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## International Year of Forests

Last year, we celebrated the *International Year of Biodiversity*, by publishing four issues of *Hornbill*, dealing with all representative life forms on this Earth - from the so-called lower invertebrates to the glamorous mega-vertebrates. The year 2011 is recognized by the UN as the *International Year of Forests* and beginning of *The Decade of Biodiversity*. In the coming four issues of *Hornbill*, we will try to publish articles on the different forest types of India.

Perhaps there is no country on the planet that has arid hot deserts (Rajasthan) and tropical lowland rain forests (Kerala and Andaman), dry open cold steppes (Ladakh) and thick mangroves (Sundarbans). We have 16 major forest types and numerous sub-types in India. The seminal book *THE FOREST TYPES OF INDIA* by H. R. Champion and S. K. Seth is a compulsory read for all foresters, researchers and conservationists, even 50 years after its publication. Unfortunately, many forest sub-types are in bad shape, particularly the forests of the plains, which were first to be occupied by human beings.

In order to highlight the values of Indian forests, we would like to publish articles on all forest types and the ecosystem services that they render. We are also looking for unusual topics such as the biodiversity of the forest leaf-litter and the canopy, as not much is known about them in India, although some research has been initiated on the forest canopy ecology, particularly of the Western Ghats. Both the ground leaf-litter and closed forest canopies hold fascinating life-forms, and perhaps hundreds if not thousands of undescribed species. Universities and research institutions have to come forward to take up research topics, although I am not sure how many government and non-government agencies will fund such projects as they may not be 'glamorous' topics. Nonetheless, without the primary consumers and decomposers, no forest



MIRIUM ABRAHAM

can survive. Good researchers do not necessarily work only on glamorous mega-vertebrates. The life history of a forest spider or a centipede can be as fascinating as the life history traits of a large cat.

Another topic that needs to be researched more is the ecosystem services that our forests provide. Conservationists frequently write that a particular forest is 'rich', but in this world of rapid economic development, richness is equated with money, not with the diversity of life. For our politicians and decision makers, the richness of a forest is in utilizing it by cutting it for timber or making a fancy retreat where the rich can escape from their routine life. And, for the Union Ministry of Mining, the 'richness' of a forest lies beneath it! Studies on the ecosystem services of forests and valuation of living forests, can help convince the government that protecting a forest is more economical than destroying it for its ores.

In my earlier editorials, I have written about the TEEB and REDD. The Government of India has asked Mr. Pavan Sukdev to conduct studies on the economics of ecosystems and biodiversity in India. This is another opportunity for Indian institutes and researchers to join the Indian TEEB team for the valuation of our living forests. Our knowledge of the economic values of our forest types and sub-types is inadequate. The Government of India has developed a formula to calculate the cost to be charged if a particular forest type is converted to non-forest use by developers; this formula is based on the number of the standing trees per hectare and not the ecosystem services, both direct and indirect, that a standing forest gives us. Admittedly it is not easy to calculate ecosystem services, particularly the intangible ones, but we have to make a beginning. This is particularly urgent as the mining lobby wants all forests to be opened for mining.

Another interesting new concept is leveling super-tax or super-cost for converting a forest into a mine. At present, the cost of forest per hectare is meagre compared to what a mining company gains by digging the forest. In a few crores of rupees, a forest is taken over and forest dwellers are compensated. For a large multi-crore company this is peanuts. From the forest thus taken over, the company makes super-profit through mining or other extractive activities. Many are now asking that when a company makes super-profit by taking over a forest why it should not give super-benefits to the forest dwellers. In the case of human beings, it could be inter-generational benefits as they would have reaped if the land was still with them. While in the case of flora and fauna, this super-cost should go to the cash-starved Forest Department so the funds can be used for better protection, purchase of important wildlife corridors, good rehabilitation package from critical wildlife areas, training, research, and for providing compensation to over-worked and underpaid forest watchmen.

Let us hope that by the end of United Nation's *International Year of Forests*, our governments will become more aware of the importance of forests (and other ecosystems) and this year-long celebration will not remain just a ritual ribbon-cutting photo-opportunity for some politicians.

# Devalsari's Hidden Gems



Spot-winged Grosbeak



Cicada



Blister Beetle on *Geranium*

Text and Photographs: **Yash Sondhi**

**M**y love for nature began as a young child. My nature enthusiast parents tell me that they took me for my first nature trail, when I was all of 3-months old, to Bhimashankar near Pune. Apparently, they watched birds as they carried me in a halter, and fortunately did not tell my grandmother about the trip! With parents like these, it is not surprising that some of their passion for nature has rubbed off on me.

Now, as a 16-year old, I enjoy our nature outings, and have accompanied my parents on numerous nature treks. Having shifted to Dehradun from Pune in 2008, we have explored the forests in the Garhwal Himalayas with passionate vigour. One of the places that we have visited frequently is Devalsari. Devalsari is a 2-hour drive from Mussoorie and part of the Jaunsar Reserve Forest in the Garhwal Himalayas, Uttarakhand. The area has rich coniferous and broadleaved forests and receives moderate rainfall. It contains a vast array of exquisite flora and fauna, most of it hidden, waiting to be revealed. Devalsari, Kyari, and Sirs together form the entire Jaunsar Reserve Forest Range. Villages surround this range; with rain-fed agriculture activities and livestock rearing being the primary livelihood of the villagers.

Devalsari seems like a regular Western Himalayan landscape – clear blue skies, Deodar, Fir and Pine trees sprawled throughout the hills, the usual scattered fields with an assortment of crops, Himalayan streams gurgling through hill slopes, and in winter a few snow-capped peaks seen at a distance. Regular sight, isn't it! However, like any landscape, beauty lies in the eyes of the beholder. On one of our trips, we arrived at the Devalsari forest rest house, after a short 2-km trek from the village of Bingsal. On arrival, we found that a party of 25 school children were camping there. I only hoped that they wouldn't scare away the wildlife with their rebellious uproars and out-of-tune singing. Their singing even scared me, so I wonder what the animals must have felt! Deciding to get away from the raucous revelry, we decided to go on a short night walk.



Yash Sondhi is a young naturalist interested in birds, herpetofauna and mammals. He is very passionate about butterflies.

I am glad we did. After walking barely for ten minutes, we saw a large, red, furry animal moving on the path about 10 m away. Further investigation revealed that it was a large rodent with its tail curled on its back. It scampered away and sat crouched on some rocks. Slowly, we crept closer to the animal. The animal peered at us with bright red shining eyes, inquisitively, but not frightened at all. It was a Red Giant Flying Squirrel *Petaurista petaurista*. The flying squirrel is a rodent of the Sciuridae family. Flying squirrels do not actually fly but glide with the help of an elastic membrane between their fore and hind limbs. Nocturnal, they usually remain high up in the trees, and are shy and elusive creatures. Or so I thought! Surprisingly, the squirrel just sat there and allowed me to photograph it. I got so close that I could almost touch it!

Nature held more surprises for us! Next morning, we set off early. Our destination was the Lungsu nala, a short 3-km trek. Local forest guards had told us that Lungsu had the densest forest in the area. Enroute, we spotted several colourful birds. Spot-winged Grosbeaks *Mycerobas melanozanthos*, two juveniles and an adult female perched on a tree, alongside a well-traversed jungle path. Wow! A lifer (a species seen for the first time) for me! Despite the constant movement of people, the grosbeaks repeatedly returned to feed on the path. The continued disturbances meant that we could not get a good photograph, despite being quite close to the birds. Just as we were about to get a good picture of the female, an old man who was passing by, on seeing the camera, asked us “*kya aap baraat kee tasveer le rabe hai?*” (Are you taking pictures of a marriage?) Disturbing the birds yet again, he left us perplexed and frustrated, wondering about how taking bird pictures could be mistaken for taking pictures of a marriage! It was only later that we were told that there was a wedding in the village leading the old man to believe that we were wedding photographers! Finally, after our third attempt which involved almost getting kicked by a mule, we got a lovely picture of the female grosbeak.

What a beauty grosbeaks are! They are altitudinal migrants, i.e., they fly down to lower altitudes in the winter and back to higher altitudes in the summer. Being the month of April, we were surprised to see it this late in the year at such a low altitude. The Spot-winged Grosbeak, an uncommon bird, is a seed eater. It has a very strong beak with which it splits open seeds/ coats of fruits and eats the seed inside. Surprisingly, the only seed in the area was that of Neem *Azadirachta indica* which is usually quite bitter, leaving us wondering whether the bird had acquired a taste for bitter fruit! Enthused by this lovely sighting, we continued our journey. We spotted the Strong-footed Bush-



Kumaon Mountain Agama - 200 m away from its habitat



Dubois' Frog - smallest of the *Nanorana* genus



Orange Oakleaf resembles the oakleaf when wings closed



The 'not-so-shy' Red Giant Flying Squirrel

warbler *Cettia fortipes*. This Bush-warbler has a distinct song; a long whistle followed by an explosive cry: "He'll beat you." Leaf warblers abounded in the area. My father pointed out the Sulphur-bellied Warbler *Phylloscopus griseolus*, Lemon-rumped Leaf-Warbler *Phylloscopus chloronotus*, Greenish Leaf Warbler *Phylloscopus trochiloides* and Hume's Leaf Warbler *Phylloscopus humei*. Despite my recently acquired interest in

(with a few sightings in the adjacent areas of western Nepal). Seeing it in Devalsari, in the Garhwal Himalayas, almost 200 km away from the Kumaon region, was a significant range extension. Continuing on our way to Lungsu nala, we stopped only to examine a Kashmir Rock Agama *Laudakia tuberculata* that was sunning itself on a rock. The locals called the agamid "chibaada" and mistakenly, consider it to be venomous.

Without further ado, we reached Lungsu nala. The nala was a large stream surrounded by walnut, oak and rhododendron trees with dense undergrowth. As soon as we arrived, a bright blue butterfly flew past us and settled on a nearby leaf, exciting both my father and me. On closer observation, we found it was a hairstreak. We identified it as the Fawn Hairstreak *Neozephyrus birupa*, a rare butterfly found in the Himalayas. The butterfly's larval food plant is the Rhododendron *Rhododendron arboreum*, called 'burans' locally.

A little further ahead, we saw a pretty yellow-eyed black and white butterfly. My father, who had seen the butterfly in north-east India identified it as the Courtesan. Months later, I looked up the image of the butterfly again. The Courtesan is seen in north-east India, and seeing it in Uttarakhand represented a significant range extension. But it turns out that we were mistaken! The butterfly was actually the Siren *Hestina persimilis*, a rare butterfly similar to the Courtesan! We saw many other pretty butterflies like the Common Peacock *Papilio polyctor*, which has metallic blue and green hues. The presence of woolly scent scales on the upper side of its forewing is one of its distinguishing features. The scent scales on the male are useful in attracting some lovely females. The Alboocerulean *Celastrina alboeruleus* is an uncommon

butterfly seen from Simla to Assam. It has white patches which distinguishes it. The Orange Oakleaf *Kallima inachus*, which we saw occasionally, is so called as it resembles a leaf when it sits with its wings closed. Butterflies are best seen during the hotter parts of the day around flower bushes or treetops. Many butterflies mud puddle. Contrary to popular belief, nectar is not their sole source of



The Stinging Nettle warning caution (above) and the alluring *Impatiens* sp. (below) inhabit the area

birds, identifying leaf warblers is light years ahead of me, so I just have to rely on my father to identify them!

While walking through a particularly dense forest patch, we spotted a small lizard, which on seeing us, scampered up a tree. We waited patiently till it came down. The lizard was the Kumaon Mountain Agama *Japalura kumaonensis*. A little known agamid, its known range is the Kumaon region



food; they sit at damp or muddy patches in large numbers, sucking nutrients and minerals from the ground. Butterflies play an important role in nature by acting as pollinators, thus helping plants complete their life cycle.

Another night walk at a nearby stream beckoned. We heard a loud bird-like *pik-pik-pik* call. A search revealed the Dubois' Frog *Nanorana minica*. It is the smallest frog of this genus in India, which we found occasionally at mountainous streams in the Garhwal region.

As we prepared to leave the stream, a sudden flash of grey darted out of the water, ran over my foot and back into the water. Both of us were stunned! What was it? The animal seemed to walk on the water's surface! Was it a mammal, snake, or a fish, we wondered? Dramatically, the creature returned, this time allowing us to get a better look.

dull shade of grey. The same happened to its black throat. Finally we were left with a normal grayish-brown garden lizard with almost no traces of its previous brilliance. All this happened in a matter of a few minutes. This was clearly in response to the threat (namely us!). I was surprised since I knew that chameleons could change colour, but I didn't know it was true for ordinary garden lizards. The colour change occurs due to a group of fast reacting cells and pigments, with mood and temperature affecting the colour change. The scientific name *versicolor* comes from the Latin, *versare* which is *to turn* and *color* as colour. I was delighted to have witnessed and photographed this beautiful change.

We arrived at the guest house to find a flurry of activity. An ex-*raja* of Kashmir was visiting and preparations were being made for him. He wanted to purchase land from villagers near the reserved forest, on which he planned



The stages of colour change witnessed in a male Garden Lizard

It was the Himalayan Water Shrew *Chimarrogale himalayica*, a bluish-grey shrew that lives in water. The shrew feeds on insects and other small prey. Shrews have an unusually high metabolic rate and hence they have a daily food intake of upto twice their body weight or more.

On another day, we had a delightful sighting of a male Garden Lizard *Calotes versicolor*. This lizard had a bright vermillion head, jet black throat and grey body. The lizard looked magnificent, sunning itself on a branch showing off his colours. Male Garden Lizards in the breeding season become bright red to try and impress and attract the female (a familiar story!) They are often called Bloodsuckers (vampire lizards can be the next character in the book series *Twilight*), to try and impress and attract the female, a familiar story! We took a few pictures but as we moved closer we were surprised to find that the red colour was receding. Initially the head became a paler red and then became a

to build a resort. Yes! Build a resort and spoil the pristine beauty of nature. Turn this paradise it into a tourist hotspot! Development, yes! But at what cost? Usually when resorts are built, more trees are cut down, water shortage increases and farmers who sell their land lose their only source of livelihood. I was aghast.

Unfortunately, agriculture in the Himalayas is under threat; dependent on the irregular rainfall and faced with significant damage to crops by wild animals, Himalayan farmers are being driven to desperate action-like selling off their land. Talking to the people, sensing their love and attachment to the land and nature, gives me hope that development will not destroy this quaint Himalayan landscape. I sincerely hope that Devalsari continues to retain its natural wonders for everyone to enjoy. Visits to this serene place teeming with natural life have taught me to find and appreciate the hidden gems in our life. 🐸



The beautiful *Tithonia diversifolia* occurs in moist areas

# The Unpalatable Plants ...

Text and Photographs: A.J.T. Johnsingh



A.J.T. Johnsingh is the first Indian to conduct a long-term study on a free ranging large mammal. Based in Bangalore, he works for Nature Conservation Foundation, Mysore and WWF-India.

One of the most disturbing developments related to habitat degradation within and outside forest areas in India is the proliferation of unpalatable plants commonly called as weeds. These unpalatable plants are either native in distribution like *Pteridium aquilinum* in the grasslands of Western Ghats, and *Flemingia bracteata* and *Pogostemon benghalensis* in the sal forests of Kanha Tiger Reserve and *Desmostachya bipinnata* in the Kanha meadow; or are introduced *Lantana camara*, *Parthenium hysterophorus*, *Ipomoea carnea*, *Opuntia dillenii*, *Cassia spectabilis*, *Cassia occidentale*, *Hyptis suaveolens*, *Eupatorium odoratum* and *Mimosa invisa*. A study would reveal that the number and density of alien unpalatable species are much

more than native species. While exotic species such as *Tithonia diversifolia* and *Poinsettia pulcherrima* have brought immense beauty to the landscapes where they occur, most exotic species have caused much more habitat degradation than native species, as a result of their abundance. Degradation occurs because proliferation of exotic species reduces the forage available to both the wild and domestic ungulates, thereby reducing the carrying capacity of the land. In the forest areas, this can have a negative significance for large carnivore conservation, as a degraded habitat can only support a lower density of wild ungulates and consequently, fewer large mammalian predators.

While it is true that many of our wild ungulates feed on the tender shoots of weed species such as *L. camara* and *E. odoratum*, this is because these species tend to dominate the landscape. In other words, very little of other palatable species are available to the ungulates, where *Lantana* and *Eupatorium* have taken over. Existing information indicates, however, that *Lantana* is toxic and long term effects on wild ungulates have not been assessed. It should also be on record that lots of attention is already given to the eradication of noxious *Lantana* in many of our protected areas, particularly in the tiger reserves. *P. juliflora* causes problem by invading the habitat profusely. Although its fruits are eaten by almost all ungulates (leaves are not very much relished), its sharp and powerful thorns can be deterrent to both large herbivores and predators. At a great cost and effort it has been controlled in protected areas such as Velavadar NP where blackbucks need open areas for their sexual displays, feeding and yarding; as also in Keoladeo Ghana NP where *Prosopis* had invaded every nook and corner of the NP.

