800 per family/year), and therefore it is in their collective interest to properly verify all loss claims. Also, it is in their interest to minimize livestock losses, to ensure that high compensation amounts need not be paid, so that the corpus fund in the bank can grow.

In the long-term, this would mean a reduction in premium rates for the villagers. Through the contributions of the villagers (37% of total amount) and of NCF-ISLT (NCF contributed a sum in accordance with the premium collected by villagers in the initial phase), the amount collected in the Kibber insurance programme to date is about Rs. 2.6 lakhs, with about 40% of the amount paid as compensation to 28 families that lost livestock. The compensation was not just a consolation, but represented the near-market value of the livestock lost to predators.

An important component of the insurance scheme was the 'right of the predator on a hunted animal'. The villagers could not take away the animal killed by a predator. This way, the scheme ensured that the predator did not go hungry, as used to happen earlier. In such instances in the past, the hungry predator made another kill, thus leading to intensification of the conflict. The insurance scheme plugged this loophole. Needless to add, the programme forbids any kind of persecution of wildlife.

SUMANTABAGCHI



Above: Kibber is the first village that adopted the NCF led programme

Below: Better livestock herding now reduces loss to carnivores



SUMANTABAGCHI



CHARUDUTT MISHRA

The increasing numbers of Blue sheep the in Kibber grazing reserve is a sign of success

Village grazing reserves ensure sufficient availability of food for both the wildlife and livestock

Looking Back

After a year, the committee with advice from village elders, made revisions in premium rates and the mode of payment. Accordingly, a higher premium was kept for animals that were more vulnerable and vice versa. For instance, the villagers decided to increase the premium for sub-adult yaks from Rs. 30 to Rs. 50, as these were more vulnerable to predation. The market prices and utility of the concerned livestock were also considered while restructuring the premium rates. Thus, the premium for insuring a male donkey was higher than that for a female.

These efforts have certainly paid off and success, at least in the three-year period from the onset of the scheme, has followed. This is reflected by the fact that three other smaller villages (Gete, Tashigang, Kee) joined the scheme managed by the Kibber villagers since 2004. From an initial 44 families in one village in 2002, the programme has grown with 116 participating families in five villages in 2005. About 66 per cent of the households have insured a part of their livestock heads (the livestock holdings are not very large, some families do not own livestock, all livestock is not equally vulnerable) per family. The number of livestock heads insured is increasing and the prospect of risk

coverage has motivated more people to join the insurance scheme.

Another important feature of this programme is the steady rise in the population of wild prey in the protected pastures, as estimated by the ongoing monitoring by scientists and local field assistants of the NCF and ISLT. An earlier study had documented that 58 per cent of the diet of Snow Leopards came from domestic prey. It now remains to be seen whether with an increase in wild prey, there are any changes in diet. Close monitoring has also reassured conservationists that the insurance programme has not caused any increase in the livestock population of the region, which would have been an important conservation concern.

Success in the making

This is a 'first of its kind effort' in the Indian trans-Himalaya. It is probably one of the few in such regions across the world. The present model followed in Spiti has shown that the four aspects – livestock insurance, better herding, pasture protection and recovery of wild prey need to be targeted simultaneously, to ensure a long-term future for the wildlife. This approach has withstood and improved with the passage of time. That is an indication of its suitability, feasibility and acceptability.

A factor seldom noticed, but of obvious significance, is the involvement of village youth in the entire process. There is a small voluntary body called 'Kibber Youth', which has been playing an active role, from the beginning, in this conservation initiative. Its origin was mainly through efforts of Charudutt Mishra, a co-founder of NCF and Director of ISLT's India Programme. But, its sustenance is largely due to the drive and motivation generated by the programme and its rewards. This is also an example of local institution development and capacity building, as the villagers essentially manage the scheme on their own. The Literacy level among the youth of Kibber is high, and this too has facilitated good functioning and relative independence, in terms of maintenance of accounts and bank transactions.

Role of a catalyst

What emerges as an interesting facet of this story is that the presence of the NCF and ISLT – both outside agencies, has not divided the village. In fact, it has been playing the role of a true catalyst or facilitator. All the efforts, as one can see are in the positive direction, with little policing and hardly any denial except the self-imposed one, on the use of some parts of pastures. This conservation

Conservation at high altitudes

initiative is also a direction for aspiring researchers to shape their own conservation initiatives.

Looking Ahead

This small effort is getting recognition, both amongst the local communities as well as among conservationists. A big boost to the overall programme of these institutions in the Indian high altitudes

the Indian trans-Himalaya.

