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APRIL-JUNE, 2006



**BNHS**  
India

**BOMBAY NATURAL HISTORY SOCIETY**



# Home, Sweet Home.....



## Indian Skimmer

*Rynchops albicollis*

The Indian Skimmer hunts actively up and down the river in daytime as well as during moonlit nights. Its call can be described as a shrill chattering scream and also a nasal *kap, kap*.

The Indian Skimmer was once abundant in the major river systems of the Indian subcontinent and fairly common in South-East Asia. However, due to the ever increasing human usage of wetlands, many colonies have been plundered and many feeding areas have been over-exploited, polluted, flooded or drained. This has led to a decline in the skimmer population and it is now confined to the major river systems of Pakistan, northern India, Bangladesh, Myanmar and Indochina (Laos, Cambodia and Vietnam). A very concerted conservation effort is required to protect this unusual waterbird. The National Chambal Sanctuary, Madhya Pradesh contains one of the healthiest skimmer populations in Asia.

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

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



Narora Atomic Power Station (above) in district Bulandshahr (U.P) is located on the right bank of river Ganga. Two units of 220 MWe each, are in operation.



*Indian Skimmer* can be spotted on the banks and sand-islands of Ganga adjoining the Exclusion Zone of Narora Plant.



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April-June, 2006



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### SAVING THE TIGER

Despite the best conservation measures, saving the Tiger still remains a challenge for all of us. Today, more and more tiger populations are fragmented and most tiger habitats are surrounded by a growing human population, giving rise to new conflicts and challenges.

The Tiger Cell of the Bombay Natural History Society, one of the partners of the Satpuda Landscape Tiger Project\*, is entrusted to undertake conservation education and environmental awareness activities for the people who live in and around national parks and wildlife sanctuaries in Maharashtra and Madhya Pradesh. These are the people who really matter and can make a difference. The aim is to make these people partners in conservation by making them realize the importance of a forest and its flagship species like the Tiger. Healthy forests will ensure sustained water regime, soil fertility, fodder for the cattle and livelihood for people. A thriving forest can provide the much-needed ecological security to ensure a sound economy for the region.

Conservation can succeed only if locals are made partners. The forests should be their lifeline and they in turn should protect the forests as their own. Eco-tourism is now popular world over; tourists visit wild places and the revenue from such tourism is ploughed back for the betterment of the place and locals. India has a great potential to exploit this avenue. However, it should be ensured that the revenue generated from such activity benefits the local population directly.

With this photograph of the Tiger, which I had taken in 1988 in Ranthambore National Park, I share with you an unforgettable experience of coming face to face with the Tiger in the wild. Yes, once in a lifetime, one must see this magnificent animal in the wild. And then I am sure you will never let the Tiger go EXTINCT.