This article is about four unpalatable species and restocking of our landscapes with palatable species. The unpalatable species in discussion are *I. carnea* found throughout India (except in the Higher Himalaya) in fresh water habitats, *C. spectabilis* which is spreading in Bandipur and Bhadra Tiger Reserves *O. dillenii* in the forests south and east of Mudumalai WLS and *P. juliflora*, a problem in the newly established Sathyamangalam Blackbuck Sanctuary, Tamil Nadu which is to the east of the Mudumalai WLS.

*I. carnea*, like *Lantana* has come from the American tropics as an ornamental plant and is commonly known as Pink Morning Glory because of its large pink flowers. Its leaves are toxic to cattle and by the same logic, should be poisonous to all wild ungulates as well. In the United States of America, it is declared as a prohibited noxious weed. Invasion and spread of this species in the Nile Delta has been noted as an ecological disaster, with *I. carnea* biomass vastly exceeding that of other species. It spreads mainly through vegetative propagation from



*Poinsettia pulcherrima*, although an exotic has brought lots of beauty to the landscapes where they occur



*Opuntia dillenii* has covered atleast 100 sq. km of ground of Mudumalai WLS



*Ipomoea carnea* is also known as the Pink Morning Glory



*Cassia spectabilis*, spreading and causing a problem in Bandipur and Bhadra Tiger Reserve



*Cassia fistula* a native, does not spread and cause problems although its leaves are inedible

decumbent branches, and less commonly through sexual propagation from seeds. In India, the problems caused by this noxious plant are many. Smaller water bodies get totally encroached by this weed, leading to drying up and desiccation of the water bodies. This, in states like Assam, where people have the habit of getting some fish from the small road-side ponds throughout the year, has drastically reduced the availability of fish. Since it is a noxious weed, we are unaware of impact of this species on the aquatic fauna. Kanyakumari district, a southern district in India, was once home to

thousands of tanks and all had plentiful murrel *Channa marulius*. Now, most tanks have disappeared as a result of unregulated development. In the remaining ponds, local people report that the murrel has largely disappeared, possibly due to the invasion of *I. carnea*. When this weed grows along the edge of the tanks it makes this edge habitat unavailable to species like waders that feed along the edges, and ducks and teals that like to rest on the shores. When the growth of the plant around the tank is rampant, even the open waters in the middle of the tank are avoided by species like pelicans and ducks, as they are afraid of cover that could be used by hunters. While we talk about freshwater conservation and declining water table, a major problem in our country, surprisingly there are no discussions about the need to totally eradicate this useless and problem species from Indian freshwater landscapes.

*C. spectabilis* is a fast growing small to medium size tree. It is a species of the family Fabaceae (legume family) and is native to American tropics. Its golden yellow flowers come in clusters and when the tree is in full bloom it looks spectacular, and hence the name *spectabilis*. Its conical bunch of abundant and conspicuous flowers and compound leaves with pointed leaflets can help anyone identify the species. I became aware of this species during my recent visits to Bandipur TR where the species is invading the Reserve from the tourism complex where a few trees had been planted for ornamental purposes. Wild pigs, which frequent the tourism complex, possibly disperse the species by feeding on the fruits and dispersing the seeds. The problem with the species is it is not eaten by any ungulate, not even by the versatile sambar. Therefore, the species spreads rapidly and in Bandipur it has already spread for a kilometre radius around the tourism complex. It grows forming dense thickets, below which growth of other plants is negligible.

I have observed a similar phenomenon happening in Bhadra Tiger Reserve. The species here has invaded the Muthodi Range from the abandoned nursery, where the translocated Muthodi village once stood. In both the places I have urged the forest officials to eradicate the species from the Reserves as early as possible. There should be a ban on planting this species in the forest areas and if found in forest areas the species should be immediately eradicated by digging and uprooting the entire sapling/tree. Interestingly *Gliricidia sepium*, another pea family member, and an exotic from tropical America and planted in Bandipur and Bhadra, does not spread; as its leaves are eaten by wild ungulates. *Cassia fistula*, another pea family member, native to Southern Asia, is another species that does not spread in spite of the fact that its leaves are not eaten by ungulates and the seeds are dispersed by Sloth Bear which feeds on the mature and dry fruits, which are dark in colour. It is common in Bandipur and Bhadra. It is observed that in Rajaji National Park porcupines often feed on the roots of the saplings of

*C. fistula* which lead to the death of the saplings. This way, sometimes, even the adult trees are killed.

*Opuntia dillenii*, commonly known as Erect Prickly Pear, is another native of tropical America. It was possibly introduced in India as an ornamental plant for its lemon-yellow flowers and purplish-red fruits. Possibly the seeds get dispersed by frugivorous birds, which may feed on the fleshy pulp-coated seeds. *Opuntia* is a xerophyte (a species of the dry habitat), with sharp long thorns. It is abundant in the Masinagudi Range of Mudumalai Wildlife Sanctuary, Singara and Sigur Ranges of Nilgiri North Forest Division, and the newly established Sathyamangalam Blackbuck Sanctuary. The area occupied by this unwanted species could easily be around 100 sq. km. Eradication of this unwanted species from these forests would significantly improve the habitat for chital and blackbuck as its total removal will create open areas preferred by these ungulates. We are not sure what harm it is causing to the soft-padded tiger and leopard, which also occur in these forests. A machine, like a smaller version of a JCP fitted with tractor tyres, should be fabricated for use in *Opuntia* habitats to uproot this weed. Most *Opuntia* habitat is fortunately not very hilly. In places the machine cannot reach, a properly equipped team of men and women with strong gloves, boots and tools for uprooting, pulling and cutting, should remove the *Opuntia*. Eventually all the collected *Opuntia* should be piled and dried up in different places and burnt. Along with this *P. juliflora*, another exotic from tropical America in Sathyamangalam Blackbuck Sanctuary, should also be removed on war-footing.

The eradication of unpalatable species in our forests should be followed by the planting of thousands of grown up saplings of palatable species (e.g. *Bambusa arundinacea*, *Bauhinia purpurea*, *B. racemosa*, *Bridelia retusa*, *Dendrocalamus strictus*, *Gmelina arborea*, *Grewia elastica*, *G. tilaefolia*, *Lansea coromandelica*, all species of *Albizzias*, all species of *Terminalias*, *Zizyphus mauritiana* and *Z. xylopyrus*) in the cover of *Lantana* and other thorn bushes at the onset of the rainy season. This type of habitat restoration program necessitates reviving the art of raising these species in the forest department nurseries where now largely unpalatable species such as *Pongamia pinnata* and *Acacia auriculiformis* are grown. Two grass species that can augment the availability of extremely palatable forage inside the forest are the native *Arundo donax* which has crude protein as high as 16.6% and *Panicum maximum*, a useful exotic. Presently, *A. donax* largely occurs in wet common lands outside protected areas where growing developments will eventually eradicate this extremely useful species. Nearly 20 years ago, 10 ha of *Lantana*-dominated habitat on the bank of Ramganga river in Corbett Tiger Reserve was planted with *A. donax*. It has not eradicated *Lantana* but has established itself very well, and continues to provide forage to sambar and elephant.

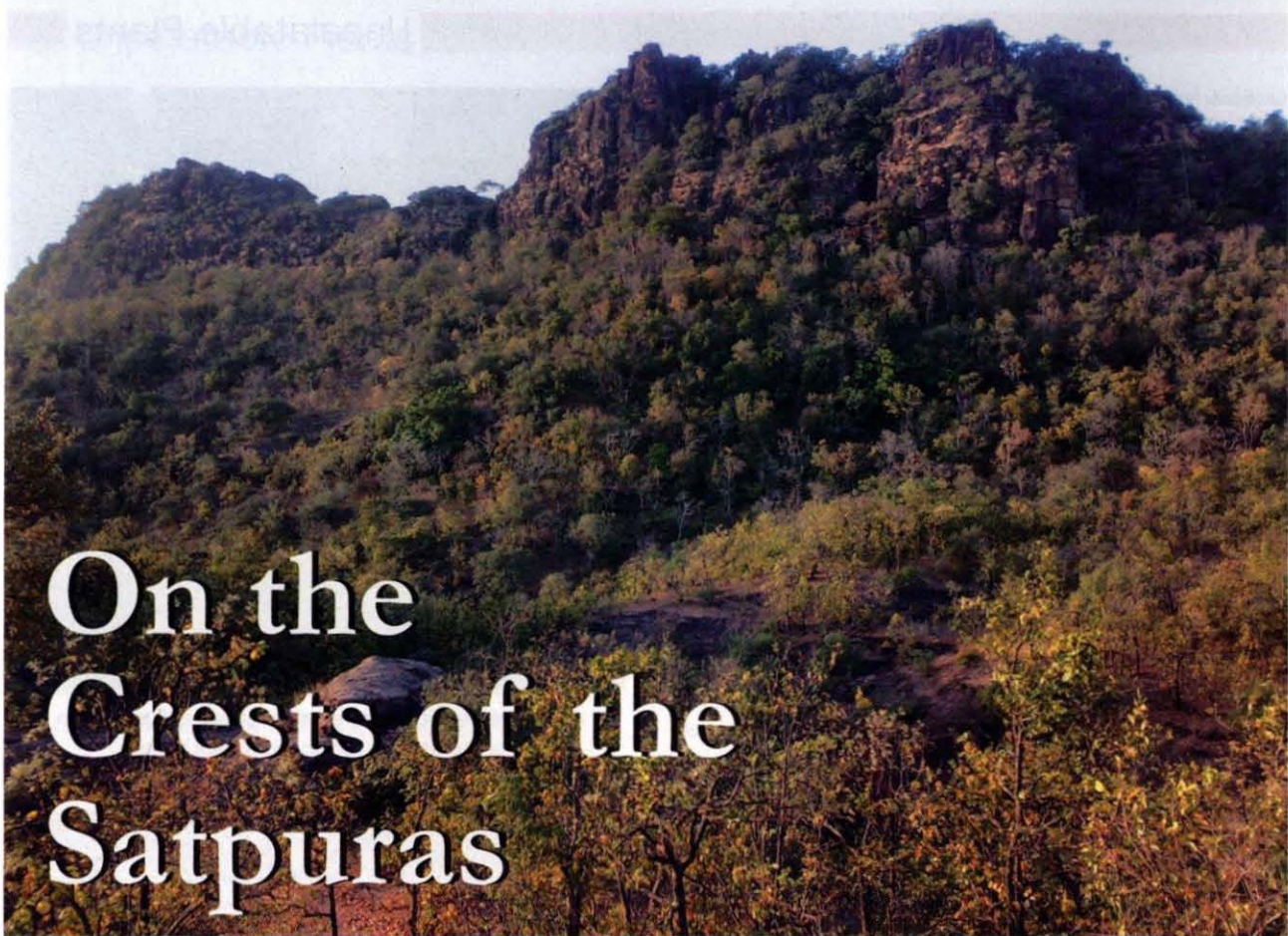


*Arundo donax*, a valuable native grass, rich in protein, can be used to replace *Ipomoea carnea*



*Gliricidia sepium*, an exotic, but does not spread, as it is eaten by wild ungulates

Eradication and control of unpalatable plants from the much abused Indian landscape is going to be extremely challenging and it can be achieved only when the people render support to the efforts of the Government. But an effort should be made as early as possible so that our fresh water habitats can be saved from the noxious *I. carnea*; *C. spectabilis* can be eradicated from Bandipur and Bhadra Tiger Reserves, and eradication of *O. dillenii* and *P. juliflora* will significantly improve the wildlife habitat in the Mudumalai landscape. 🌿



# On the Crests of the Satpuras

PERVEZ CAMA

Typical rocky cliffs dominate the Satpura terrain

Text: **Pervez Cama**

**T**he bejeweled sky speckled with stars was glittering with brilliance; an experience encountered only in elevated regions. I thought it seemed to have put on a special display for us. There hung my favourite constellation Orion and there was the wide arc of the Great Bear guiding us to the North Star, an indispensable navigational aid to the mariners of old. The beautiful night sky accompanied us on a late night walk at Pachmarhi, after an exhausting drive from Chhindwara. We revelled in the cool air of Pachmarhi, a military station which is flanked by jungles and crags of the Satpura Tiger Reserve. I had finally got the opportunity to visit this place at the end of February (thanks to Col. J.M. Rebello, an infantryman and my companion in this trip).

When at Chhindwara, at end of winter, we encountered the forest stretch from Tamia to Matkuli, painted in innumerable patches of flamboyant red, by the gorgeous blooms of

the 'Palash' Tree *Butea monosperma*, better known as the Flame of the Forest. That night as I was drifting off to sleep, visions of scenes narrated by sportsmen and explorers in the forests of the erstwhile Central Provinces flashed through my mind. As if to reinforce that ambience, a Jungle Owlet *Glaucidium radiatum* broadcast its familiar call, which beamed out clearly in the silence of the night. It sent my mind racing back to the pristine forests of marvellous Kanha, further to the east, where during nearly ten visits I had heard its calls countless times early in the morning.

Till the advent of the British in 1818, the *Gond* and *Korku* tribes initially held sway in the region of Pachmarhi, followed by a later influx of Rajputs, Mughals and Marathas. Pachmarhi is located in the Hoshangabad district of Madhya Pradesh at an altitude of little more than 1,067 m, rising to 1,350 m at Dhupgarh, the highest summit in the Satpuras.



Pervez Cama is currently working as a Trainer with WIPRO. He has also been a volunteer with the BNHS.

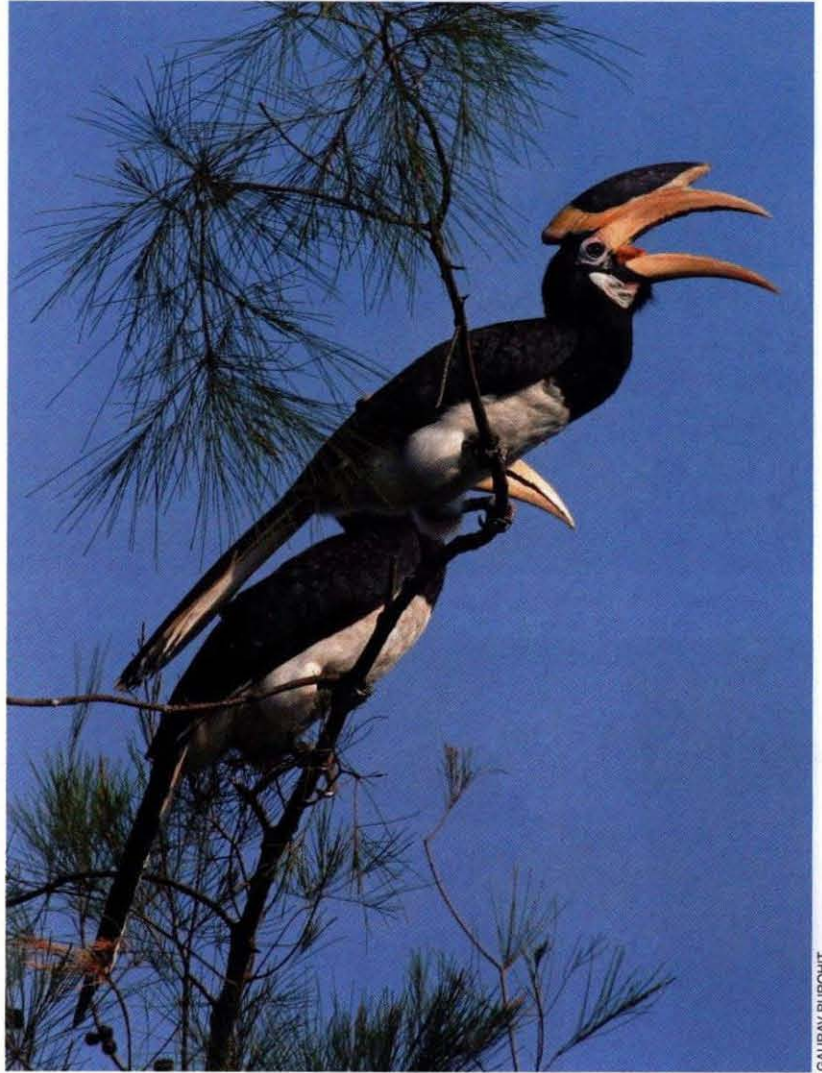
His keen interests lie in the environment and historical literature.

Beyond the settled portion of the plateau, it is bordered by steep cliffs of towering jagged rocky outcrops and sheer red-sandstone inclines. Most of the slopes and valleys here are seen to be covered with lush forest. The grand and awe inspiring peak of Chauragarh dominates impressively over the landscape and the view from Priyadarshini point is stupendous. This is where Captain Forsyth discovered Pachmarhi in 1857 and later chronicled it in his book 'The Highlands of Central India'. Through the soft sandstone of the Pachmarhi plateau, deep canyons and ravines cut their way into the depths below, many with streams and waterfalls. Also, the ravines and rock shelters here bear treasures in the form of stone-age drawings of animal and human stories dating back thousands of years.

But, the most magnificent scenery here is undoubtedly visible from the west of the highest point, Dhupgarh. Here, a glorious panorama of fantastically shaped and enormous mountains and deep jungle covered valleys stretches into the dim mists of the horizon. The Colonel and I were enthralled by the grandeur at Dhupgarh.

Gazing in silence at this very picturesque array of jungle and mountain, an exceptional masterpiece crafted by nature, there welled up in my memory a somewhat similar, fabulous view of endless exuberant wild jungle viewed from the 847 m Bamhnidadar plateau in Kanha National Park.