Is this model perfect? Not yet. The insurance scheme has to become self-sustaining and entirely run by the villagers to define success in the long run. Besides, new initiatives need to be explored and incorporated into this movement. In this regard, NCF is planning an eco-tourism initiative to provide another sustained economic basis (at least partial), for pasture



SUMANTA BAGCHI

The motivated youth of Kibber are the strength of conservation movement in Spiti Valley

came in the form of the 2005 Whitley Gold Award, one of the highest honours for conservation. With support from the Whitley Award, and learning from the experiences in Spiti, a new insurance programme covering four villages has recently been started in the Gya-Miru region of Ladakh. The award is also helping to facilitate work on conservation education and awareness, and most importantly to prepare the ground for 'Project Snow Leopard' – a project aimed at conserving the high altitude wildlife in partnership with local communities in

protection. Under this, boarding facilities will be provided and managed by 'Kibber Youth' for tourists with specific interest in wildlife viewing and conservation. Tourists will trek through the protected village pastures and view the high altitude wildlife there. Some local youth have already been trained, due to years of work with the NCF-ISLT team, but more specific training will be provided. The non-consumptive use of pastures would also provide benefits in the form of employment, cash earnings and a reserve fund for village betterment.

I would like to thank Aparajita Datta and Charudutt Mishra for their comments, suggestions and changes in the article, which have improved it considerably. I also thank NCF and ISLT for the opportunity to get involved in the high altitude programme.

Some questions

Several factors could influence the future of this initiative. To name a few – a change in the livestock holding pattern, better employment opportunities in towns and cities, especially for youth, unregulated tourism and recovery of wild prey and predators, to levels that could trigger the waning conflict between man and animal. There is therefore need to appraise the present conservation programme to provide a dynamism that could anticipate and cope with, such changes. An awareness and education component that targets local children and youth to foster a relationship with their natural environment, and appreciate its value in their day-to-day lives, as well as in the socio-cultural domain would be useful. After all, a change that has come about for good needs to get transferred to future generations, preferably through trained local youth and visionary elders. The conservation programme seems to have been adopted, internalized and is gaining momentum among the local community; but one cannot lie back. Human societies are notorious for wasting such efforts, with a few individuals taking advantage of a thriving system and causing it to collapse. The programme needs constant monitoring, evaluation and improvement. Often, wildlife research fails to transcend the human reality, which is the real challenge. The success of the Spiti effort is a glaring example that this is achievable. ■



Pranav Trivedi is Head, Education and Outreach with Nature Conservation Foundation and Snow Leopard Trust.

Tribal Bill

Text: Rushikesh Chavan, Conservation Officer

Environmental protection in India is a 5000 year old tradition. The efforts to protect environment can be traced to the Vedic period. Ancient Hindu scriptures directed people to protect their environment. The *Yajurveda*, the *Bridha Smriti*, the *Yagyavalkya Smriti* and the *Vishnu Sambita* all emphasize the need to co-exist peacefully with animals and serve them. In fact, every aspect of nature is worshipped and revered by Hindus. It is the *dharma* of every Hindu to protect nature. However, the current trends in wildlife protection are not very positive, to say the least. The passage of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Bill, 2006, (popularly know as Tribal Bill) on December 18, 2006 by the Parliament is a testimony of the current trends.

The Tribal Bill aims to reverse the historical marginalization of tribals and provide a tool for their security and posterity. In a nutshell, the Bill proposes that each nuclear family of a forest-dwelling scheduled tribe receive up to 2.5 ha of forest land. India's human population at present occupies more than 95 per cent of the country, with less than 5 per cent of its landmass set aside for wilderness. If the Bill is enacted over 60 per cent of this landmass will be transferred into the hands of 8.2 per cent population.

Does providing land to forest-dwelling scheduled tribes solve the problem?

No. Providing land will not solve their problems! The situation is complicated. A fundamental question, which we probably fail to ask, where does our tribal population fit in the current globalization and economic growth? Our tokenism actions have brought tribals to a 'neither-nor' situation. They neither practice their traditions nor can they match footsteps with the world outside their territory. To quote an example, most tribals in India do not have access to basic education, their specialized traditional skills are also diminishing.

One of the assumptions in the Tribal Bill is that forest land is fertile land; this is not always true. Besides, the tribals would require facilities such as irrigation, fertilizers to cultivate such lands.