**B.G. Deshmukh**  
President, BNHS

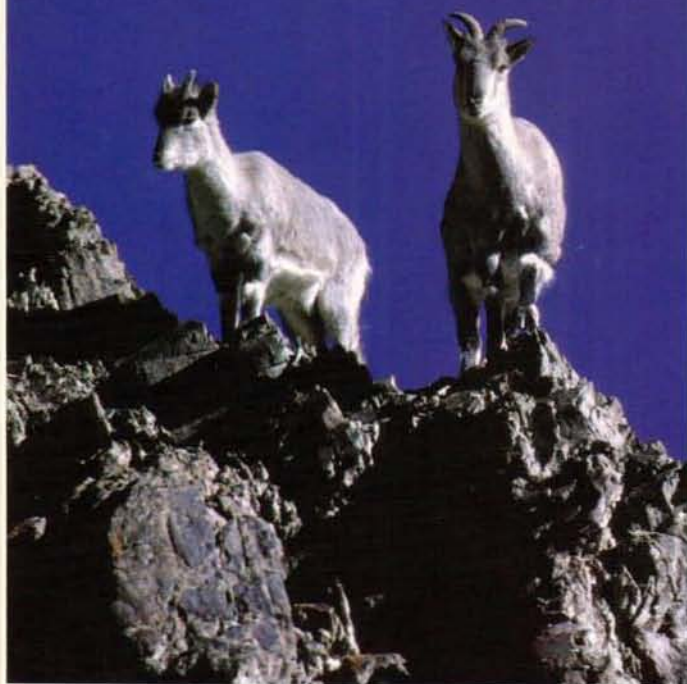


\* Project funded by the Born Free Foundation, UK



# Wildlife at Hemis

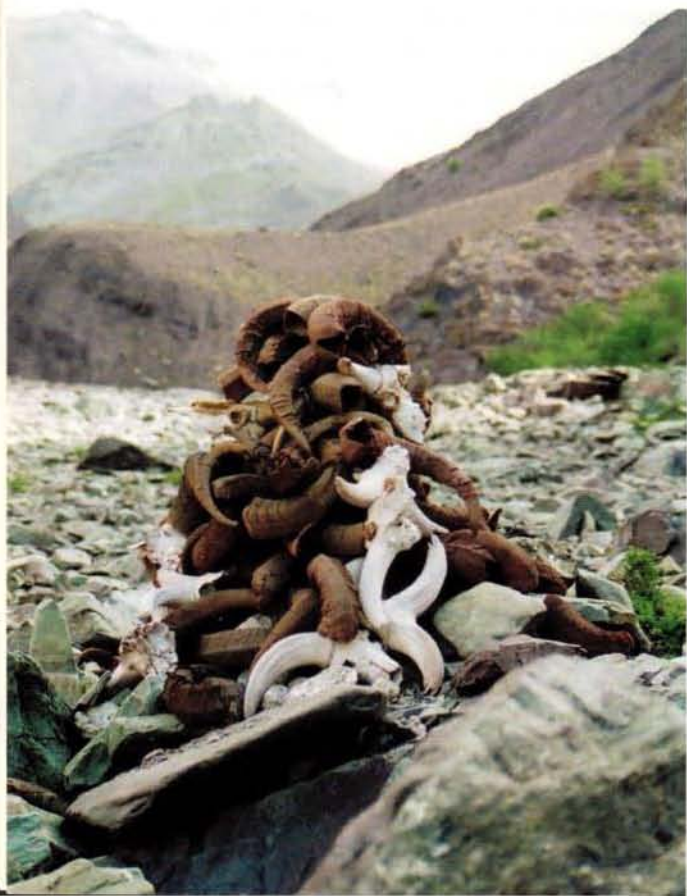
Text: Tsewang Namgail



JOANNA VAN GRUISEN

Above: Bharal are the most abundantly found sheep in Hemis National Park as well as in the entire Ladakh region

Below: A pile of bharal horns offered in reverence to the mountain spirits of the Zangskar Range



TSEWANG NAMGAIL

One afternoon Chris and Kishor, my colleagues from Norway, and I squeezed into our Land Cruiser and headed towards Rumbak Valley in Hemis High Altitude National Park. A long and jerky drive on a desiccated plateau above the mighty Indus river, brought us to the confluence of Rumbak and Rumchung streams. We camped here on a slanting meadow, at the edge of a village. Later, I sat outside my tent enjoying the shooting stars in the black sky; the evening zephyr blowing down the valley was pleasant and invigorating.

Named after the famous Hemis Monastery, the Park was established in 1981 by the Jammu and Kashmir Government. It is the only national park in Ladakh. Hemis is the first national park to be established in India on the northern side of the Greater Himalaya. Encompassing an area of c. 4000 sq. km, the Park harbours a unique assemblage of high-altitude flora and fauna. The north-western part of the Park is the only place on earth where four magnificent mountain sheep and goats; Tibetan Argali *Ovis ammon*, Ladakh Urial *Ovis vignei*, Asiatic Ibex *Capra ibex* and Bharal *Pseudois nayaur* occur together. This is a haven for the highly endangered Snow Leopard *Uncia uncia* – the ‘flagship’ species of the Trans-Himalayan ecosystem. The diversity of wildlife in the area have long attracted wildlife enthusiasts and researchers alike.

The next day, I clambered the ridge opposite the camp and scanned the slopes across the Indus river. The crescendo of the murmuring river filled the morning breeze when I found a lone Ladakh Urial rushing swiftly across a russet-coloured slope, perhaps looking for the herd that had left for greener pastures. On a closer look, it turned out to be an elegant, rufous-grey ram with stately horns. The Ladakh Urial is endemic to the region, and is distributed along two major rivers: Indus and Shyok. The species suffered high persecution by sportsmen as well as pot-hunters in the last century, largely due to its occurrence along the Leh-Srinagar highway that runs along the Indus for about 100 km.





TSEWANG NAMGAIL

The rugged mountainous terrain of the Park provides vantage points to locate and study its ungulates

At noon we arrived at Zhingchen, a small village consisting of two households. After an hour's uphill walk in the searing heat we squashed under a flank of rock for shade. I was soon taken aback by two Red-billed Choughs *Pyrrhocorax pyrrhocorax* swirling and tittering in the hazy air. Hemis has a rich avifauna that includes exquisite birds like the Snow Cock *Tetraogallus tibetanus*, Golden Eagle *Aquila chrysaetos* and Rose Finch *Carpodacus rubicilla*.

We broke camp early the next day for Rumbak – a hamlet of about twelve houses hustled on a red scree-slope. On our way, we saw a Golden Eagle's nest from near a *Lato* (animal horns piled up on stony structures supporting twigs of Juniper, an offering of reverence to the mountain spirits). When seen through a spotting scope the noble bird perched on its

nest, appeared like a monarch on his throne. We hobbled up the valley after this grand sighting. Further up, we saw Snow Leopard spray-marks at several places, mostly under flanks of rock indicating that the animal frequently walked along the bottom of the valley.