The 418 sq. km Pachmarhi and 486 sq. km Bori Wildlife Sanctuaries, together with the 524 sq. km Satpura National Park, were constituted as the Satpura Tiger Reserve (STR) in 2000, which has a picturesque undulating and rough topography. They also form the core zone of the Pachmarhi Biosphere reserve. These tracts are endowed with an abundance of floral and faunal diversity because of the varied geography and habitat, recording 1,381 plant species and over 50 mammals. The rainfall is heavy and a number of streams flow into the perennial Denwa River. The bulk of the Pachmarhi forests lie on the northern slopes of the Satpuras and are largely dry deciduous in nature, though the plateau also bears the unique



GAURAV PUROHIT

The Malabar Pied Hornbill, one of the many birds found here



PERVEZ CAMA

The densely forested valleys of the Satpura Tiger Reserve



PERVEZ CAMA

Flame of the forest flowers set the area ablaze from January-March



GAURAV PUROHIT

The Crested Serpent Eagle, among the raptors, is one of the most widely encountered

western most outlier of Sal forest, and a patch of Central subtropical broadleaved hill forest dominated by 'Jamun' *Syzygium cumini*, below Dhupgarh. But eyesores are the Eucalyptus *Eucalyptus sp.* and Chir Pine *Pinus roxburghii* stands, raised by the Forest Department.

Though we saw a Barking Deer *Muntiacus muntjak* near the view point of Rajendragiri, larger mammals like Sambar *Cervus unicolor*, Sloth Bear *Melursus ursinus*, Gaur *Bos gaurus* and Tiger *Panthera tigris* are better spotted in distant areas. One has to journey to Neemghan, or ascend from the edge of the 204 sq. km. Tawa reservoir in Bori Sanctuary, to the heights of Dhupgarh. Places like Churna, Madhai and Paraspani have had Tiger sightings and are reputed to be likely sites for seeing wildlife.

Like many old cantonments, stately trees of Banyan *Ficus bengalensis*, Mango *Mangifera indica*, Silk Cotton *Bombax ceiba*, Mohwa *Madhuca latifolia* and other species abound, providing refuge to a variety of birds and small animals such as the Indian Palm Squirrel *Funambulus palmarum* and Rhesus Macaques *Macaca mulatta*.

A walk through the shaded and forested avenues, yield an interesting variety of birds. The STR forests are reported to host more than 250 species of birds. The typical huge stony prominences that crown the hillsides are frequented by raptors like the Oriental Honey Buzzard *Pernis ptilorhynchus*. The Grey Junglefowl *Gallus sonneratii* and Red Junglefowl *Gallus gallus*, normally crowing in pride in exclusive latitudinal zones, also share this home in the STR. The popular cobalt blue songster that patronizes many a waterfall and stream in the Western Ghats, the Malabar Whistling Thrush *Myophonus horsfieldii*, is to be found here too. The Red-Vented Bulbul *Pycnonotus cafer* is common, but the perky and handsome Red-Whiskered Bulbul *Pycnonotus jocosus* is also found here. Their cheerful calls and catchy plumage, with black crest and splashes of red, draw attention as they scout around for fruits and insects. One familiar call that resounds throughout the day is the repetitive 'Kutroo' call of the Brown-Headed Barbet *Megalaima zeylanica* ringing out over the area. Out on a morning walk, I saw one close by on a small tree. He peered at me inquisitively with one eye,



well highlighted by its encircling band of orange skin. A few paces ahead, I saw a pair of large birds sailing through the air and disappearing into the foliage of a big tree. I excitedly searched through the binoculars and discovered a group of Indian Grey Hornbills *Ocyraos birostris* on an early morning sortie. Its unusual figure, grey colour and long beak ensure that it is not the smartest looking of the avian clan, but it is prominent due to its size and casqued beak.

Once near the military hospital in STR, we stood admiring the shady spread of a noble Banyan. Suddenly, a movement caught my eye in a neighbouring tree. A bird with blotches of greyish black was flitting about the upper branches. Its colours and movements seemed typical of the Minivet family and I expected to see the brilliant red or yellow colours of that group at any moment. Shortly, another bird flew to join its companion and came into full view. Surprise! There was no red, but only the dark grey and white, and the black hood of the male Ashy Minivet *Pericrocotus dinaricatus*. Nevertheless, it was a pleasure to see this species, which I have rarely come across.

On another day, while crossing the bridge spanning a pond, I could spot a Woolly-Necked Stork *Ciconia episcopus* at the pond's edge and a few Little Cormorants *Phalacrocorax niger*. Further on the road, the striking and brief calls of numerous Plum-Headed Parakeets *Psittacula cyanocephala* filled the air, as they sped to their destination. Some of these feathered jets, alighted on a fruit tree and it was a treat to watch them feed, their lavish colours of brilliant green contrasting with their maroon and grey heads. Their calls were pleasant and



Plum-headed Parakeets feed on seeds of tall herbs, weeds, bamboo seeds and smaller fruits

musical, unlike the Rose-Ringed Parakeets *Psittacula krameri* whose shrieks abound in Mumbai's trees.

But, the most thrilling sight was indisputably whilst departing when I looked out wistfully over the Army camp and espied a pair of Malabar Pied Hornbills *Anthracoceros coronatus* perched in the trees. This is surely an attractive bird and far removed from its cousins mentioned above. I had encountered them at very close proximity in the Dandeli Sanctuary in North Kanara, where no less than six, settled into a tree close to me. The sight was wonderful and rewarding, and certainly one that I have retained vividly in my forest memories.

Bearing the farewell wishes of few of the officers at the military camp

where we stayed, we left and began the descent from the Pachmarhi plateau. The natural healing powers of the outdoors had worked their magic on us and we were in good spirits. However, there was a last treat still in store. As we clambered up to the road, a recognizable and distant cry stopped me in my tracks. I had heard it before in so many places – at the superbly hewed montane and jungle vistas of Lodwick point in Mahabaleshwar, and in the green depths of entrancing Kanha and Corbett National Parks. It was the spectacular Crested Serpent Eagle *Spilornis cheela*, one of the most widely encountered of our raptors. It soared over us, effortlessly gliding on the up-currents of warm air. I looked at it delightedly as it disappeared over the brow of the hill.

Quiet walks in natural surroundings are the best therapy for our unquiet lives. It is amazing how efficaciously Mother Nature lays her soft caress upon our

stressed brows through her wondrous sights and sounds, and banishes those fretful worries and aches that plague our mundane lives. The bountiful glory and beautiful orange glow of the rising sun, beckoning lonely paths strewn with leaves, beautiful trees and the melody of birds touch the soul and fill it with tranquility, joy and reverence for the Creator. At this point, the sun was climbing higher into his preordained orbit, its rays progressing from gentle to fierce, reminding us that we had a long journey to traverse in his warm but nurturing company. It was time to return from the highlands. The trusty Maruti engine sprung to life with an unflinching 'whirr'. With pleasant memories of Satpuras, the Colonel twisted the key and steered us towards home. ✕

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# Save the Houbara . . .

Houbara's normal clutch size is 3-4 and only 1-2 chicks survive

Text: M. Zafar-ul Islam & Ahmed Boug

Come winter, and birders in most parts of India are waiting to welcome the avian visitors that arrive to the Subcontinent in large numbers. The winter migrants join the existing avian diversity to create a magic that is difficult to express in words. One such winter migrant is the Asian Houbara Bustard *Chlamydotis macqueeni*. This visitor prefers to migrate to the dry and semiarid areas in north-west India mainly in the Thar Desert, Kutch, and parts of Saurashtra like Jamnagar and Little Rann of Kutch, from November to mid-March.

The Houbara bustard is a rare bird globally. A very rough estimate of this bird's wintering population is considered to be anything between 2,000 and 5,000. The populations of all the subspecies of Houbara bustards have been declining due to habitat

loss and degradation, as desert areas are developed for agriculture and infrastructure projects. This decline maybe due to habitat loss, fragmentation compounded by high hunting pressure from falconers, seen today even in the breeding areas in the Central Asia. It was, thus, classified as Vulnerable by IUCN in 1994 and 2005. In India too, they are opportunistically hunted by local poachers. But large-scale hunting by falconers, as seen in Pakistan, fortunately does not occur here. It is but a need of the hour, to draw our attention to the realities and conservation issues faced by the Houbara bustard.

Several studies have been undertaken on these birds all over the world. In India, between 1994 and 1998, Dr. Asad R. Rahmani, Director, BNHS, and a team of researchers that included the first author,

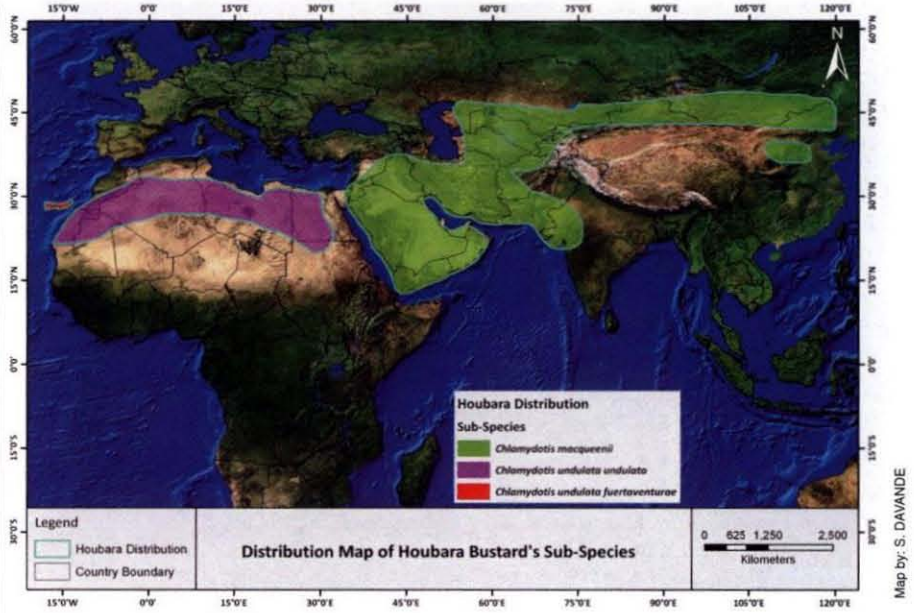


M. Zafar-ul Islam (L) is Research Coordinator with NWRC, Saudi Arabia, dealing with re-introductions of Houbara and other species. Ahmed Boug (R) is General Director of NWRC and a field biologist who has studied Hamadras Baboon.

conducted detailed surveys and found the bustard in eleven districts of Rajasthan, with the major concentration in the Bikaner, Jodhpur, Barmer and Jaisalmer districts. In Rajasthan, of thirty-eight sites censused, its population was confirmed from thirty-four sites. But, as per local information, illegal hunting was occurring then and may still occur in at least eleven of these sites. In India, the Houbara Bustard is protected under the Wildlife Protection Act (1972) and classified under Schedule I, Part III. Even though the actual census figures of this bird are not available, there is a perceived notion, as per individual observations that its population is declining in India.

It is interesting to know that for hundreds of years, falconry and the hunting of Houbara Bustard were deeply embedded in the Arabian culture and traditions. It is said that when Houbara used to inhabit the Arabian region in large numbers, migrating from Central Asia, falconers used to hunt them on the camel back. Since the advent of four wheelers, it became easier for people to chase and hunt this bustard even on sand dunes. But, these days they are not hunted for food but for sport, as the hunters consider this as a challenge. They are not only illegally trapped, but also supplied for falcon training.

To know more about the conservation issues faced by the Houbara bustard, it becomes imperative to learn briefly about its subspecies and their distribution. There are three subspecies of Houbara bustard - *Chlamydotis undulata undulata* (about 10,000 individuals) resident of North Africa, where its population is known to have declined from Libya, Egypt and Tunisia, and probably also in Algeria, Mauritania, Morocco and Sudan; *Chlamydotis undulata fuertaventurae* (700 - 750 birds) on the Canary Islands, Spain; *Chlamydotis macqueenii*, also called Macqueen's Bustard. According to



The Houbara Bustard is protected in India, under the Wildlife Protection Act, 1972

BirdLife International, the last subspecies occupy six subregions: resident and migratory birds occur in parts of Middle East and in Russia, Iran, Pakistan, India, Afghanistan, Uzbekistan, Tajikistan, from western Kazakhstan to Turkmenistan, and on the Mongolian plateau and in the Gobi desert of Mongolia, and in western China. The population of Macqueen's Bustard is estimated between 39,000 and 52,000 individuals, mostly breeding in

Kazakhstan (30,000 - 40,000) although numbers in the mainland China are likely to be much higher than the current estimate of 500 birds. A major decline is reported from countries such as Saudi Arabia, UAE, Bahrain, Jordan, Yemen, Kazakhstan, Iran, Iraq, Pakistan, India and China. Populations from some subregions are thought to mix on the wintering grounds.

But, where can one find the Houbara bustard? They are adapted to desert



Houbara prefers moderate or sparse perennials, primarily holophytes, grasses, herbs and shrubs



A Houbara bustard fitted with a radio-transmitter

environments, preferentially inhabiting undulating, flat arid plains, steppe habitats and semi-deserts, often with little cover, except for open or scattered desert shrubs. The bustard is known to avoid rugged terrain, sandy deserts and barren salt pans. The wintering population of Houbara bustard in India inhabits sandy and stony semi-desert and are specialized to exist in arid conditions where trees are absent and both shrub cover and herb layer are sparse.

The houbara is omnivorous and opportunistic, as its diet reflects local and seasonal abundance of various plants and

small animals. It feeds on vegetable matter including fruits, seeds, shoots, leaves, flowers and young shoots, drupes, and berries growing over leaves. It is also known to feed on, cultivated plants such as beans, peas, alfalfa and mustard, if available. Besides a vegetarian diet, it also feeds on invertebrates such as grasshoppers, weevils, termites, locusts, beetles, caterpillars, scorpions, spiders and ants, snails and also on small vertebrates such as snakes, lizards and geckos. Bustard chicks generally feed on insects and small reptiles.

In 1996, the Species Survival Commission of IUCN organized a

meeting in Muscat, Oman to formulate conservation management of the species in Asia and Middle East, which was attended by 90 participants from 13 range states: Afghanistan, Bahrain, India, Iran, Jordan, Kazakhstan, Kuwait, Oman, Pakistan, Saudi Arabia, United Arab Emirates, Uzbekistan and Yemen. This meeting brought out some very important recommendations that included improvement in protection measures, further research on migration and assisting Saudi Arabia to conclude an international management agreement under the Bonn Convention. In 1997, National Avifauna Research Centre, Abu Dhabi in United Arab Emirates (UAE) fitted satellite transmitters on Houbara to study the migratory routes. They found that the Houbara migrated to northern China, covering 6,600 km in just 54 days and crossed Iran, Turkmenistan, Uzbekistan and Kazakhstan to Chinese province of Xinjiang and eight months later it followed the same route and returned to Abu Dhabi. India is trying to save the species by protecting its habitat mostly in the Desert National Park and community reserves. Launching education and awareness programme to motivate the local people for the protection of this bird is required. Field staff should also be supported by giving them infrastructural support like wireless sets, firearms, and vehicles. However, as the species is hunted in a large scale in the adjoining country the wintering Houbara population in India will always be vulnerable as it moves through Pakistan during migration. The bird should be given complete protection in its entire range, starting from the breeding ground, staging areas, migratory routes and wintering places.

### Captive-breeding and reintroduction programmes

As hunting pressure in the Middle East is very high and the populations

of Houbara have sharply declined, captive breeding and reintroduction programme was the one of the solutions to bring back the bird from local extinction.

The captive-breeding programme of Houbara bustard was started in Saudi Arabia in 1986 to undertake the restoration programme. From 1986 to 1988 fertile eggs were collected under the Government permit from resident populations in the Baluchistan in Pakistan. By 1990s, through the application of artificial insemination techniques the National Wildlife Research Centre (NWRC) was able to produce enough Houbara chicks to replace for release purpose. Two sites were selected for houbara reintroduction, i.e., Mahazat as-Sayd and Saja Umm Ar-Rimth both protected areas in central Saudi Arabia, keeping in



Houbara bustards are omnivorous, feeding on seeds, insect and small creatures

mind the IUCN resolutions on reintroduction.

**Re-introduction methods**

All the houbara were fitted with the radio-transmitter. The transmitter attaches to the bird as a backpack using various harness material such as Teflon

ribbon. The harness is looped under the wings and then around the base of the neck known as "belly cinch". We have been releasing houbara in Mahazat as-Sayd and Saja Umm Ar-Rimth protected areas using technique of 'Captive bred juvenile of 4-6 months translocated to long tunnel shaped cages and after three to four weeks release them in the enclosure.'

**Status of re-introduced houbara**

Between 1991 and 2010 a total of 856 (424 males:432 females) houbara have been released to Mahazatas-Sayd Protected Area, and from 2004 to 2010, a total of 194 houbara were released in the core fenced area of Saja / Umm Ar-Rimth Protected Area. These birds are equipped with radio-transmitters and are regularly monitored by vehicles on ground and by small aircraft to collect information on its ecology including feeding behaviour and breeding biology.