My years of traveling through rural India and forests, have taught me that basic facilities that we city dwellers take for granted do not exist here. Children have to walk for hours to reach schools with inadequate numbers of teachers and classrooms. A sick man has to travel miles to reach a doctor. How can one solve such problems by providing land?

Does anyone care for water?

We have all learnt about the water cycle in school, but were unfortunately



Dwindling forest covers have seriously jeopardized our water resources

Most settlements in forest lands burn trees to illegally acquire forest land





AVISHEK ROY

Natural resources are the true wealth of any country, as they ensure a secure future

never taught the role of forest in that cycle. Forests act as sponges; they soak rain water and gradually release it into our rivers during the year. About three hundred rivers originate from the forests in our country. Deforestation will threaten our water sources, with potential long-term and catastrophic effects. The forest cover in India is dwindling at a rapid rate. If the existing forest cover is lost then we can be sure that future wars will be fought over water. We will have large dams for our hydro-electric projects, but no forests to arrest rainwater for these dams.

What happens to the current environment legislation?

The Bill overrides the Forest Conservation Act, 1980 and the Wildlife Protection Act, 1972. Once accepted the enforcement powers would rest with Gram Sabhas (*adivasi*

community leaders), and not with the Ministry of Environment and Forests (MoEF). The Bill is in direct opposition to the mandates of the Supreme Court, which banned de-reservation of forests in a November 13, 2000 order. It contravenes the National Forest Policy, 1988, which requires that one-third of India's geographical area be under forest and tree cover. In 2003, India was already woefully short of this mandate, with just 20.64 per cent of its 3,287,263 sq. km under forest cover. In the past two years, dense forests were reduced by a further 6.3 per cent, amounting to a total of 26,245 sq. km.

The Bill will allow the felling of up to 75 trees per hectare for a range of activities, including construction of irrigation canals and power lines, with no clearance required from the MoEF. This means that the remaining

forests will probably end up in the hands of individuals or companies with short-term financial interests.

What happens to the existing encroachments?

Since there is no clear definition for a forest dweller, all existing encroachments are liable for regularization. In fact, even citizens of Mumbai, as it has a national park within the city limits, whose three generations have been dependent on forest resources, and can prove it, are forest dwellers and can claim a piece of forest land? Further, individuals that are not residents of a state, but have encroached on forest land will be legal owners of the land. If all such land will be regularized then why would one spend a fortune to buy a piece of land?

The survival of the endangered and endemic Forest Owlet will be jeopardised by the fragmentation and degradation of habitat that is sure to follow the passing of the Tribal Bill

Isn't the government supposed to take care of our wealth?

The Joint Parliamentary Committee has recommended that the Act be placed in the 9th Schedule of the Constitution, making it immune to judicial scrutiny and review. Thus, mistakes once made will never be corrected. The natural wealth and resources on which we all depend would be transferred from the control of the Governments to individuals who could destroy it for short-term benefits, leaving nothing behind for the future generations. The Bill is undemocratic and will jeopardize the political, social and economic security of India.



GIRISH JATHAR



BNHS-CONSERVATION DEPARTMENT

Encroachments like these are a common feature of Indian forests



AVANI PATEL

"Let us not forget that we have borrowed their future for our present"

Who cares for wildlife?

Much of India's wildlife finds shelter in its 90 national parks and 501 sanctuaries, which together account for just 22 per cent of the forest area, and 4.74 per cent of the land area of India. Widespread deforestation and human activity in protected areas, resulting from the passage of this Bill, will further decimate species already on the brink of extinction. The loss of species, such as the Bengal Tiger, One-horned Rhinoceros, Asian Elephant, Jerdon's Courser, Great Indian Bustard and many more, all already struggling for survival due to poaching and habitat loss is certain. This Bill will be a tremendous blow to the natural legacy, which we hold in trust for our own descendents.

The role of wildlife in ecosystems need not be mentioned, it is the most integral part of our life support system.

Our utter disregard for wildlife will lead us to the same road that wildlife walks on today, as we too are a part of the same ecosystem. I remember a quote from the movie 'Spiderman', "with great powers come great responsibilities." We have the power to make a difference, but are we responsible enough to make that difference? We have already signed a number of international treaties and conventions to protect nature; it is only left to imagination on how we are going to abide to them.

Contributing to Climate Change.