In the evening, we visited the village where we saw Bharal grazing on the slope across the stream. The grazing of these mountain ungulates in close proximity to human settlement reflects the harmony between man and wild beast in the valley. "Local people never hunt," said Namgyal, a villager. "Only the paramilitary forces hunted in the past, but it is totally discouraged now," he says. However, the story is different with the wild predators that kill domestic livestock. They are often persecuted in retaliation, which has been acknowledged as the major cause

of conflict between large carnivores and the pastoralists in the area. Some international organisations, in collaboration with the Park managers, are currently working towards mitigating such conflicts.

Early one morning, I followed a dusty path leading to the Kharlung nullah in search of the Snow Leopard. The villagers told me that they had often seen the cat in this nullah. There I sat among some small plants that had made haste to bloom without trying to grow tall. I scanned the slopes for a long time, but to no avail. One has to wait patiently for days, months and even years for a glimpse of this extremely shy cat. A herd of Bharal nibbling on a rocky slope nearby consoled me.

Bharal, with rams measuring c. 60 cm high at the shoulder and handlebar horns is the most abundant



## Wildlife at Hemis

JOANNA VAN GRUISEN



Above: Robin Accentor (*Prunella rubeculoides*) is a small, compact and somber-colored bird that resembles sparrows, but for a more slender and pointed bill. In summer, accentors are chiefly insectivorous, and in winter they feed mainly on seeds

Below: Tibetan Partridge (*Lerwa lerwa*) occurs in the Zangskar range just south of the Hemis National Park. It has a loud, harsh and frequently repeated whistle

ungulate in the Park as well as in the entire Ladakh Region. The general colour is brownish grey suffused with slaty blue. It is distributed across the entire Tibetan plateau and its marginal mountains. The Bharal is a sturdy animal with strong and muscular legs that enable it to climb steep cliffs, when chased by predators such as the Snow Leopard and Wolf *Canis lupus*.

Our study on the Bharal, and the Tibetan Argali, which occurs sympatrically with it, revealed that the Bharal's high affinity towards cliff minimises its interaction and thus competition with the Argali, which has long legs that enhance its strategy of outrunning predators in open areas of its preferred habitat.

Tibetan Argali was absent in the

reserve until 1978, when three individuals arrived in the Rumbak catchments, and established a small population. Today there are about 25 individuals, which are mostly found near Ganda La (4,900 m) in the upper Rumbak catchment. One afternoon, I saw three rams with massive horns forming almost complete circles around their ears. I sat on a sun-

JOANNA VAN GRUISEN





Above: Hemis High Altitude National Park is also home for many small mammals such as Himalayan Weasel *Mustela sibirica*.

Below: White-Throated Dipper (*Cinclus cinclus*) has short wings and tail, and is adapted for feeding in or under running water. It inhabits fast flowing rivers and streams in hilly or mountainous country



TSEWANG NAMGAIL

cracked clayey ground and watched them until they fled down the hillside leaving me in a cloud of dust. The Tibetan Argali is the largest wild sheep in the world, standing at 71 to 81 cm at the shoulder with horns measuring c. 90-100 cm. The ram is greyish brown, darker on the sides with a white rump patch, whereas the female is paler with small horns and a less prominent

rump patch.

Besides large mammals, there are a myriad of smaller ones that enhance the biodiversity of the Park. These include the Himalayan Marmot *Marmota bobak*, Tibetan Woolly Hare *Lepus oiostolus*, Mouse Hare *Ochotona* spp., Stone Marten *Martes foina* and Himalayan Weasel *Mustela sibirica*. The Marmot, a very important prey

species of the Snow Leopard during summer, lives in small colonies in a network of burrows where it hibernates during the icy winter months. It is often amusing to see the animals in a colony, especially when they unfurl their social life: mock-fighting and chasing. If approached closely, one animal, perhaps the sentinel, makes a high-pitched shriek