If hunting continues, houbara populations may eventually collapse over most of the range of the species, reaching levels, such that recovery would be difficult. Such a decline would certainly mean houbara would no longer be able to be harvested by falconry, and this ancient Arab tradition would die. If the disappearance of houbara from many countries is to be avoided, then conservation action must be taken immediately to ensure the protection of habitats within the houbara's range, and to reduce the loss of animals from hunting.

**CONSERVATION CHALLENGES FOR HOUBARA CONSERVATION**

In India, houbara should be monitored on an annual basis to know the wintering population trend and their distributions, density, and habitat/area left for the bird. However, we need to carry out studies on the migration of this bird, especially the Indian wintering population using satellite transmitters (PTTs), which would be helpful in global houbara conservation strategy and action plan. Other challenges are:

- Need to support national and international legislations concerning the houbara for long-term conservation.
- Falconers/hunters should also participate in the conservation programmes
- Houbara range countries should exchange information regularly using the IUCN Bustard Specialist Group (BSG).
- All the breeding sites should be strictly protected.
- Large-scale habitat conservation programmes are among the most promising steps for houbara conservation, particularly if hunting is prohibited or strictly controlled in such areas.
- Conservation awareness programmes should be continued in houbara range countries.

We are grateful to  
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*Kekoo Naoroji Memorial Fund*  
 to support the publication of *Hornbill*

## Visual treat of Tirunelveli

As the sun sets beyond the misty mountain ranges of the Kalakad-Mundanthurai Tiger Reserve (KMTR), the golden-orange sky come alive with the arrival of thousands of birds converging on a lake near Aiwarkurichi in Tirunelveli district of Tamil Nadu. The lake called Vagai Kulam could be Tirunelveli's new bird paradise after Kundankulam.

Researchers from the Ashoka Trust for Research in Ecology and Environment (ATREE), involved in an International Union for Conservation of Nature (IUCN) study of wetlands around KMTR, stumbled upon this gem in a recent survey of the "kulams" which dot the district. The unique ecology of Tirunelveli, comprising of forested hills of the western Ghats, rivers, wetlands, canals, and fields of paddy and banana, evolved into an ideal habitat for many bird species including migratory ones.

During the day, the birds forage in these forests fields and lakes, while at night they move to roosting and nesting sites like Vagai Kulam. People of this district have also over the years developed a conservation-conscious relationship with the birds, thereby creating a relatively safe environment for them to exist. The researchers could identify 38 species of birds in and around the lake. Among them are the Black-headed Ibis *Threskiornis melanocephalus*, White-breasted Waterhen and *Amaurornis phoenicurus*. Different species of Sandpipers, Jacobian Cuckoo *Clamator jacobinus*, Rosy Starling *Sturnus roseus*, Red-vented Bulbul *Pycnonotus cafer*, Asian Openbill *Anastomus oscitans*, Purple Heron *Ardea insignis*, Little Grebe *Tachybaptus ruficollis*, Barn Swallow *Hirundo rustica*, Asian Palm-Swift *Cypsiurus balasensis*, Chestnut Munia *Lonchura atricapilla*, and also several Cormorants, Darters and Egrets.

A few hours spent at Vagai Kulam was quite an exhilarating experience. As the sun went down, the birds started arriving in batches from all directions.

They zoomed in on to the Babul trees *Acacia nilotica* and *Ipomea* sp. As they near the roosting site, the birds glide in like small aircrafts approaching a runway, readying to land with precision on the chosen branches. With so many flights arriving, it is a wonder there are no crash landings.

Meanwhile, a Pied Kingfisher displayed tricks of its trade. After locating a snack, it climbed to a height of about 7.5 m from the water, and dove vertically like a missile at great speed, disappearing under water after its prey. A few Jacanas were busy scouring the waters around its nest, which it had conveniently made among the Water Lilies. Palm Swifts and Swallows were all over the place, doing random manoeuvres in the air. Rosy Pastors and Chestnut-tailed Starlings arrived in small to medium sized flocks, each flock moving in choreographed unison to settle down on separate trees.

Strangely enough, House Crows in great numbers flocked to a site further away from the lake and chose to settle down on the power lines passing over the lake. There was a constant stream of Egrets and Black-headed Ibis flocks,

coming in which covered the trees like a white dotted carpet.

The *Acacia* trees on which the birds were roosting have been earmarked for cutting. In fact, 70 % of the trees have already been cut. The rest were spared because of the rains and the subsequent increase of water level in the lake. Once the rains stop and once water level recedes, the trees will be axed. The trees were planted around the lake and in the lake bed by the Forest Department under their Social Forestry Scheme. Such trees are scheduled for harvesting for firewood in 10 years. The contract for cutting them is given out by the local *panchayat* and the income shared with the Forest Department.

ATREE has made an appeal to the *panchayat* heads to spare the trees that have been left. The *panchayat* heads have assured to bring the matter for discussion before their respective committees. An appeal has also been made to the Forest Department to consider protecting the place. Hopefully, better sense will prevail and the birds will continue to flock to Vagai Kulam.

Samuel Jacob, Bengaluru, Karnataka



### Be kind this summer

Beautiful and colourful *Falgun* is approaching. It will be a very pleasant weather next month. It will be great if you could put out water for birds of different sizes and colours. Shallow vessels made

of earthen pot will be ideal to serve our avian friends. Let us fight the summer heat by saving the precious birds. This will also give us an opportunity to watch the birds closely. Let us first look at the ibis, one of which is the White Ibis and the city of Porbandar is very a congenial habitat for the White Ibis and several other birds. Three types of Ibis are seen here, one of them is White Ibis, the Black Ibis and the Glossy Ibis, all of which are seen to breed here in large numbers.

Porbandar houses around 250 species of local and migratory birds. Many of these migratory birds, while passing through Pakistan and Kutch, reach Porbandar and spread out in different areas. I humbly request all to be part of conserving the habitat of birds and kindly provide water to birds during the summer.

Bharat Rughani, Porbandar, Gujarat



**S.O.S, is anybody listening?**

Thol lake is only about 25 km from Ahmedabad, we therefore go there often to photograph and for bird watching. It was Sunday, October 4, 2009, I was accompanied by my father Vidyut Thaker and my three friends, Kalgi, Aditya and Deep. Near Thol lake are villages of Chandarpura, Kanjari, Bavlu where we would spot herds of Blackbuck *Antelope cervicapra* ... but on that day a surprise awaited us. We spotted, not one, but two male Leucistic Blackbucks. Leucism is a trait among animals and is caused due to lack of melanin. Such animals are easy prey in



the wild as they lose an advantage for survival – their camouflage – which makes them easy targets for predators.

But, that is not all ... the blackbucks near Visatpura and Thol are not safe, although they are listed under Schedule I. There was a time when there were about

9,000 Blackbucks in this area, but now they are only a few hundreds. Where have they gone? This area is not a protected area and land is either privately owned or government revenue land. It is feared that farmers residing in these areas give 'contracts' for killing of these animals, as they destroy their crops. They are also attacked by dogs here.

The need for now is to have a fresh non-biased census and to declare this area as Protected. If not, then at least by preserving the status of the Government land as a Reserve land and fencing it. Is anybody listening?

*Rajal Thaker, Ahmedabad, Gujarat*

**ABOUT THE POSTER**



Sholas are patches of stunted evergreen forest found at higher elevations, from the sub-tropical to the temperate belt of the southern Western Ghats of India. The term 'shola' has been derived from the Tamil word 'cholai' which means 'a grove'. Shola forests grow in patches mainly in the valleys and are usually separated from one another by undulating montane grassland. The shola and grassland together form the shola-grassland complex or shola-grassland mosaic. The Shola forest is home to various species of flora and fauna and one of the flowering plant species seen in the photograph, at the Eravikulam National Park, is the Neelakurinji *Strobilanthes kunthiana*. This shrub grows abundantly in Shola grasslands of southern India above 1,800 m.

This year being the International Year of Forests, let us pledge to understand and spread awareness about the various types of forests of India and its diverse flora and fauna. The United Nations has declared this year so, to raise awareness and strengthen sustainable forest management, its conservation and sustainable development of all types of forests for the benefit of the present and future generations.

We are grateful to

**SETH PURSHOTAMDAS THAKURDAS & DIVALIBA CHARITABLE TRUST**

for a generous donation to the  
*Pratap Saraiya Hornbill Fund*  
to support the publication of *Hornbill*

# Shola Forest



# Forests of India

Text: Swapna Prabhu

**F**orests form an integral part of the ecological, economic and socio-cultural well-being of our country. According to the latest forest reports of the Forest Survey of India, the forest cover of India is 19.27% of its entire geographic area, corresponding to 63.3 million ha. In a vast and biodiverse country like India, it is but natural that different types of forests would be spread throughout its land. But have you ever wondered what makes one type different from another? How and why are they classified such?

Classification of forests is based primarily on the combination of the following factors: elevation on which they are found, the type of climate in which they thrive, their nature and composition, and their relationship with the surrounding environment.

Elevation and accordingly temperature classifies forests into Tropical (approx. up to 1,000 m), Sub-tropical (approx. up to 1,800 m), Temperate (up to 2,500 m), Sub-alpine (up to 3,500 m)

and Alpine (above 3,500 m). Within these elevation zones, forests are further described on the basis of climatic conditions, mainly rainfall, into wet, moist and dry.

Further, it is the nature of the species which form most of the forest canopy, that determines forest types, e.g. Evergreen (in which most of the species which make a canopy retain their leaves throughout the year so that the canopy is closed), Semi-evergreen (canopy has intermittent deciduous species which shed their leaves in dry season), Deciduous (where most of the species forming canopy, lose their leaves during dry season), Conifer (needle-leaved trees), Mangrove or Thorn forests.

There are 16 major groups, which are ultimately classified into 221 minor types based on location specific climatic factors and species association. Let us touch upon some of these types of forests, and in the process understand the nature and importance of conservation of these nature's gifts.



**Mangroves** are the assemblage of species highly adaptable to land-water interface, specialized in tolerance for high salinity, flood situations, lack of oxygen in soil and firm substratum, and considerable difference between land and water temperature throughout the day. Mangrove forests fringe almost the entire west coast of India, as well as Orissa and predominate the Sundarbans in the East.



**Tropical Wet Evergreen Forests** mostly occupy the areas of Southern Western Ghats and the North-east India. These forests have high stature, dense canopy and very humid interiors. They are considered the richest ecosystems because of their complex structure comprising of strata (levels) of vegetational components that provide ample of space for other species to inhabit.

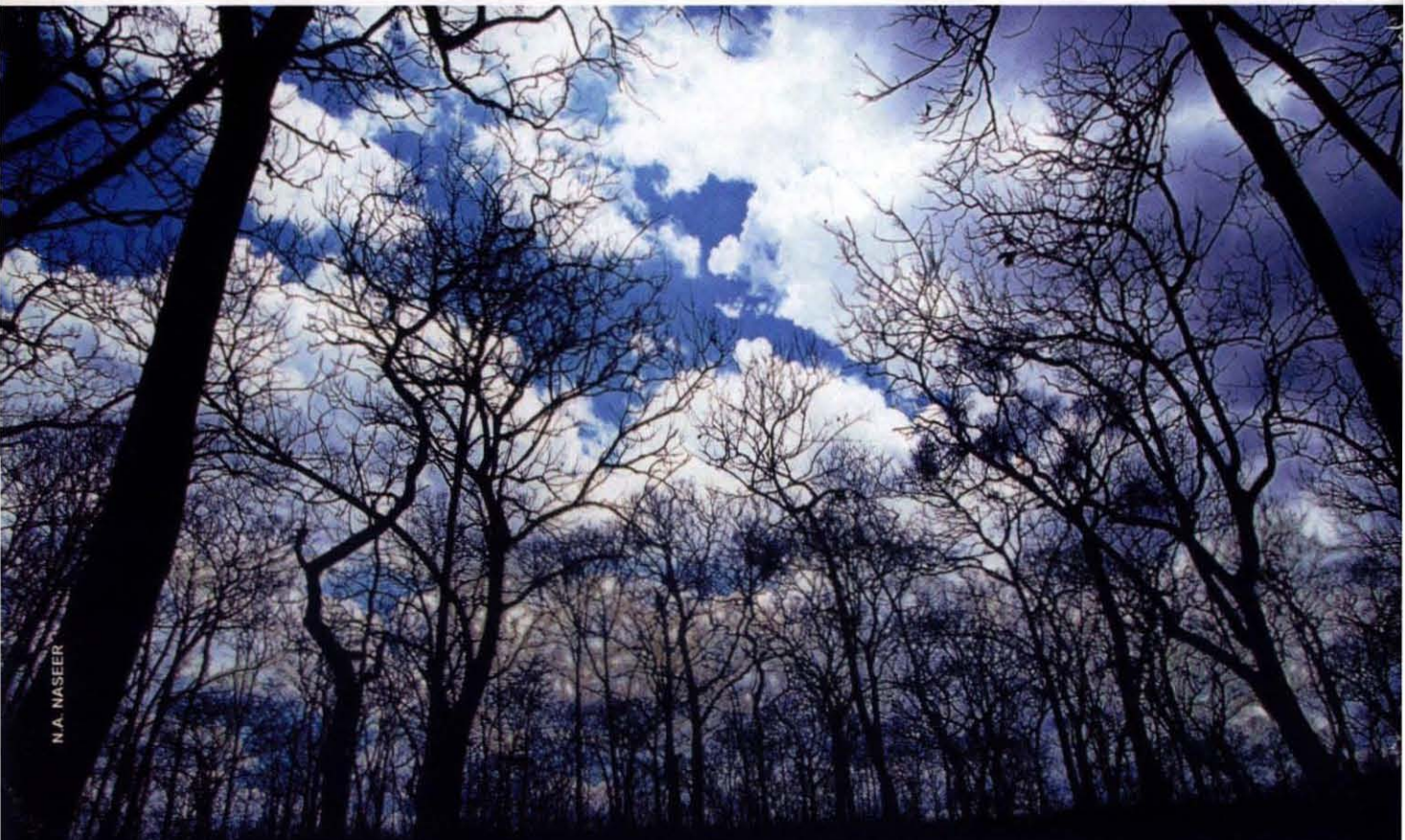


**Tropical Semi-evergreen Forests** occur in the Western Ghats where rainfall gradient is very steep. These forests have both, evergreen and deciduous species forming a closed canopy and usually have lesser species than the associated evergreen forest. The Andaman and Nicobar Islands are known for their tall evergreen and semi-evergreen forests, where the latter form a major part of the tropical belt of these islands and are described as the densest forest there.



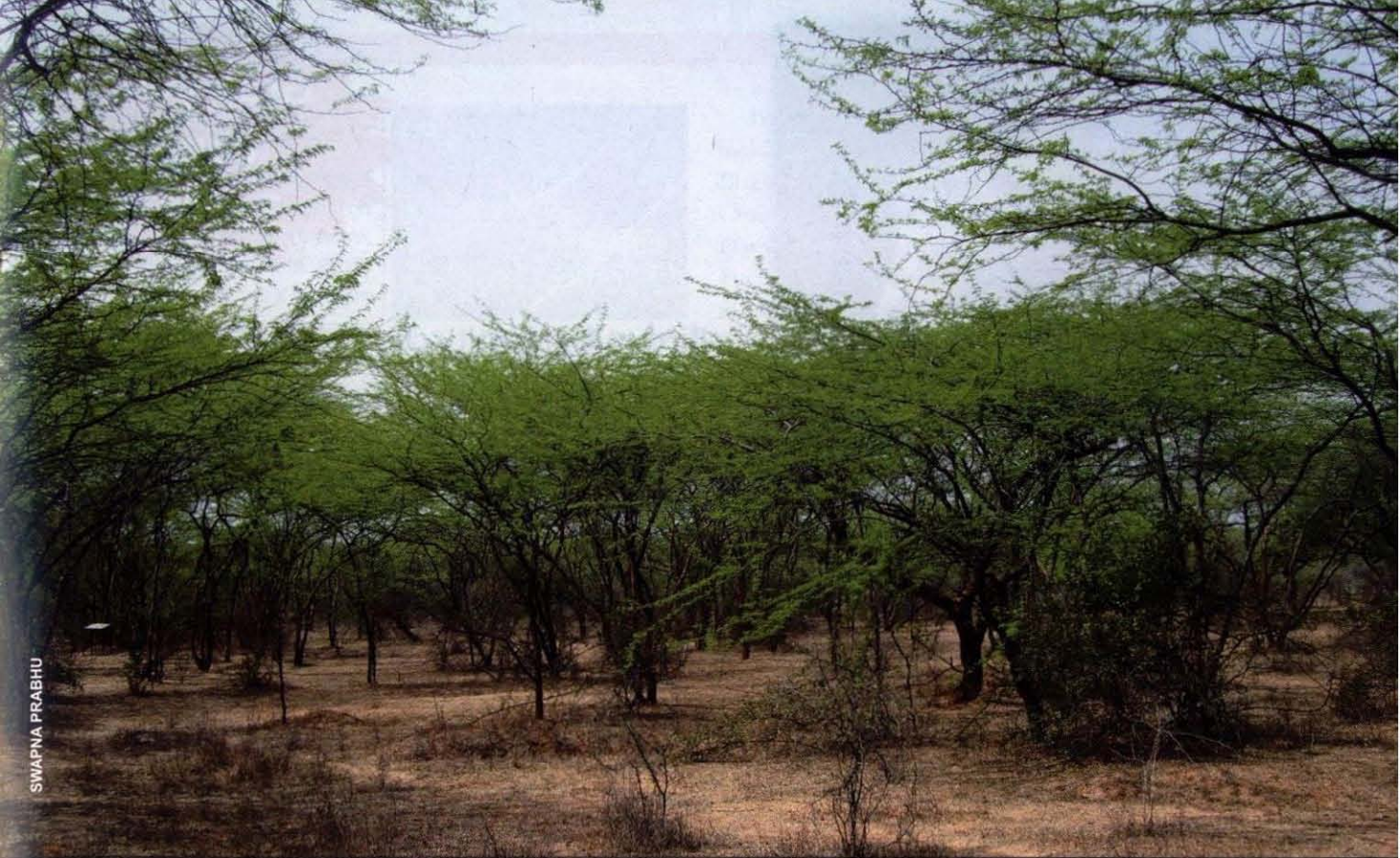
SWAPNA PRABHU

**Tropical Moist Deciduous Forests** enjoy less rainfall and are composed of more deciduous species compared to tropical semi-evergreen forests. This forest type extends from Central India to Orissa and Andhra Pradesh in the east, reaching up to the Eastern Ghats in the South.