The Tribal Bill will allow rapid fragmentation and further degradation of one of the last remaining carbon sinks – our forests. This, along with the burning of fossil fuels, will lead to rising global temperatures. The results of climate change are overwhelming and undeniable. Glaciers are melting,

plants and animals are being forced out of their habitats, and the number of severe storms and droughts are increasing. The World Health Organisation predicts that deaths due to global warming will double in 25 years, about 300,000 people a year! Global sea levels could rise by more than 20 feet with the loss of shelf ice in Greenland and Antarctica, devastating coastal areas worldwide. Heat waves will be more frequent and more intense, droughts and wildfires will occur more often. The 2004 Arctic climate change assessment report suggests that the Arctic Ocean will have no ice, and more than a million species worldwide could be driven to extinction by 2050.

In light of all the above concerns the basic objective of the Bill to protect the tribals and their rights is defeated. The enactment of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Bill, 2006 would do incalculable harm to India's natural environment, and to its human population, adivasi and non- adivasi. This dangerous legislation needs to be retracted, and the laws and policies of the land strengthened to prevent the further destruction of our natural heritage. Do we not owe this much to our children?

If you share the views mentioned in the article please append your signature, name and address to the letter below and post it to the President of India. Also, send a copy of this letter to the Conservation Officer, BNHS. ■

Only when the last tree has died and the last river has been poisoned and the last fish has been caught will we realize that we cannot eat money – Anon.

Petition against 'The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Bill, 2006'

To,
His Excellency Dr. A.P.J. Abdul Kalam
President of the Republic of India, Office of the President, Rashtrapati Bhavan, New Delhi -110004.

Your Excellency,

We the undersigned citizens of India believe that the passage of 'The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Bill, 2006', mandating that each nuclear family of a forest-dwelling Scheduled Tribe receive up to 2.5 ha of forest land, will cause serious harm to the adivasis of India, and will decimate India's remaining forests, protected areas and wildlife, including our national animal, the Tiger. We sincerely request that this Bill be removed from consideration by the Government, and instead steps be taken to strengthen our country's once impressive set of environmental protection laws. Our concerns about the Bill are as follows:

(1) The Bill will harm, not help, India's adivasi communities

Enactment of the Bill will fail to rectify the earlier wrongs committed against adivasis. Lack of land is no longer the real concern facing most adivasis, hence "giving it back" will not ensure a better quality of life or a return to a more viable existence. In fact, the wholesale destruction of India's forests, which is likely to happen if the said Bill is enacted, will do further serious harm to adivasi communities.

(2) The Bill will seriously jeopardize the political, social and economic security of our country

India's human population now occupies more than 95 per cent of the country, with less than four per cent of the landmass set aside for wilderness. The Bill will transfer over 60 per cent of India's forests into the hands of 8.2 per cent of its population, leading to further degradation, and possibly destruction, of what remains of our forest and protected areas. The Bill will allow the felling of up to 75 trees per hectare, including the construction of irrigation canals and power lines, which will not require a clearance from the Ministry of Environment and Forests (MoEF). Much of India's remaining forests could end up in the hands of individuals with short-term financial interests. Around three hundred rivers originate from the forests of our country; deforestation will threaten water sources with potential long-term and catastrophic ripple effects. Forests provide nearly 40 per cent of India's energy needs, with 80 per cent of the energy needs coming from rural areas. More than 25 per cent of livestock fodder is obtained from forests or surrounding areas.

(3) The Bill is bad for wildlife

Much of India's wildlife finds shelter in its 90 national parks and 501 sanctuaries, which together account for just 22 per cent of the forest area, and 4.74 per cent of the land area of India. Widespread deforestation and human activity in protected areas resulting after the passage of the said Bill will further decimate species already at the brink of extinction. The loss of species such as the Bengal Tiger, the One-horned Rhinoceros, the Elephant and many more, all already struggling desperately for survival due to poaching and habitat loss, would be a tremendous blow to a natural legacy, which we hold in trust for our own descendants.

(4) The Bill will reverse the existing laws of the country

The Bill would override the Forest Conservation Act (FCA), 1980 and the Wildlife Protection Act (WPA), 1972. Enforcement powers will rest with Gram Sabhas (adivasi community leaders), not with the MoEF. The Bill is in direct opposition to mandates of the Supreme Court, which banned de-reservation of forests in a November 13, 2000 order. It contravenes the National Forest Policy, 1988, which requires that one-third of India's geographical area be under forest and tree cover. In 2003, India was already woefully short of this mandate, with just 20.64 per cent of its 3,287,263 sq. km. under forest cover. In the past two years, dense forests were reduced by 6.3 per cent, i.e. a total of 26,245 sq. km.