JOANNA VAN GRUISEN



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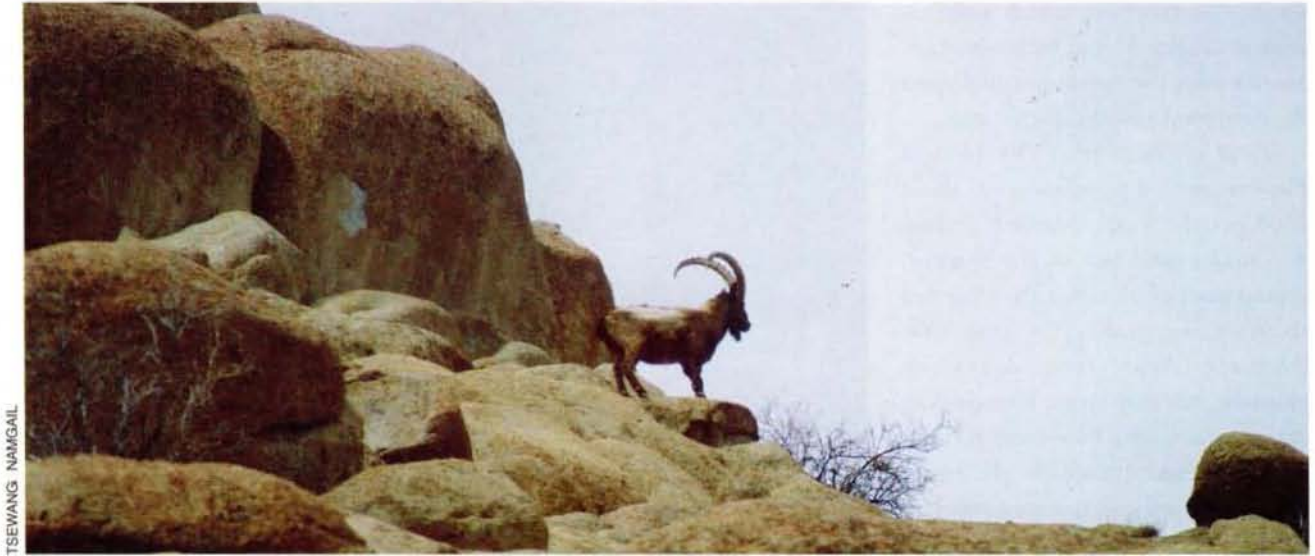
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TSEWANG NAMGAIL

Mountain ungulates like the Asiatic Ibex *Capra ibex* enrich the biodiversity of Hemis

and the entire population rush to their burrows.

Our most exciting day at the Park was when my colleagues and I finally saw the Snow Leopard. One evening, while returning to the camp, I saw the silhouettes of two leopards on a ridge above the path. We followed them for a closer look, a long cherished dream! I clambered the gravel-strewn slope, hiding behind piles of stone, and surprisingly found the splendid cats resting just 15 m away from me. I was

scared and mesmerised to see the animals that, until then, I had always considered as elusive as the Himalayan Yeti. They sat there for about ten seconds, and gazed at me with their frosty eyes and then moved away. Later we could see one of them for about 5 minutes before it disappeared amongst the stones.

There are some wonderful peaks in the Park, including the mighty Stok Kangri (kangri means glacier in Ladakhi; 5,600 m), which makes the

scenic beauty of this area matchless. I was however satisfied with climbing smaller peaks (5,000-5,300 m), which provided a birds eye view of the entire study area. I often sat on these vantage points to locate argali and bharal. One day while scanning the ostensibly barren slopes, I saw a caravan of small donkeys climbing up the Ganda La in a single file. The animals were winged with jerricans of kerosene oil and sacs of rice and flour. Trucks may soon replace these animals since a road is



TSEWANG NAMGAIL

Bharal has strong and muscular legs that allow it to climb steep cliffs



## Wildlife at Hemis

under construction, which will link several villages of the Park with Leh. Such developments will certainly upset the ecological balance of this area.

There are more than 15 villages in the Park with a population of about 1500 people. Since livestock rearing is a major land use in the reserve, several parts of the Park are subjected to intensive grazing by domestic livestock. Apart from degrading pastures, this may create disturbances detrimental to the long-term survival of endangered species like the argali. This wild sheep was observed avoiding herds of domestic sheep and goats, perhaps in recognition of the keeper and guard dogs as threats.

Approximately one third of the livestock population that graze the Rumbak catchments during summer belong to villages outside the boundary of the Park. Of these, animals like yaks are free ranging, while the Park residents herd sheep and goats on lease in order to accumulate manure for the agricultural fields. Furthermore, mules, horses and donkeys that carry the gears of trekkers graze the area. Ever since Ladakh was opened to tourism in 1974, the number of tourists that trek through the Park has been rising steadily. This in turn has increased grazing intensity, which threatens to expedite the resource depletion, and if it continues apace it may exclude the wild ungulates from the area.

The conservation challenges are further complicated by the remoteness and ruggedness of the area. The current strength of the field staff of the Wildlife Protection Department at Leh is less than 30 individuals. They are responsible for the management of one national park and two wildlife sanctuaries. In such a scenario it is extremely important to seek cooperation from the local communities and



We wound the camp after an unforgettable journey that brought us close to the elusive snow leopards at Rumbak valley

involve them in the park management programs.