N.A. NASEER

**Dry Deciduous Forests**, as the name suggests, are found in the semi arid zones of India such as Central India and Uttar Pradesh. As majority of canopy trees are deciduous, these forests are completely open in dry seasons. Sometimes a single species, such as Saal and Saag, dominate these forests.



SWAPNA PRABHU

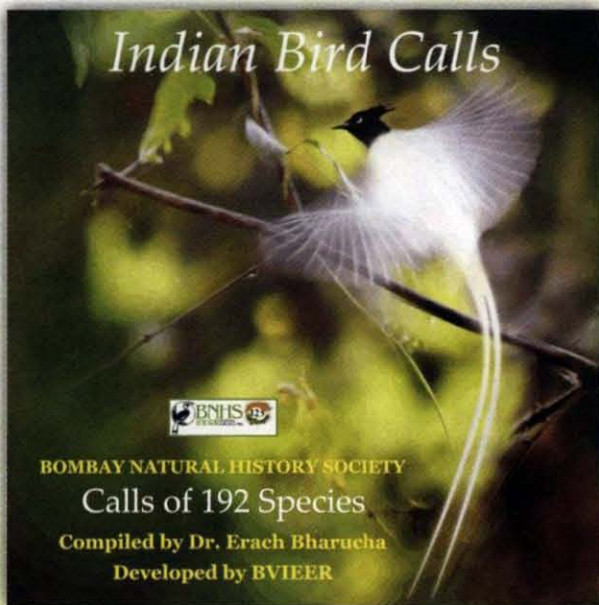
**Thorn Forests** become predominant with dry climatic conditions. Stunted, deciduous and xerophytic species characterized by armature (thorns and spines), lack of leaves and succulent plant body are the main components of these forests. The arid/semi-arid north-west and penninsular India exhibit this forest type.



N.A. NASEER

**Temperate Broad-leaved Forests** are usually dominated by Oak species, either forming a closed canopy or mixed with a few deciduous species depending on the rainfall. Found in the Western Himalayas, these forests have spectacular Rhododendrons as their understorey. During spring, these are beautifully draped in warm colours of tender leaves.

Every forest type is a refuge for certain set of species which will not survive outside that habitat. Thus, destruction of a forest does not eliminate just the tree cover, but also the biodiversity that is solely dependant on it. 🌲



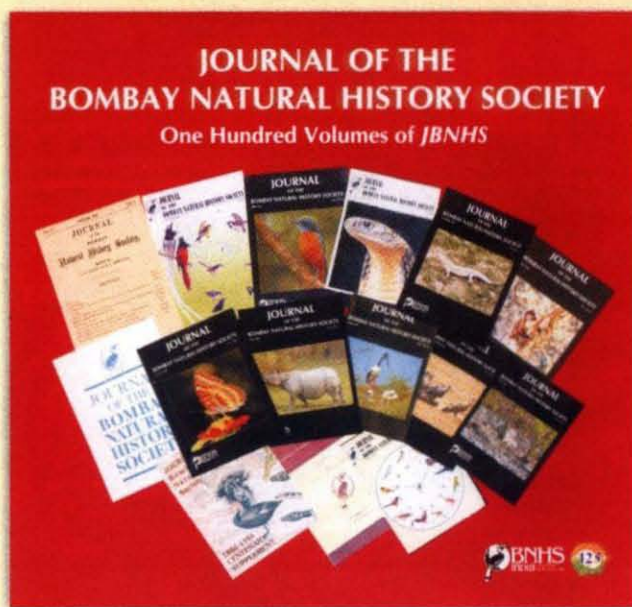
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For further information contact:  
 Mr. Santosh Mhapsekar  
 Bombay Natural History Society, Hornbill House, Shaheed Bhagat Singh Road, Sálim Ali Chowk, Mumbai 400 001, Maharashtra, India.  
 Tel: (022) 2282 1811, Email: bnhs@bom4.vsnl.net.in



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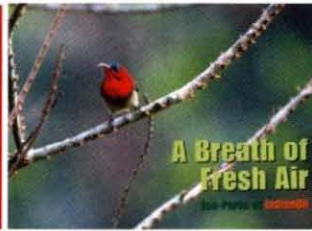
**A BREATH OF FRESH AIR  
ECO-PARKS OF INDIAN OIL**

Edited by N. Shiva Kumar

Published by the Research &  
Development Centre,  
Haryana. 2010.

108 pages. Size: 21.5 X 31.5 cm

Price not mentioned. Hardback.



Reviewed by Atul Sathe

Here is a decent coffee table book that takes the reader on a quick tour of the Eco-Parks developed and conserved by the public sector oil company, Indian Oil, across 10 different locations of its refineries in India. It gives glimpses of the conservation activities undertaken in its premises that have created greenery in some cases and has maintained habitats for myriad bird species in others. The book documents the wildlife seen (primarily birds) across various locations of Indian Oil.

Printed on quality paper, along with good photos, the book describes how the company has been processing its effluents generated while refining crude petroleum oil. Indian Oil has either conserved the existing tree cover around its water body or has done afforestation that supports other species of birds and also some mammals such as jackal, mongoose and porcupine. At its Digboi site in Assam, even migrating elephants occasionally skirt the refinery premises. The Eco-Parks also include man-made gardens, nurseries and medicinal plantations.

Birds found at various refinery locations across India include Asian Barred Owlet, Asian Paradise Flycatcher, Black Ibis, Black-necked Stork, Blue-throated Bee-eater, Cinnamon Bittern, Golden Oriole, Garganey, Greater Flamingo, Indian Roller, Long-billed Vulture, Red-crested Pochard and Whiskered Tern, among others. The book includes checklists of bird and plant species found across its locations.

The refineries are located at Barauni (Bihar), Bongaigaon (Assam), Chennai (Tamil Nadu), Digboi (Assam), Vadodara (Gujarat), Haldia (West Bengal), Guwahati (Assam), Paradip (Orissa), Panipat (Haryana) and Mathura (Uttar Pradesh).

However, at times the continuous narrative of the company's conservation initiatives may sound like self-praise and monotonous, although facts need to be stated. At times, it sounds like a bit of exaggeration about how the flora, fauna and people around refineries are doing well and do not suffer from pollution effects. No doubt the conservation efforts must have brought some respite to the habitat, the pollution caused by refineries cannot be ignored. In some places, the book digresses from its core area by discussing about the company's employee health programs and its bio-fuel initiatives.

Nevertheless, the book can surely serve as an inspiration for other well-intentioned corporates of how a company can systematically conserve and promote the habitat and wildlife in and around its premises. It surely highlights the corporate social responsibility (CSR) efforts taken by Indian Oil to play its small role in preserving India's biodiversity. 📖

**THE GOAN JUNGLE BOOK**

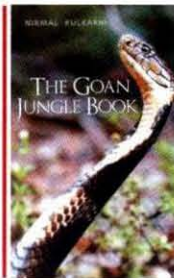
By Nirmal Kulkarni. 2010.

Published by Herperactive  
Publications, Goa.

109 pages. Size: 21.5 x 13.5 cm

Price not mentioned.

Paperback.



Reviewed by J.C. Daniel

Have you read the book A NATURALIST ON THE PROWL? This is a modern version by an equally committed conservationist. Nirmal Kumar gives a catalogue of conservation sorrows; a catalogue of 23 once common species in the jungles of Goa now well on the road to extinction. What he describes could well apply to the same species once common elsewhere in India as well. The only consolation is that there are people like Nirmal elsewhere in India also alert to conservation needs of life in the country other than human. The photographs which illustrate each description are excellent. A word of advice – print scientific names in italics type. 📖

Reviewed by J.C. Daniel

Bamboos make the ultimate sacrifice they flower, fruit, and die. This extraordinary plant of the tropics has been a useful tool of man for aeons. The flower, fruit, and die habit of bamboo makes it possible to plan ahead for its commercial use if one knows the flowering periodicity. This is one of the objectives of the Tropical Botanic Garden and Research Institute (TBGRI) established by the Kerala Government in 1979. The Bambusetum (area exclusively holding Bamboos) at TBGRI holds 68 species and 12 hybrids from all over India and undertakes studies in flowering cycle, techniques of sapling mass production, and other commercial and scientific studies. A worthwhile endeavour. The publication is well illustrated, but Rs. 800/- is a heavy price to learn about the activities of the TBGRI. 📖

**BAMBOOS AT TBGRI**

By K. C. Koshy. 2010.

Published by Director,  
TBGRI.

104 pages.

Size: 27.5 x 19.5 cm

Price: Rs. 800.

Paperback.



# Wildlife, a treasure or a delicacy?



The Golden Jackal is mercilessly killed and skinned for its meat

Text: **Riddhika Kalle**

Photographs: **N. Gokulakkannan**

**S**ome startling and disturbing events, welcomed me to one of the remotest parts of Southern India. When, I was on a trip with my friend and local guide, N. Gokulakkannan. As we passed through the streets of Nirthanamangalam, which is a small village belonging to Nagapattinam district.

It is here that we encountered one of the most horrifying and shocking event, that till date, gives me the jitters! What follows here is an episode that is as disturbing as it can get. Enroute to the village, we encountered a group of three men who had caught a Golden Jackal. I almost screamed out of shock at the traumatic sight!

One of the men was mercilessly holding the jackal by its neck; and another man was squeezing its slender hind region tightly. The horrific sight sent a paralyzing chill down my spine, as we stood dumbstruck. The unfortunate jackal had already died due to exhaustion. Its beautiful golden fur was peeled off completely from its body. Only its paws and nails were intact. The outer skin was separated from the internal organs. The jackal was literally butchered like a domestic goat.

As we got out of the shock and began to regain our spirits, it was my friend's presence of mind to quickly take pictures of the events with his camera. We then decided to approach the men boldly, with the intention of interacting with them. At first, they hesitated to talk to us, but later, they gradually opened up to our questions. On talking to them for a while, we understood that they were local villagers who had caught this jackal because it had strayed into a farmland in their backyard. They also told us that they would hunt jackals occasionally to use in their curry dishes, especially prepared with jackal meat; and this was a delicacy in the Nagapattinam villages. For me, this had been the most terrifying event that I had ever witnessed. But there was little we could do then.

Just a few weeks after this incident, I received a phone call from a friend and I hurriedly rushed to meet him in Pavithramanikam, a small village situated in the outskirts of Tiruvarur district. A similar case was about to unfold here. This time a group of men had trapped two Grey Mongoose and an Indian Monitor Lizard in animal cages. Upon interrogation, they told us that they had already trapped many more animals and the same killing procedure was followed to obtain meat. We tried to stop them from what they were doing, but they were a bunch of unfriendly men so we had to refrain from our protests and avoided any risks. I was told by the local people that even



Riddhika Kalle, an M.Sc. in Wildlife Biology, is currently working as a Jr. Research Fellow at Wildlife Institute of India. Her research interests include carnivore community ecology and habitat restoration of tropical forests.

# Seeds of Work and Fruits of Happiness

Indian Peafowls, Spotted Doves, Cuckoos, Pond Herons, Egrets and Indian Pittas were also being hunted from agricultural fields for meat and were an enjoyed food item. To our surprise and some relief, Jackal fur and Monitor Lizard skins are not sold here though, but they are discarded as the hunters are poor villagers that don't belong to any tribal community.

Peafowl tail feathers are sold on the streets of Nagapattinam for peanuts. Rural Tamil Nadu being generally covered with dense scrub jungles interspersed with open paddy fields provide the ideal habitat for jackals and other species to thrive onto. I remember stumbling into peafowl carcasses in paddy and chilly fields, especially during the harvest season. The succulent red chillies attracted peafowls the most but the consequences of crop raiding by them led to certain man-bird conflict issues here. This reminded me of Dr. M.C. Sathyanarayana, a pheasant specialist, renowned wildlife biologist and Reader, Department of Wildlife Biology and Zoology, A.V.C. College, whose enumerable classes I had attended during my masters program. He would often share with us his experiences on how he tackled the 'farmer-peafowl conflict' in these villages.

It is a disturbing fact that hunting is not only occurring in protected areas like sanctuaries and national parks, but it is also steadily taking its toll around agro-ecosystems and small wetland bodies. There is still void in the basic ecological information on common wildlife species in India, let alone the endangered ones. It's high time that we investigate the impact and extent of hunting even in the remotest parts of our country. To ensure their better survival, initiating public awareness campaigns, especially among villagers may avoid these continuing hunting practices in the future and ensure protection of our environment. ✕



*Horsfieldia kingii* is a typical example of a large seed hornbill dispersed species

Text: **Nandini Velho**

A part of my February 12, 2008, diary entry reads "Tezpur (one of the three biggest cities in Assam) is a bone shaking, waste of work day, ride away." This was after two and a half months; I had certainly come a long way. When I started my journey to Pakke Tiger Reserve (western Arunachal Pradesh), it did not help my nerves that I only had a hand drawn map and names of villages along the way. I had pre-conceived notions about the 'the wild-wild east of India' because of the news, newspapers and contradictorily the lack of information. The aim of my study was to try and understand the role of terrestrial rodents in a tropical forest. Several studies in other parts of the world have shown that rodents may take away seeds and store them, so that they can be retrieved during periods of food scarcity, a term called 'caching'. However, sometimes seeds of plant species are lucky enough, since rodents forget to retrieve these cached seeds therefore allowing them to germinate. It is also interesting to know that, according to some studies, this caching behaviour is actually beneficial to plants, as rodents deposit seeds in beneficial places like the gaps of the canopy where sunlight is not a limiting factor. One famous example is how survival of the Brazil Nut Tree relies intensely on the caching behaviour of the Brazilian Agouti *Dasyprocta leporina*.



Nandini Velho, an M.Sc. from WCS-India Program and the National Centre for Biological Sciences (NCBS), presently works as Jr. Research Fellow at NCBS.

Trade of nuts of this species goes up to 2.3 billion dollars a year! So, one can imagine the production rate too, a part of which is due to caching, of course. In India, rodents are the most specious group of mammals. But hardly any information is available on what role they play in a forest. It is important to understand this, especially what effect they have and whether they affect some plant species, more than others?