(5) The Bill is undemocratic

The Joint Parliamentary Committee has recommended that the Act be placed in the 9th Schedule of the Constitution, which would make it immune to judicial scrutiny and review.

For all of the reasons stated above, we sincerely repeat our serious concern that enactment of the Tribal Bill would do incalculable harm to India's natural environment, and to its citizens. We urge you to retract this dangerous legislation, and strengthen laws and policies that will ensure the natural foundations for centuries to come. We owe this to our children, and the children of the world.

Append your signature, name and address to the letter and post it to the President of India.

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A Bird's Eye View



(L-R): Mr. J.C. Daniel, Mrs. Tara Gandhi, Mrs. Sheila Kurian and Dr. Asad R. Rahmani look on while Mrs. Pheroza Godrej releases 'A Bird's Eye View'

ON NOVEMBER 11, 2006, a book titled *A BIRD'S EYE VIEW – THE COLLECTED ESSAYS AND SHORTER WRITINGS OF DR. SÁLIM ALI* and edited by Mrs. Tara Gandhi was released at Hornbill House, Mumbai by Mrs. Pheroza Godrej, Vice President, BNHS. Mrs. Tara Gandhi later enthralled the audience with readings from the book.

"A great number of students of ornithology, like Tara, have benefited from Dr. Sálím Ali's studies. *A BIRD'S EYE VIEW*, will be invaluable to aspiring students of ornithology, many of whom may not have had the opportunities that Dr. Sálím Ali had in the field – to study so large a variety of species of birds, punctiliously and extensively", said Mrs. Godrej.

Mrs. Gandhi mentioned Dr. Ali's habit of keeping meticulous notes of his field observations, excellent use of language and the sense of humour.

Mr. J.C. Daniel, Honorary Secretary, BNHS and Dr. Asad Rahmani, Director, BNHS shared their experience of working with Dr. Sálím Ali. Dr. Rahmani said, 'Dr. Sálím Ali's paper on the nesting habits of Baya, published in *JBNHS* 1931, is considered far ahead of his time. We say that the bird is behaving as described by Dr. Ali!'

Mrs. Sheila J. Kurian, Regional Manager, Orient Longman Private Limited was present on the occasion. The book is published by Permanent Black and distributed by the Orient Longman Private Limited. ■

Brunch with Birds

'BRUNCH WITH BIRDS' was organised at the Conservation Education Centre (CEC), Mumbai on December 17, 2006. The programme was attended by a group of 195 enthusiastic participants (145 adults, 50 children). Each participant received an interesting booklet on bird facts.



Mr. Sunjoy Monga shared his bird watching experiences with the participants



Young bird watchers had bird tattoos painted on their hands and faces

The highlight of this half day event was five bird watching trails led by Sunjoy Monga & Eugene Rego, Kiran Srivastav & Hutoxi Arethna, Nitin Jamdar & Sanjay Marathe, and Ketaki Marthak & Hemant Tripathi. The children's trail was led by Suraj Bishnoi, a young bird-enthusiast and member of the Society. The trails were followed by an audio visual 'Nature in Mumbai' presented by Sunjoy Monga and five informative sessions on 'Bird Architecture', 'Bird Calls', 'Bird Migration', 'Bird Quiz' and 'Threatened Birds'. The half day programme concluded with testimonials from the participants. ■

'Bait for Butterflies'

THE NATURE INFORMATION CENTRE of the Bombay Natural History Society at Sanjay Gandhi National Park organised a butterfly programme on November 19 and 26, 2006. The programme included sessions on baiting butterflies, a slide show 'Butterflies in Nature', a crossword on butterfly names and a nature trail, conducted by Nelson Rodrigues and Yuvraj Gurjar. Over 60 people attended this programme. ■



Young naturalists and their guardians were guided through the beautiful world of butterflies



The nature camp introduced the children to the flora, fauna and ecology of SGNP

Young Naturalists gather at NIC

NATURE INFORMATION CENTRE organised a nature camp for children at Sanjay Gandhi National Park (SGNP), between December 22 and 24, 2006. The camp included nature trails to different parts of the Park. Through the trails, children were introduced to a variety of habitats, flora and fauna and the ecology of the Park. Slide shows, environmental games and stories kept the programme educative. The children presented skits and short term projects at the end of the camp. ■

EDITORS' CHOICE



"Ah yes, just look how nice it is where we haven't been!"

Published on March 12, 2007 by J.C. Daniel for Bombay Natural History Society, Hornbill House, Dr. Salim Ali Chowk, S.B. Singh Road, Mumbai 400 023, Maharashtra, India.

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