During summer the domestic sheep and goats are taken to higher camps for, at least two months. Lilangtse in the argali range is one such camp. One sunny day, Morup, my assistant and I went to Lilangtse. As we talked to some kids, who tarried on a dusty path, a herd of argali rams appeared on the ridge above us. I let the kids see the animals through the telescope. "Wow! *Izug chenmo doog* (Wow! They are so big)," exclaimed a kid. They were seeing the animals so close for the first time. Later, the village headman invited us for tea. After talking about the Snow Leopard, Argali and the weather for sometime, we fell silent. The silence was soon broken by the bleats of two lambs; bleating in chorus, they were perhaps announcing the return of their mothers from the pastures.

It was our last night in Hemis, the moon was bathing the mountains surrounding us with its dazzling silver light. I sat on the roof of the Yurutse house, where we had had a great time

with its warm and hospitable residents. Dawa, who drove cows up the valley every morning, always bore an unfathomable smile on his countenance. His grandfather had incredible tales about the Argali, including the one describing the animal's arrival in the area about three decades ago and how they first made them welcome.

The Hemis High Altitude National Park continues to support good populations of species like the Bharal. If managed properly, it may continue to remain the most popular destination in India for high-altitude wildlife admirers, for centuries to come. I hope that the Snow Leopard, Bharal, Ibex, Urial and Tibetan Argali roam the hills and vales of Hemis as long as the mountains pierce the lonely vistas. ■



Tsewang Namgail has been working on the wild ungulates of Ladakh for the last six years. He has a M.Phil degree from the University of Tromso, Norway. Currently, he is pursuing a doctoral degree at the Wageningen University in Netherlands.



The Painted Stork is found in India, Pakistan, Bangladesh, Nepal, China, Myanmar, Thailand, Cambodia and Vietnam and has an estimated global population of less than 25,000. It is listed as Near Threatened in the Red Data Book and features in Schedule IV of the Wildlife Protection Act, 1972.

I have been visiting Bhadalwadi Tank area for the past several years to study Grey Herons *Ardea cinerea* and Indian Pond Herons *Ardeola grayii* nesting on the trees standing in the compound of the zilla parishad school of Dalaj, near Bhadalwadi.

Four years ago, we rescued about fifty juvenile Grey Herons, sheltering them from a hailstorm. With the consent and help from J.C. Daniel, Honorary Secretary of BNHS and the Forest Department, we were able to ring these birds prior to their release. This cooperative effort by BNHS, Forest Department and ELA Foundation not only helped save these birds, but also proved fruitful in understanding their movements. Eight months later, we recovered one ringed heron at Neelambar district in Kerala.

Painted Storks, Grey Herons, Black Ibis *Pseudibis papillosa*, Oriental White Ibis *Threskiornis melanocephala*, Glossy Ibis *Plegadis falcinellus* and Asian Openbill Stork *Anastomus oscitans* nest on trees in the Bhigwan and Indapur regions, both within 20 km radius from Bhadalwadi, for the past 15 years or more, but in small numbers from 5 to 50, all together. The nests have never been lower than 12 m from the ground.

Bhadalwadi tank is a small water body formed about 40 years back, sprawling over 350 hectares and from 1 to 3 m deep. It is under the control of the Irrigation Department; two canals begin from the tank and are filled by lifting the water for irrigation. The tank is also annually auctioned to



# BHADALWADI TANK

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## A refuge for Painted Storks

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Text and Photograph: Satish Pande