This is where my work began and it involved using of a metal enclosure where rodents were not allowed to access seeds and comparing them with plots which were open to rodents. I collected data on the number of seedlings and saplings under a parent fruiting tree and computed the abundance of adult trees in the habitat. I also had installed three digital camera traps to try and identify the visitors that came to these fruiting trees and also to look at how they handled these seeds. These traps were modified to take four pictures a minute when an animal passed through the sensor of the camera trap. On the first few days of camera trapping, all seeds were taken away by some animals and

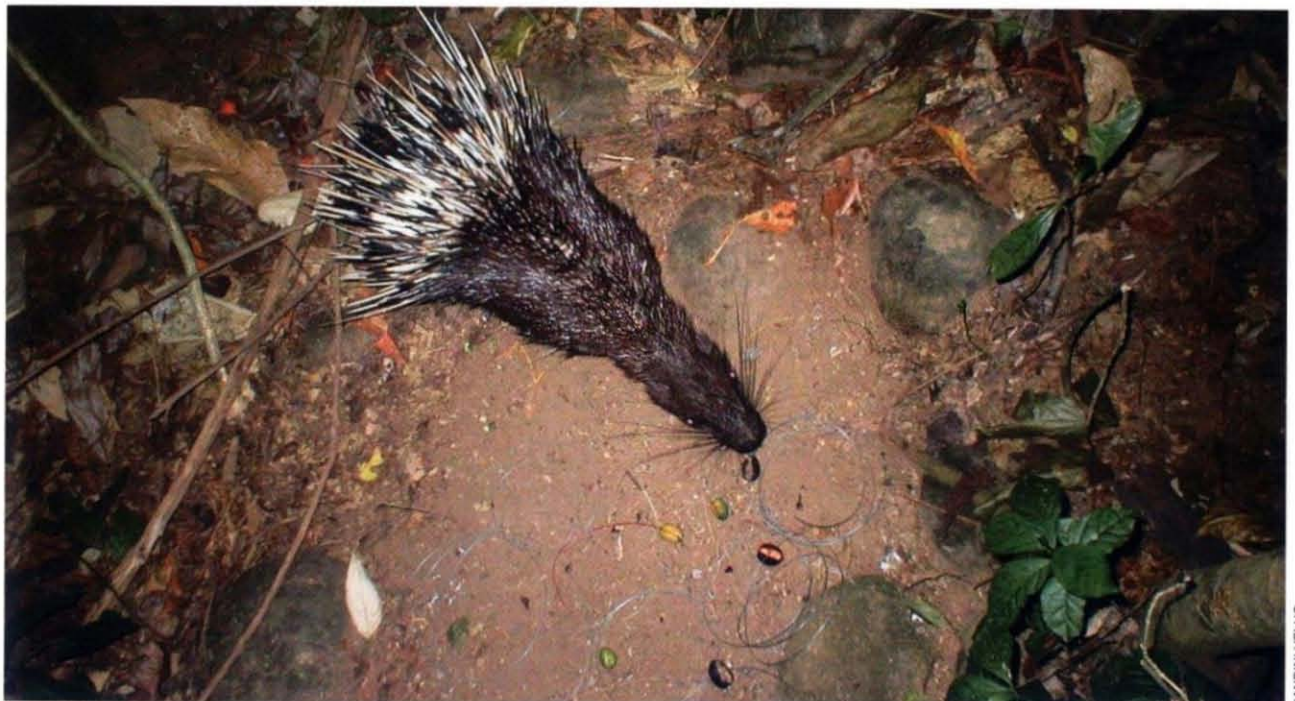
no pictures were taken. It did not exactly do too many wonders for my ego when word spread around the small village of Seijusa about my failed attempts at getting camera trap photos. With better sense and more experience, things did start to change. Sometimes all the seeds were eaten in one night, I had got photographs, starting from when the animals entered the scene, started



Camera traps were placed at fruiting trees

chewing or taking away seeds until it went away and another animal came by. The most common animals that passed through my camera traps were the Himalayan Crestless Porcupine (*Hystrix brachyura*) and the Brush-tailed Porcupine *Atherurus macrourus* and they were mostly seed predators. It so happened that on some days I even got annoyed at the volume of pictures that my camera traps had taken. There would be sixty to eighty pictures in two hours, of small birds like the Orange-headed Thrush *Zoothera citrina* or the Large Niltava *Niltava grandis* that were not even remotely interested in the seeds but seemed happy to pose for my trigger happy camera traps.

Once, the routine of fieldwork set in, I began to unwind better every day. I began to make time for the kids around the place, who were curious about this new 'scientist didi.' Their curiosity ranged from why my hair was so short to what study I was doing and some even asked me if I had heard of a 'tele-shopping' book where they teach English in six months! It wasn't long before I started teaching the kids every



The Himalayan Crestless Porcupine was one of the major seed consumers

evening at my field station. I had a minimum of six kids at home every evening, though the numbers dwindled after their exams. My main field assistant Kumar Thapa was like an elder brother to me and was extremely entertaining. He used always tell me that I would not be able to manage going up a steep slope or walk long distances, but I would valiantly try and articulate in my limited Hindi that he was being a 'male chauvinist'. Many months later I heard about how he told some people that he could not keep up with me!

After five and a half months of field work that was mostly memorable, I was back in college trying to make sense of my data. I'd prefer field work any day but once I got a few results it made the stress of data analysis better. The results were however very exciting. In my study I found that rodents in this tropical forest cache very few seeds and they are predominantly seed eaters. Rodents preferred to consume seeds of some species more than others. Sometimes even two species from the same family (*Meliaceae*) suffered different predation levels on seeds. Locals had one name 'Banderdima' for these two species (*Chisocheton paniculatus* and *Dysoxylum binectariferum*). However, in my study I found that *Chisocheton* sp. suffered very low levels of seed predation (3%) and *Dysoxylum* suffered almost 98% predation. Along with species like *Dysoxylum* there were some more that were highly preyed upon. Since little or no seeds were left because of the high consumption levels, these species seemed to have a lower number of seedlings and saplings under parent fruiting trees (compared to species that had low seed predation levels). As adults, these highly preyed upon species of trees were scattered at distances and the general trend was that, another individual tree of the same species was generally far apart.

Since rodents may have a negative effect on such species, Hornbills and



MANDINI VELHO

Seeds protected from rodents, seen germinating

other such avian frugivores are very important for the survival of these tree species. Hornbills consume fruit pulp and regurgitate or excrete these seeds, long distances away from parent fruiting trees. More importantly with respect to the eco-region of north-east India, there are numerous sites, where large vertebrate dispersers like Hornbills have disappeared due to hunting. Here, the

Pakke and other parts of Arunachal Pradesh, Hornbill casques are used by many people as part of their traditional head gear. I searched a lot every evening in Pakke for five and a half months, to try and witness a congregation, where the severely hunted Great Pied Hornbill come to roost for the night. On my last day there, as I ran around to collect the last bit of data, I was lucky to



KALYAN VARMA

A flock of Wreathed Hornbill flying to their roosting site

abundance of rodents may often have increased, as they are not specifically targeted by hunters. Since these critical plant-animal interactions are disrupted, in the long-term, relative abundance and distribution patterns of plant communities may be affected resulting in certain dominance of species. In

observe twenty-four Great Pied Hornbills for a fleeting glimpse at their roost sites. It was awkward, that it left me with mixed feelings, because today in north-east India, Pakke is one of the best and also the last few places left to spot Hornbills and I was lucky enough to do that. 🐦



# A walk through the life in Saiha ...

Once considered an intruder in the crop fields, the Asian Elephant is no more found in Saiha

Text: Nimesh Ved

**S**aiha, situated on the southernmost fringe of the north-eastern region of India, borders Myanmar on its eastern and southern side. Saiha, a district comprising of two blocks – Saiha and Tuipang, is spread across a large area; it was here that we interacted with the locals, in the course of our work.

Back in 2007, I had shifted to Saiha to be a part of a team to set up Samrakshan's (the NGO I work with) third field base in this southern most district of north-east India. Samrakshan had earlier conducted a survey around the area that brought to light that hunting of wildlife and also the locals' perception acted as a threat to the biodiversity of the area. I and my colleague Manuna were at Saiha to initiate a program there that primarily focused on conservation education

and awareness. A month of initial activities and field work kept Manuna and me on our toes. Several memorable encounters and experiences made this trip worthwhile.

We had moved to Tuipang on a Saturday and met the Block Development Officer there to seek permission to be put up for the night in the state guest house. As it was a Saturday, I wondered if I would meet him on such a drizzling evening, but was surprised to see the entire staff working on a holiday. Electricity then used to visit Tuipang only during weekends! Once in the guest house, I sat wondering about the locals' opinion to the opposition of dams and other development activities in the region. Early the next morning, we began our long walk to Lalveng to talk to the locals about the various issues concerning them, especially conservation



Nimesh Ved is interested in conservation education, feels fortunate to have been based at landscapes of Saiha and Baghmara and selfishly wishes for opportunities for more such walks.

education. This three-hour walk seemed much longer, but brought us puffing, perspiring and yearning for tea, to our first destination. During the chat accompanying tea, the local family, on learning of our interest in forests, told us of people from Myanmar entering Lalveng to collect orchids from around their village. Discussion then ventured to work done by an international NGO in their village that undertakes activities like construction of public water points, facilitation of self help groups and distribution of school books. With this encounter with the locals, we moved towards Ahmypi, our next destination. It is, but imperative to get people to actively participate in conservation education and awareness, and this was exactly what we were planning to initiate in Mizoram.

Walking on, we came to a Power House that generates power in the middle of this eden around the Tuipang

river. The power is first transmitted to the neighbouring district of Lawngtlai from where it is distributed to Saiha. The humble people of Saiha had already fascinated me with their lifestyle. Having steaming tea with the people there made me feel a proud Indian. Here I was, a Gujarati with a Mara colleague having tea made by a Mizo in the house of a Jharkhandi while the company that made the Power House and this tea providing house was from Orissa. The local people saw deer and bears around the Power House, especially in the season when the Indian gooseberry or amla trees fruit. In a place where the human-animal encounter is so frequent, my thoughts wandered onto environment education and the possibility of linking the protection of the forests to the Tuipang river. Our walk continued on to Ahmypi and a new issue of the locals struck me. After an hour at Ahmypi, over an amazing curry of fresh pumpkin leaves,

we discussed the National Rural Employment Guarantee Act in Saiha - the daily wage rate offered, the trainings that the people concerned receive and, their interactions with the Block Development Office that administered the Act, and the work done with the local village committee. At the beginning of our journey (our walk), we had not expected to have been able to interact so much with the people of Saiha. But the by the time we reached Ahmypi, we had got a fair idea of the infrastructure and the environment related issues of Saiha. The next day began my true encounters with the beautiful wildlife of the area. I was awakened by the cold chill and drumming of the rain on the roof. When the rains stopped, the roof retreated to silence and we put on our bags to continue our walk towards Khopai. On our way, we came across several parakeets, junglefowls, forktails and leeches! The team spirit the leeches

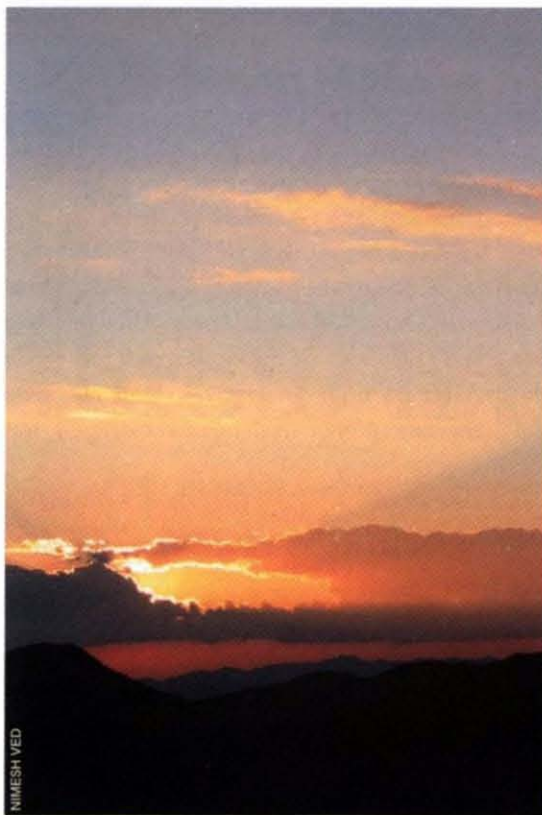


The habitat of Saiha, that needs to be protected and cherished

demonstrated in sucking my blood appalled me. After reaching Khopai and putting away our bags safely, we went for a walk around the village to interact with the people there. We started conversing about Hoolock Gibbons with a group of elderly men there. According to them, while the population of Hoolock Gibbons *Hoolock hoolock* had declined significantly in number; people still continued to hunt them! One of them also added that Hoolock Gibbons are easy to hunt, as their call is very loud during specific times of the day. As they inhabit only specific areas and have single mates, when a hunter shoots an adult Hoolock Gibbon, then the mate calls out in agony and meets the same end. I had read an article about the loud calls of their being monogamous, and their territorial behaviour. But all these were now being put across in a fashion, that to me, was unconventional. We were also told that the arm of a dead Hoolock Gibbon was used to lessen agony of women during child birth by placing it over her abdomen and that its blood was considered good for curing ailments like blood pressure and malaria. Phayre's Leaf Monkey *Trachypithecus phayrei* too was hunted and regularly put to use. Its brain was given to a child with abnormal growth, while its blood was considered good for curing tuberculosis. I did not know how many people had suffered from tuberculosis and malaria in the past, but here this group did admit that both these animals currently were not present around their villages, but only in distant forests, which thankfully is so far devoid of human habitations.

The next day evening, we met the village council president who had just returned from a meeting in the neighbouring village. The meeting was

regarding protecting the forests alongside the Tuipang and Tuisi rivers and was attended by representatives from select villages and forest departments from both the Indian and Myanmar sides. A meeting on similar lines had also been organized during the previous year. This walk through Saiha was teaching us more than we had expected. The next day we left for Vahai,



A view at the end of the walk through Saiha

reaching in around six hours. Enroute we stopped to observe a group of Orange-bellied Himalayan Squirrels *Dremomys lokeriai* rushing up and down a huge tree. In my three years in South Garo Hills in Meghalaya, I could not recall coming across such huge trees in community owned lands. When, at Vahai, we stayed with an accomplished hunter. He told me that earlier he was aware of only three animals being protected by law, meaning those he could

not hunt; Asian Elephant *Elephas maximus*, Great Indian Onehorned Rhinoceros *Rhinoceros unicornis* and Tiger *Panthera tigris*, but off late through interactions with various people he had learnt that, the list was pretty long. He then said that the people of his village had seen a Tiger a few months ago and had also accidentally caught one in the snares that was laid for primates.

Whether these hunters hunt for their survival, or as an act of poaching, is not yet known. But, it was encouraging to know though that some locals were atleast aware of the importance of the protection of the wildlife around them.

After a good long sleep at the forest rest house, we set out for Palak lake on the following day. Palak is Mizoram's largest lake and recognized as an Important Bird Area. I had seen pictures of the Lake before, but being there just left me mesmerized. Walking around, I noticed the dung of the only Asian Elephant spotted in the landscape. There used to be five till some years back 'intruding' the crop fields and demolishing toilets. I thought to myself, crop fields, of the permanent nature, are about two decades old and toilets one decade, whereas Asian Elephants who have been here for ages were considered as intruders! Yet another proof of vanishing population of the mega species! Sitting down to have a meal at the hut constructed near the lake, I wondered if some places like Saiha be just left alone? Should they be left bereft of conservation and livelihood projects? Most such projects are unfortunately ill conceived or cannot match the complexity that nature offers. Back at the forest rest house, I was told that government officers come over to hunt birds at Palak. I believe we should begin our efforts with them first! 🌳🌳

# ...and they flew a 3,067 km!

Text and Photograph: **Gopa Haldar**

*Birds are fitted with colour marks such as neck collars for Geese and Swans, and leg flags for waders that can be easily identified by observers in the countries through which the birds migrate and spend the winter in. By reporting observations of marked birds, observers help to piece together the birds' life histories, their movements and needs, and thereby helping and assisting in their conservation.*

On January 22, 2011, I and my colleague, Kaushik Deuti, spotted three 'collared' Bar-headed Geese *Anser indicus* at the Bakreswar dam in the district of Birbhum, West Bengal. As reported by Mr. Martin Gilbert, a wildlife veterinarian and Associate Director, Asia, of Global Health Program, Wildlife Conservation Society, the three 'collared' birds that we observed were marked by Wildlife Conservation Society in Mongolia. The bird with the collar V2 is a male and V7 is a female. According

to him, this sighting is the first resighting report of these two birds from West Bengal, since the birds were captured and collared. The two collar codes that we were able to spot and read were fitted on July 14, 2009, at the Sharga Lake, Bulgan Aimag province of Mongolia (N:48.94365, E:101.96365). The Bakreswar dam, as he has calculated, is a 3,067 km from the capture location! The birds, when collared, were both captured as adults during their post-breeding moult, when they were flightless. 🦢



The collared Bar-headed Geese V2 and V7's first resighting





The Indian Tarpon inhabits the tropical seas, but the young frequent freshwater habitat

## A Tale of the Indian Tarpon

Text and Photographs: **Ranjit Manakadan**



Ranjit Manakadan has been working with the BNHS since the early 1980s. He is presently an Assistant Director at the Society.

**T**he term 'Megalops' translates from the Greek to mean 'large-eyed' and this very obvious feature describes the tarpons. The tarpons are large coastal fish species belonging to the family Megalopidae and genus *Megalops*. They are carnivorous species that feed on smaller fish and crustaceans. The tarpons consist of two species of fish, out of which one is native to the Atlantic – Atlantic Tarpon *Megalops atlanticus*, and the other to the Indo-Pacific oceans – Indo-Pacific Tarpon *Megalops cyprinoides*.