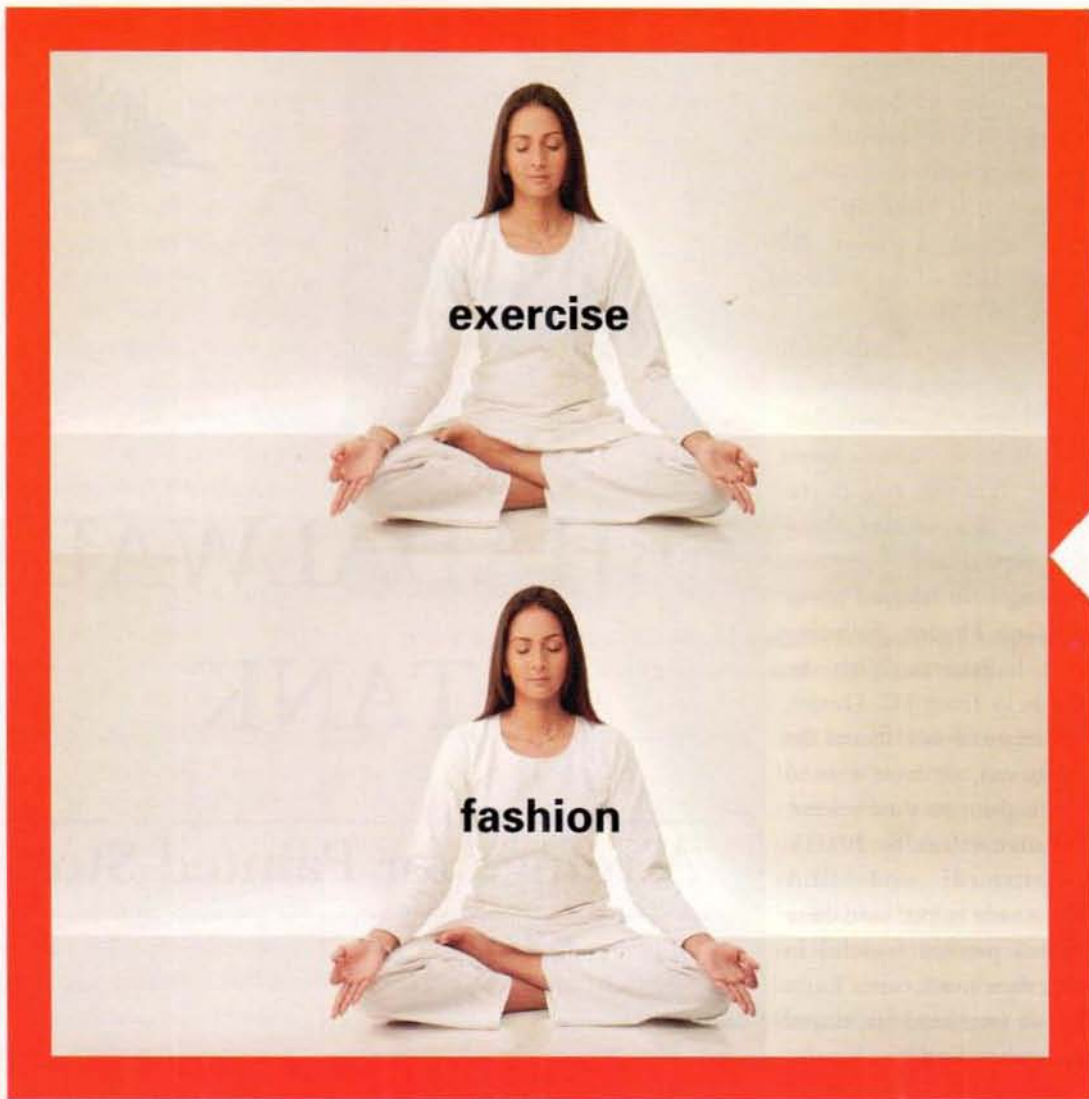
On the bank of River Bhima and close to the Ujani dam backwaters, is the small village of Bhadalwadi, in taluka Indapur, district Pune, Maharashtra. A dusty road from here leads to Bhadalwadi tank, where one of the largest breeding colonies of Painted Storks *Mycteria leucocephala* in India was recently discovered.

fishermen. On the banks of this tank stand about a hundred or so 2.5-3 m tall *Acacia* trees that were partially submerged under water, even in the summer month of April this year.

I first visited the tank in the last week of April and found that at least five hundred pairs of Painted Storks and an equal number of pairs of Little

Cormorants, about fifty pairs of Grey Herons and Pond Herons each were nesting on the branches of *Acacia* trees standing in water. The lower nests were at water level whereas the upper nests were 1-2 m above them; approach to either nests was not possible. The area was alive with the relentless calls of these birds. We counted at least 1100





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# Painted Storks

juveniles of Painted Storks and Little Cormorants each and about seventy five juvenile Grey Herons and Pond Herons perching on various nest platforms. The large flat nest platforms were almost joined to each other for such was their density. I was overwhelmed at this unexpected discovery. My fisherman friend Bharat Mallav, a resident of Bhigwan, had first informed me about some birds nesting there.

Few days after my visit I received a frantic call from Bharat; the news was alarming! The Irrigation Department was lifting water from the tank and the water level in the Bhadalwadi tank was receding at an alarmingly rapid rate. *Acacia* trees, with nests of Painted Storks, that were partially submerged, were getting precariously exposed, and approach to the low placed nests was now possible. At least three hundred juvenile storks were perched on the low nest platforms that were just 1 m above the ground! Ground predators like stray dogs, Common Mongoose *Herpestes edwardsi*, Jackal *Canis aureus* and Wolf



Ground predators like stray dog, Common Mongoose, Jackal and Wolf posed a great threat to the juvenile birds

*Canis lupus* had already started feasting on these defenceless young and several juvenile storks, partially eaten, were lying on the ground.

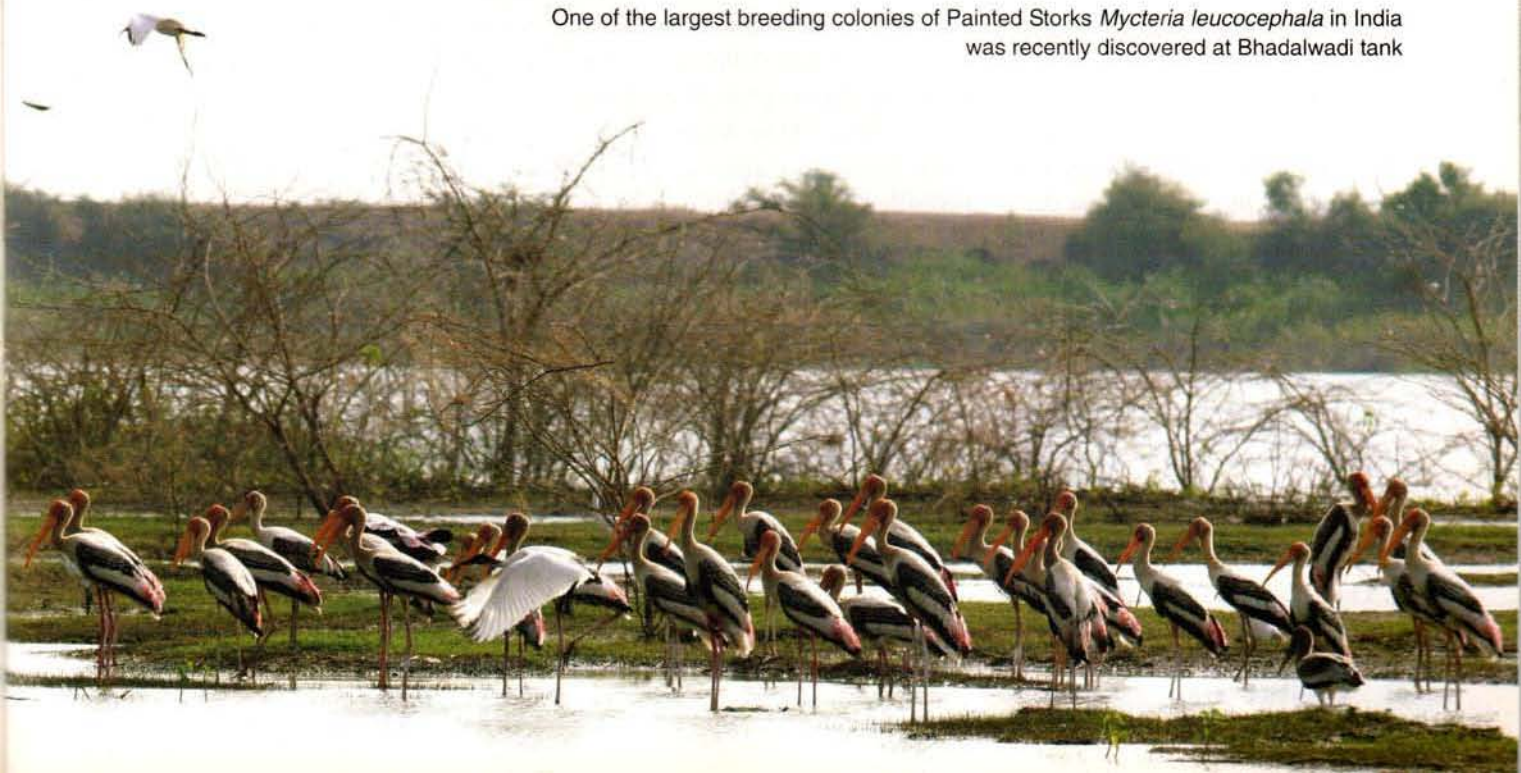
This was an emergency and something had to be rapidly done for the helpless Painted Storks. I rang the local forest department officials and requested them to post forest guards at the nesting site to minimize predation of vulnerable juveniles that were not capable of flight. This was done. In addition, two local volunteers agreed to keep vigil and also to prevent felling of the trees for firewood, a

process that had already begun. I met Mr. Ramkrishna Ekale, a young teacher from Bhadalwadi, who had seen Painted Storks nesting to a lesser extent in the same area last year, but had not realized the importance of this phenomenon and was not aware of the endangered status of these storks.

As the water level receded, the entire cluster of nest trees was exposed. The lifting of water continued since the demand for irrigation, at the peak of summer, was at its zenith. The sad Indian saga of animal versus man where the latter always won was replayed.

Even in this catastrophe, I saw a rare ornithological opportunity. The low nests had made the juvenile storks vulnerable to predation but that also implied that they could be gently picked from the nests and ringed for further migration studies. Large birds like Painted Storks and Grey Herons are rarely caught in bird traps in significant numbers during bird ringing camps, and hence this was a unique opportunity. It was a dream of any serious bird watcher. But there were several administrative formalities to

One of the largest breeding colonies of Painted Storks *Mycteria leucocephala* in India was recently discovered at Bhadalwadi tank







The estimated global population of the Painted stork is less than 25,000, which gives them a place in the Red Data book as a near threatened species and also being listed in schedule IV of the Wildlife Protection Act of India

be completed and time was against us. It was a challenge worth meeting. I immediately spoke to Mr. J.C. Daniel and Dr. Asad Rahmani on the phone and explained the ground situation, and my desire to ring the Painted Storks. I requested them to urgently provide rings since most of the juvenile storks and herons were about six weeks old, and likely to fledge any time, while many more were already flying. Time was crucial. On the very next day a parcel containing 'K' sized BNHS rings arrived at my home with the necessary data entry forms. I then rang up Mr. B. Majumdar, Principal Chief Conservator of Forests (Wildlife) and requested him to grant the necessary ringing permission. Mr. Majumdar issued the permit and sent it to me via e-mail on May 8, 2006, the same day that I spoke to him.