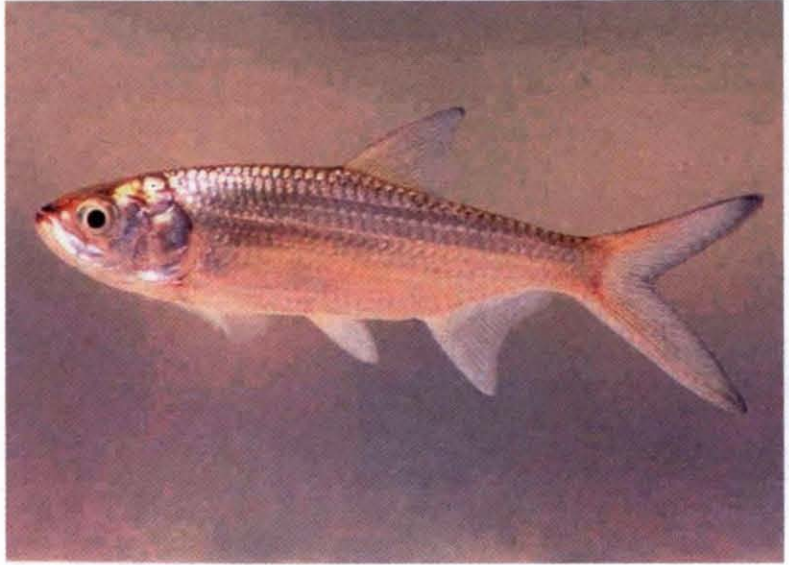
The Indo-Pacific Tarpon is popularly known as the Indian Tarpon. This species, in particular,

inhabits the tropical seas of the Indo-Pacific oceans, from where its young enters brackish and inland rivers. An intriguing fact about them is that, when in oxygen-poor water, tarpons breathe air from the surface of the water, using their swim bladder as a primitive lung. They can grow up to 1.5 m, and the greatest reported weight is 18 kg, but the larger Atlantic Tarpon can grow to more than 2 m and sometimes weigh 160 kg. In appearance, the Indian Tarpon is olive-green on top, and silver on the sides with huge scales; but the silver may be brownish-gold in estuarine waters. Its large mouth is turned upwards and its lower jaw contains an elongated bony plate. Also, the last ray of its dorsal fin is much longer than the others, nearly reaching its

Tarpons are fancied by Australians and American anglers, especially the Atlantic Tarpon. The one location most noted for this species is Boca Grande Pass on Florida's west coast that attracts anglers from throughout the world during the season.

tail. As with all fish belonging to the Order Elopiformes, the Indian Tarpon too, spawns (eggs of aquatic animals) at sea. Its flattened, transparent and eel-like larve, scientifically known as leptocephalic, migrate to inland waters. Its fingerlings and smaller specimens are seen to occur in freshwater for 4-5 months.

The Indian Tarpon is a slow grower, and mature at 7 to 13 years of age and therefore, have a rather long life. Here, I would like to share an interesting piece of information. During a three-year (2001-2004) ISRO (Indian Space Research Organisation) funded project on the faunal diversity of Sriharikota Island, fifty-three species of fish, consisting of marine, brackish and freshwater species, were recorded in the Island (for more information on the project, refer to 'Sriharikota – wilderness regained?', *Hornbill*, Oct-Dec, 2008). The island has a wide variety of aquatic habitats ranging from freshwater streams, small lakes to brackish water streams, brackish-saline lakes and creeks that flow into either Pulicat lake or the Bay of Bengal, and abandoned



Indian Tarpon *Megalops cyprinoides*

Sriharikota. I have, actually never come across the species in the fish markets of either the nearby Chennai or the others markets in Tamil Nadu and Kerala. This may be so as its flesh is not tasty and is bony. However, it is interesting that this fish is a common delicacy in the coastal towns of Karnataka, where its young are also caught and released into wells and ponds for fish culture.

The Indian Tarpon was till the 1970s a fancied species in the aquarium trade in Asian countries, but lost its importance after the arrival of arowanas and other more attractive and exotic species. I, sometimes fondly remember the lone young Indian Tarpon that I had in my aquarium in Singapore, when I was young. Few species rival it in its grace of movements – colour is not just what one should look for in selection of aquarium species. My family was quite upset on the day it suddenly died – I still miss it and its large eyes; no wonder its other name is the Oxeye Tarpon. 🐟

Once, its fingerlings were introduced into the Valvan lake near Lonavala, Maharashtra in 1939, in order to control Cyclops (an intermediate host of the dreaded, guinea worm) and for its 'sport value' to anglers. Adults, with 'tasteless and rubbery fresh' were caught during fishing operations in 1991, after a gap of 52 years!

irrigation ponds. During the project, we recorded the Indian Tarpon in all the habitats except for isolated water bodies, and abandoned irrigation ponds that were clogged with water hyacinth *Eichornia crassipes*. The Indian Tarpon is a not a very commercially important species in

*The powers of water are immeasurable.*

*In the form of ice, it can chisel rock as effectively as steel.*

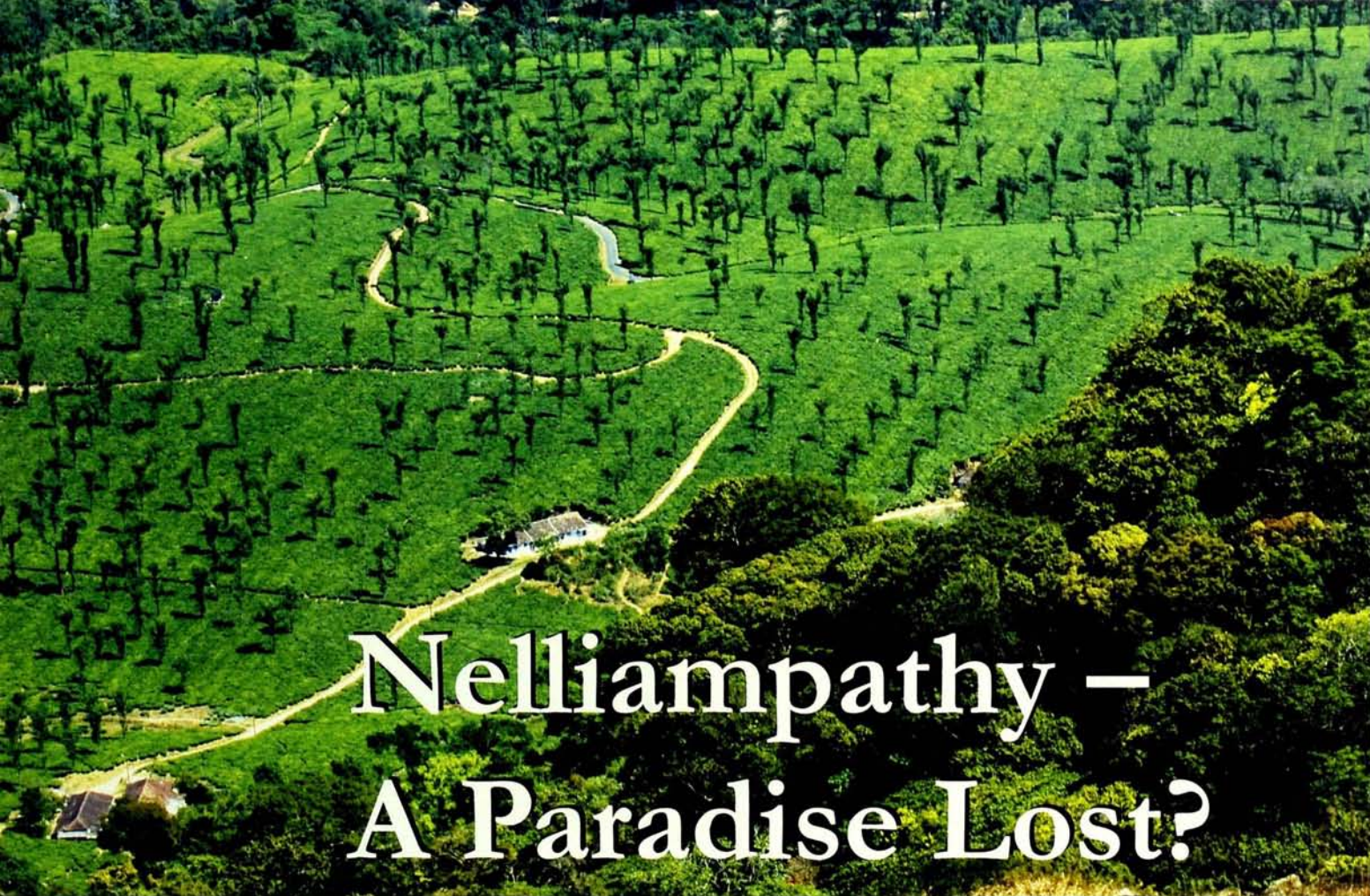
*Unloosed in a river, it can slice through*

*layers of volcanic ash like a knife through a cake.*

*Meandering in a shady stream,*

*it can make a home for green growing things.*

- Peggy Wayburn



# Nelliampathy – A Paradise Lost?

A vast stretch of forests were denuded for plantation

Text: **Miriam Abraham**  
Photographs: **N.A. Naseer**

**T**he oft quoted word ‘conservation’ becomes significant only when it is viewed on a long term perspective and with a clear vision of objectives. Conservation, as we understand today is the ‘in’ thing. Every other person talks of ecology and conservation; eco-friendly tourism, etc., these are trendy terms we hear everyday. Conservation is not pulling wool over peoples’ eye; it is a true science, based on ecological principles. Any short sighted action program to meet some ephemeral needs may induce irreparable damage to the ecosystem, which would act as a deterrent to nature’s time tested ways and means to make a comeback.

During my research on hornbills in the southern Western Ghats of India, I encountered several brimming conservation issues, most of which were due to the inconsiderate species of all, human beings! The major conservation issues prevalent were many to list – forestland encroachment, poaching, illicit quarrying, timber smuggling, illicit brewing (which ultimately leads to forest fire), not to mention ‘developmental’ activities! The most affected of all in my study

area was Nelliampathy. Nelliampathy hills are part of the High Mountain ranges of Western Ghats, which is situated immediately south of the Palakkad gap (which is a 25-40 km wide, continuous interruption in the chain of mountains of the Western Ghats).

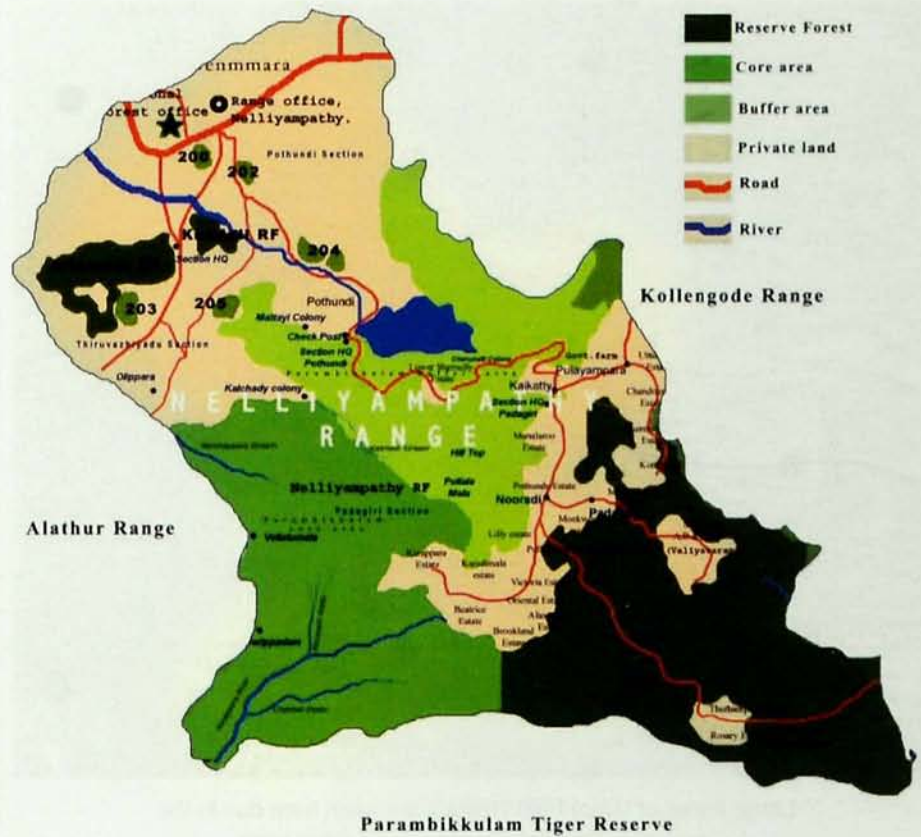
The Nelliampathy range falls under Nemmara forest division of Palakkad, Kerala. It lies between 10° 25' 10° 49' N-76° 26'-76° 54' E. The altitude here ranges from 40 m to the higher elevation up to 1,633 m above msl. Its topography is characterized by rugged and undulating terrains, ridges, rocky outcrops and valleys, taking off in various directions. Even though the temperature here varies from 8°C to 41°C and the average rainfall is 1,300 mm (on lower terrains) and 2,000 mm (on the higher reaches), there are strong, dry and desiccating winds blowing continuously across the state border from November to March through the Palakkad gap causing heavy loss of moisture, which in turn causes frequent forest fires in the drier tracts during summer. The forests in this division form catchments of numerous,



Miriam Abraham is currently working as the Conservation Officer at BNHS.

streamlets, streams, and rivulets etc. that discharge into major tributaries of rivers like Bharathapuzha, Karappara, Thekkady, Meenchadi, Ikshumathy, Gayathri, Chulliyar and Pothundi. The rich and lush green vegetation in this division, the rivers and other water courses sustain these parts of Palakkad district. It is a well-known fact that the hills of Nelliampathy, forming a part of the mighty Western Ghats, are the guardian angel of Palakkad district and protect its environmental equilibrium and ecological sensitivity.

On the southern side, Nelliampathy is contiguous to a chain of protected areas like Parambikulam Tiger Reserve, Anamalai WLS, Chinnar WLS and Eravikulam NP. Its proximity to Indira Gandhi National Park of Tamil Nadu and Parambikulam WLS gives much prominence to Nelliampathy hills as a buffer zone for the wildlife of these protected areas. All the animals found in the Protected Areas are reported from Nelliampathy hills too. The up hills and shola pockets of Nelliampathy are



This map clearly indicates that the future of Nelliampathy is an integral part of the connected TR's and WLS



Estates, bereft of human pressures, making a comeback as an Evergreen Forest habitat



Large flocks of Great Pied Hornbill are seen here due to the year round availability of figs and other fruits

considered to be a few among the best remaining biodiversity centres of southern India.

The Nemmara division, of which the Nelliampatty range is a part, is characterized by the presence of reserve forests, vested forests, leased estates and a number of Ecologically Fragile Lands. There are 52 leased estates within the jurisdiction of the division. The Nelliampathy range has both Reserve forest (RF) and Vested forest (VF). Major portions of the VF are scattered in the plains and lower hills; they are in denuded state due to over exploitation and biotic interference in the past. The extent of Vested forest is approximately 143.3416 sq. km and that of Reserve Forest is 205.517 sq. km. There are a total of 195 notified Ecologically Fragile Lands (EFL) extending over 1123.614 hectares in the Division. Extensive areas of Nelliampathy RF were leased out to private individuals and limited companies for raising cash crops like coffee, cardamom, rubber etc., and such

areas still exist within the RF. Large number of litigation in respect of estates, vested forests and Ecologically Fragile Lands are going on in Forest Tribunal, District Court, High Courts and Supreme Court.

#### A Tragic Past and Regulations

Nelliampathy has a unique identity and history, a tragic history of destruction and the heavy loss of its evergreen forests and wildlife. Once clad in pristine evergreen forests, this area has been subjected to heavy human interference for the past century and what has been left behind is a network of several private estates of Coffee, Tea, Orange, Cardamom and Rubber, interspersed with patches of evergreen forests, secondary forests and high altitude grasslands.

The forest tracts under the present Nemmara Division belonged to the erstwhile Princely State of Cochin and Malabar districts of then Madras Province. All the present RF was under

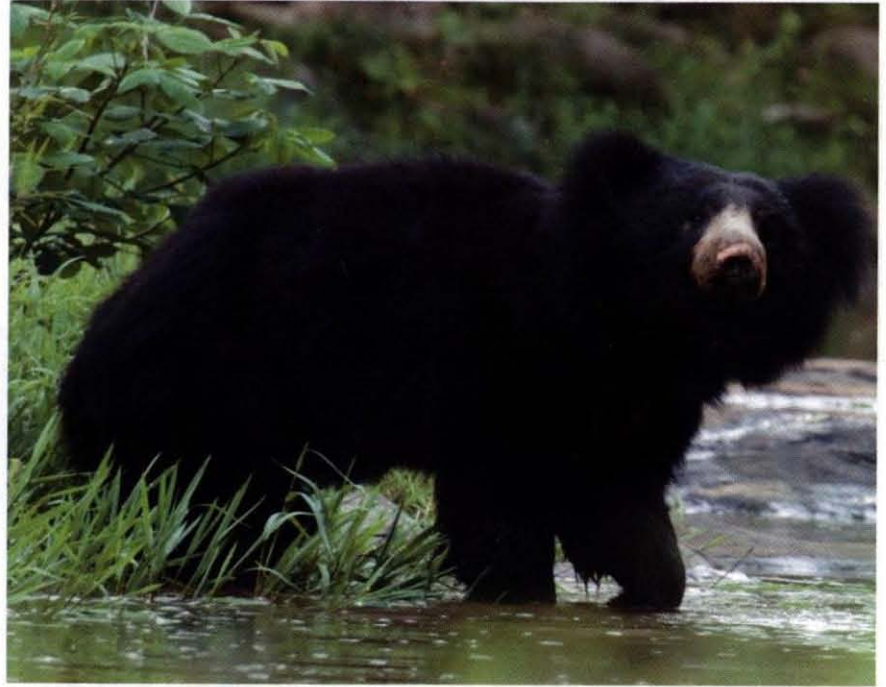
the control of Maharaja of Cochin and the VF tracts were in the possession of various feudal chiefs of the locality. In the olden days the forests were owned and managed by the "Naduvazhi" (King) who were interested only in the immediate revenue that the forests would fetch. The forests were subjected to unregulated commercial exploitation by way of selection felling, without looking into the silvicultural needs of the crop and without regenerating the depleted portions. After 1800s, the forest areas were leased out to contractors, for definite periods, primarily for extracting timber. The contractors resorted to unregulated felling, so as to extract valuable species having high demand in the market. There were no restrictions on contractors; they could fell any number of trees, of any girth in the area that was leased out to them. There was no supervision to monitor the felling. This resulted in exploitation of valuable species, damage to the remaining crop and considerable wastage. The first lease was in 1863 at a time when there was no regulation or Land Revenue Manual. Most of the leases were for a period of 99 years or on "for ever", i.e., perpetual lease. But some leases executed in the second half of the century are found to be for 40 years. Till 1949, the vast expanse of forests were controlled and managed by the local chiefs according to their whims and fancies. It was not possible for the Government to exercise control over the management of forests owned by these chieftains. Many legal difficulties existed to procure and declare them as Reserve Forests. The forest areas were subsequently leased out indiscriminately for the "Grow more food scheme", popularly called as "Hill Paddy Scheme", after clear felling of trees in suitable areas. About 5,000 acres of forests were straightaway felled for this purpose. These areas were developed into estates that formed

enclosures within the forests. Later, many of these leased out estates were subjected to a series of transfers without permission; acquisition of right in reserve forestland after October 25, 1980, is invalid and cannot create any right on the present occupants as per the provisions of Forest Conservation Act, 1980.

There were 16 well established mining quarries near to the forest area in the Division. The Forest Department have taken strict action to stop all mining quarries operating in the area. Large numbers of cases have been registered in various Courts against the forest department for the stoppage of these quarries.

The estate authorities have indulged in violation of lease conditions by committing large number of forest offences. They are also involved in violation of lease conditions by conducting tourism activities without prior permission of Central Government as stipulated in the Section 2 of the Forest Conservation Act, 1980.

But now, due to stringent measures and keen interest of the present Divisional Forest Officer, Mr. Dhanesh Kumar, several private estates had been evacuated. He fought against many land-estate cases and evicted many encroachments in forests. Around eight estates with a total area of 1,550 acres of land under illegal possession of private individuals were dispossessed and taken back to Government during 2008-2010. An additional 715 acres of Ecologically Fragile Land which belonged to three estates were also added to the recovered land. Proposals for termination of 11 estates have been sent to higher officials to take further action to save the government interests. The irony of this whole issue is that, the DFO and conservator of forests are facing penal proceedings for the stern actions they took for getting the encroached land back for the government.



Diversity in habitat – Grassland to Shola to Evergreen – support a healthy population of Sloth Bear

**Rich wildlife**

It has been observed that the wildlife of the area is regularly using the remaining natural forests and plantations, as habitat as well as corridors for migration. There is a trend among the lessees inside the forests to convert the remaining natural forests with them into plantations. If these corridors are blocked the migration route of the wild animals from the three protected areas (namely Anamalai, Parambikulam and Peechi) adjacent to Nelliampathy, will be blocked. These natural forests need be identified and protected from further destruction in the interest of wildlife conservation.

The floristic and faunistic diversity of the Nelliampathy can be attributed to many reasons and one of which is its unique topographical position in the Western Ghats, just before the beginning of the great barrier, the Palakkad gap. Palakkad gap in the Western Ghats has a special tectonic feature formed as a result of fault during lower Miocene period. Any wildlife enthusiast standing

atop one of the many grass clad knolls of the Nelliampathy could behold what is seen around him only with a sense of loss. But the vestiges that remain there is enough to aspire for a full green tomorrow. Several herds of sturdy Nilgiri Tahr *Hemitragus hylocrius* survive here only because of its incredible evolutionary adaptations and the alertness of the wild. The Tahrs of Nelliampathy are a breed apart. They stand in contrast to the much pampered Tahrs of Eravikulam NP. A good population of Lion-tailed Macaque *Macaca silenus* with habitat contiguity to Parambikulam, Anamalais and Vazhachal is a deliberately unsung glory of the Nelliampathy. The occasional sightings and commonly seen indirect evidences of tigers and leopards is a testimony to the prey diversity and density still prevalent here. The density of Hornbill population in this Nelliampathy – Parambikulam – Vazhachal – Anamalai portion is simply amazing. All the four species of hornbills of Western Ghats are seen in this stretch.



The survival of the endemic species, Lion-tailed Macaque, depends mainly on the habitat quality and contiguity

The recent sighting of Nilgiri Marten *Martes gwatkinsi* and the Jerdon's Palm Civet *Paradoxurus jerdoni* are indicators of the regions' wildlife wealth. Out of the 16 endemic bird species of Western Ghats, 13 are seen in Nelliampathy.

**Conclusion**

The present DFO can be proud of the changes he made in the area. He took strict actions against timber smuggling, illicit quarrying, illicit Brewing, ganja cultivation and wildlife cases, which ultimately put a barrier on all these degrading activities. It is really amazing to see the changes in the region for the past few years. Nature's healing powers on others and on itself is simply astounding. The evicted and abandoned estates are slowly coming back to life. A wildlifer fortified with these sights will feel immense pride and hope as he becomes aware of the commitment the Department has shown in regaining this

lost paradise. The seeds of evergreen trees which endured the pressures are coming up under the shades of secondary forest plants. If the area is left like this for few more years to come, with enough protection by the forest department, we will get the rich bounty back.

If the present trend can be taken as the prevailing spirit in the department, Nelliampathy is all set for a jubilant come back to its once existing wildlife splendor. It will undoubtedly form a part of the beautiful and rich natural heritage that we hand over to the next generation. The ultimate aim of conservation is to hand over the natural heritage without having any unredeemable havoc played on it. Conservation program becomes a success when what is handed over to the next generation is in the better state than when we had acquired it. Every year we celebrate UN declared special years ... like we celebrated International Year of

Biodiversity last year, we are celebrating 2011 as International Year of Forest ...

But the real sensitive question we have to ask ourselves is whether we have good quality forests now? What can we do to improve the status of the forests and wildlife? It is not just the job of the state or central forest department; it is the duty of every citizen. As, it is after all our survival, our water and air that is solely depending on these green covers ... The lease fee that the estates pay for a year, per hectare is appalling. It is just Rs. 2/ha per year. This was the fee set in 1863 during the first lease. Our rich forests are just worth a few thousands? We need to reflect and act. Considering the richness and history of the area, Nelliampathy needs its own special status, a WLS status or at least a PA (Protected Area) status which will ultimately stop the anthropogenic disturbances ... So the PA will ultimately become a PR – Paradise Regained!!!! 🌲🌲

## 8th Rare Books Exhibition at BNHS

**December 11-17, 2010:** BNHS organized the 8th Rare Books Exhibition jointly with Rotary Club of Bombay Sea Coast and IndusInd Bank. This exhibition "Once Upon a Time" was inaugurated by Rotary International President Elect 2011-2012 Rotarian Kalyan Banerjee on December 10, 2010, at Hornbill House. Dr. Ashok Kothari, Hon. Sec., BNHS, welcomed the Chief Guest and briefed about the exhibition. Mr. B.G. Deshmukh, President, BNHS, spoke of the role of BNHS in conservation activities and emphasized on the need for greater advocacy.

The week long exhibition, which was visited by over 3,500 book lovers and nature enthusiasts, displayed over 100 rare and precious books. It gave the citizens of Mumbai a valuable opportunity to take a look at the treasures of old and precious books from the BNHS collection and the private collection of Dr. Ashok Kothari. ■



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R-L: Dr. Ashok Kothari, Hon. Sec., BNHS, Rotarian Kalyan Banerjee, Rotary International President Elect 2011-2012, Rotarian Dr. Jayant Kulkarni, District Governor, Rotary District 3140 and Mr. B.G. Deshmukh, President, BNHS, at the exhibition

## BNHS organizes Bird Banding Workshop

**January 25-27, 2011:** The BNHS conducted a 'first-of-its-kind' Bird Banding Training Workshop at Sinhgad valley at the base of the Sinhgad fort near Pune. The workshop's main objective was to give a first-hand experience in handling and ringing birds so as to create awareness of the importance of scientific study and tracking birds. The workshop saw active participation of the BNHS staff, members, Forest Department Officials from the Pune region and general public. An eight member team from BNHS led by Dr. S. Balachandran, Assistant Director, conducted the workshop. The workshop was sponsored by Mr. B.G. Deshmukh, President, BNHS, from the Jayati Deshmukh Memorial Fund. Mr. Adkar, Assistant Conservator of Forests, Pune Division, and Mr. B.P. Jadhav, Range Forest Officer, Sinhgad area, supported the programme by visiting and encouraging forest department staff participation.

A total of 75 birds of 23 species were ringed during three days. This includes species such as Asian Paradise



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BNHS staff members and the participants during the Bird Banding Workshop at Pune

Flycatcher, Indian Robin, Oriental Magpie Robin, Red-vented Bulbul, Ashy Prinia, Jungle Babbler, Yellow-throated Sparrow, Spotted Dove, Tickell's Blue Flycatcher, Indian Pond Heron and Rufous Treepie. Each bird was studied for features such as age, length of wings, tail and bill. The ringed birds were then released close to the place of their capture. ■

## BNHS Curator Awarded



RAMAN KULKARNI

Dr. S.R. Patil awarding Mr. Varad Giri, Curator, BNHS, the Nisarga Mitra Award for 2010-11

## Avatar Flourishes



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Avatar, the Banyan tree, nurtured for many years by Dr. Ashok Kothari, Hon. Sec., BNHS, flourishes on CEC land at Mumbai



## MoU signed between BNHS and ONGC

**January 11, 2011:** In 2007, BNHS with financial support from ONGC started the 'Mangrove Restoration and Conservation Education Unit'. After the successful completion of Phase-I of the Project, BNHS and ONGC, signed a MoU for Phase-II for a period of 3 years starting January 1, 2011, to December 31, 2013. The MoU was signed by Dr. Asad Rahmani, Director, BNHS, and Mr. Anup Kumar, Executive Director, Health Safety and Environment, ONGC, in presence of Dr. A.K. Hazarika, CMD and Director (Exploration), ONGC, and several officials at ONGC-Delhi.

During Phase-I, about 150 ha of mangrove restoration was done by BNHS at ONGC-Gandhar. A Mobile Education Unit covered over 700 schools and 80,000 students and community members across coastal Maharashtra and Gujarat. Under Phase-II nearly 200 ha of mangrove plantation will be done at ONGC-Gandhar, Bharuch, and 40 ha at ONGCHazira region, Surat, with the locals' involvement.



Courtesy: ONGC

(L-R): Mr. Anup Kumar, Executive Director, HSE, ONGC, Dr. Anil Agnihotri, Manager, HSE, ONGC, Dr. A.K. Hazarika, CMD and Director (Exploration), ONGC, Dr. Asad Rahmani, Director, BNHS, and Mr. Deepak Apte, Deputy Director, BNHS, were present at the function

Also, conservation education units will carry out education programmes in coastal regions of Gujarat and Maharashtra and initiate community led mangrove afforestation drive in coastal regions of Maharashtra. ■

## BNHS and RSPB launch SAVE Consortium



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Mr. Jairam Ramesh, Union Minister, Environment and Forests, Dr. Asad Rahmani, Director, BNHS, Mr. R.P. Sapra, Chief Wildlife Warden, Haryana, Prof. Ian Newton, Chairman, SAVE Consortium, Dr. Tim Stowe, Director of International Programmes, RSPB, and Mr. Ravi Singh, CEO, WWF at the launch of SAVE Consortium

**February, 17, 2011:** BNHS and UK-based Royal Society for the Protection of Birds (RSPB) launched the SAVE (Saving Asia's Vultures from Extinction) Consortium in New Delhi. Union Minister for Environment and Forests, Mr. Jairam Ramesh launched the Consortium, along with a 16-minute

film on the vulture conservation work done in South Asia, in English and Hindi. After the successful breeding of three Critically Endangered Vulture species in captivity, under the first phase, the launch of the Consortium marked the beginning of the second phase of the project. The main aim of which is to identify Vulture Safe Zones (free from the killer drug diclofenac), for the eventual release of the birds bred in captivity in a 4-5 year time-frame. Prof. Ian Newton, Chairman, SAVE Consortium, and Dr. Asad R. Rahmani, Director, BNHS, were among the speakers at the event. SAVE Consortium aims at working towards coordination, guidance, fund raising and advocacy work for vulture conservation at international level. ■

## 'Land of the Tiger' Exhibition in Pune

**January 13-15, 2011:** BNHS Tiger Cell, Nagpur, had organized an Exhibition of Wildlife Photographs at the Balgandharva Hall. More than 200 photographs by the Head of Tiger Cell, Mr. Sanjay Karkare, were displayed at the exhibition. The exhibition covered the flora, fauna, human-animal conflict, environmental and social issues from the three Tiger Reserves in the Vidarbha region of Maharashtra, namely Tadoba- Andhari Tiger Reserve, Melghat Tiger Reserve and Pench Tiger Reserve. The exhibition titled 'Land of the Tiger' evoked great response from locals and BNHS members alike. ■



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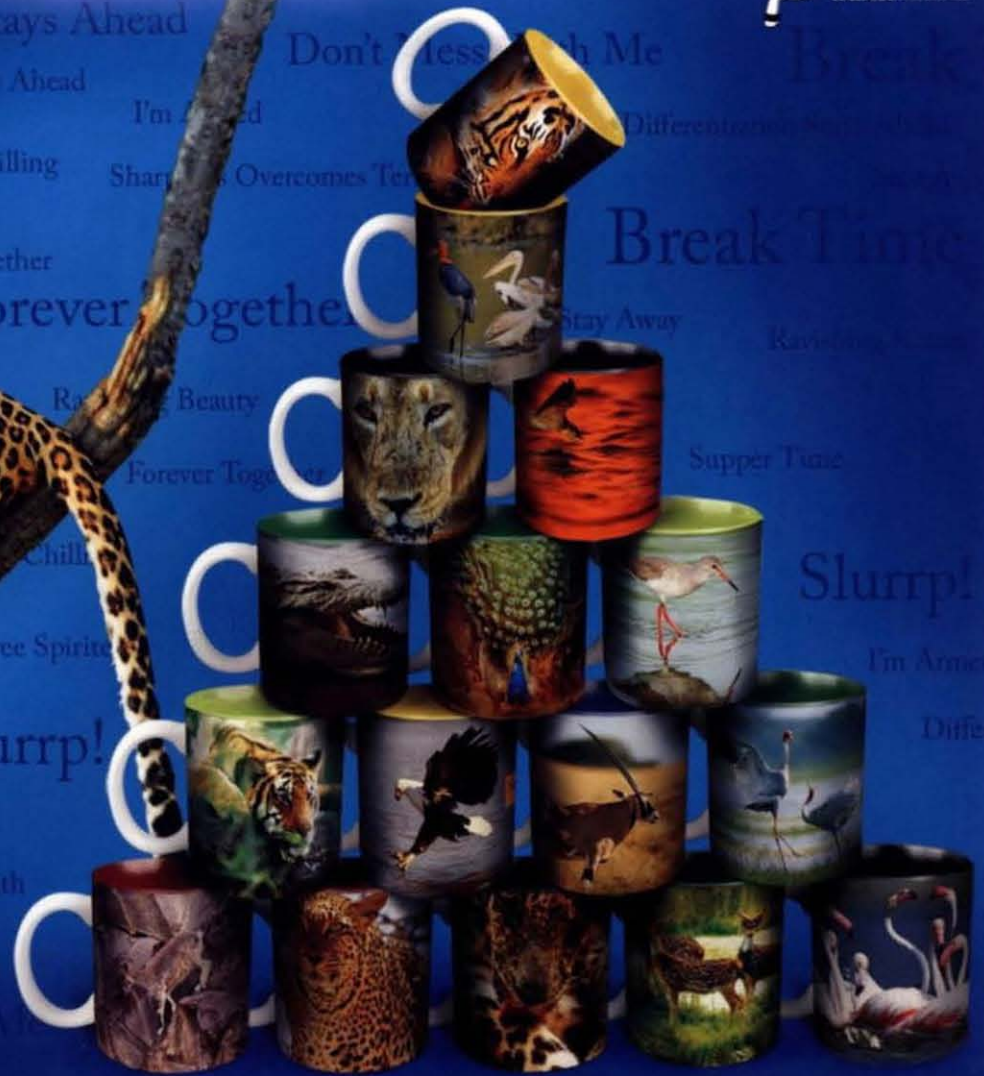
(L-R): Mr. B.G. Deshmukh, President, BNHS, and Mr. Sanjay Karkare at the inauguration of the exhibition

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on what you do today

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Representing future generations and their interests in today's decision-making processes is ingrained in the ethos of MSPL. Our approach therefore transcends regulatory, programmatic and jurisdictional constraints, and emphasizes on synergizing ecology and economy.

It is this responsibility towards mother earth and its future residents that has led us to invest in wind energy. An initiative which shall ensure availability of much-needed power for accelerated progress, at a minimal environmental footprint. Today with a Group wide installed generation capacity of 216 MW we are one of the largest producers of wind energy in the country and we are on course to double this capacity by 2012.

At MSPL, we want to make a difference and it is our endeavour to gift our children a more sustainable world than the one we inherited.



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