The next day, on May 9, I proceeded to Bhadalwadi tank with

members of ELA Foundation, Amit Pawashe, Prashant Deshpande, Chandrahas Kolhatkar, Pramod Deshpande, Bharat Mallav, Dnyaneshwar Rayate Unmesh Barbhai and Avadhoot Belsare. Forest department personnel P.R. Marne (Vanaparimandal Adhikari) and his team comprising of R.S. Pawar, Maruti Mind, H.S. Wagh and D.B. Sasan joined us. Though many of the juvenile Painted Storks and Grey Herons had fledged, several were still unable to fly and were perching on the nest platforms. Although by this time they could walk and had ascended little higher on the thorny *Acacia*, but were still accessible. Only if we could have found the heronry earlier, several hundred Painted Storks could have been ringed! We gently picked up the birds from the low nests, at times by using a short ladder. Their weight, bill, wing chord, tail and tarsus were

measured. 'K' sized rings bearing numbers K 9551 to K 9602 were carefully and gently fastened over the left tarsus of each bird. No adult was ringed. The job was tedious and tiring, especially with the ambient temperature, which was around 40°C; it took us nearly 6 hours to complete ringing the birds. But the enthusiasm of the team was tremendous; since we knew that we were doing the biggest ever, single ringing operation for Painted Storks in India. In all 52 birds were ringed with 47 Painted Storks and 5 Grey Herons. All birds were released on their respective nests after ringing.

After a hard day's work we returned to Pune, which is 120 km from Bhadalwadi tank, quite exhausted but with happy hearts. All the local newspapers and TV channels widely publicised the ringing operation and the role of BNHS, Forest department and



## Painted Storks



On May 19, 2006 about forty seven Painted Storks were ringed, making it the biggest ever bird-ringing operation of the endangered Painted Storks in India



Besides India, Painted Storks are also found in Pakistan, Bangladesh, Nepal, Myanmar, Thailand, Cambodia and Vietnam

ELA Foundation; this unique bird migration study was appreciated by all.

I visited the heronry several times after ringing, an overall mortality of 15% was noted. This could have been much higher without our timely vigilance and protection. We had managed to save the lives of more than 200 of these globally endangered birds. Both conservation and study were achieved. On June 16, 2006 one ringed Painted Stork with ring number K 9593 was found dead at the same site, a month and half after ringing. I can only hope that other birds survive longer and ring recoveries continue to occur in the future, enriching our knowledge of these bird species.

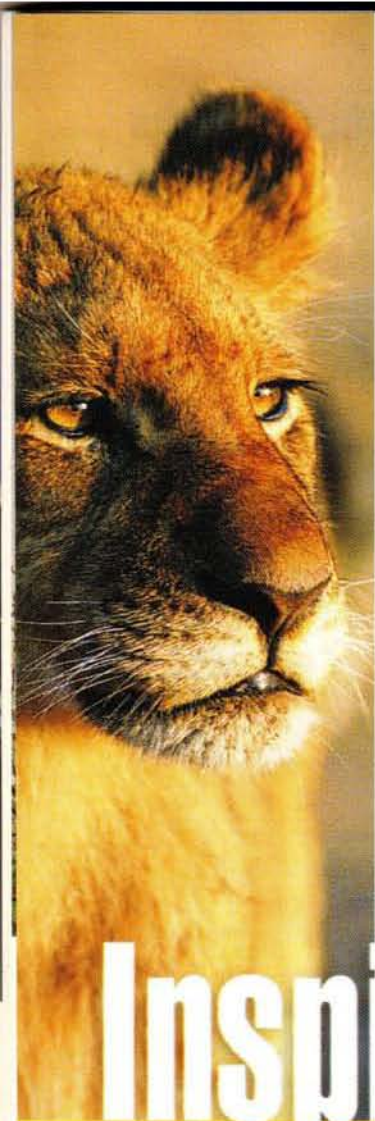
The Bhadalwadi tank mixed heronry may prove to be one of the largest current Painted Stork breeding places in India and should be accorded the status of an Important Bird Area. If the heronry is to flourish, the tree felling in the vicinity of the tank should be suspended, by educating locals, an exercise that we have already started. Since the area is under the ownership of the Irrigation Department, strict surveillance can be initiated during the nesting period. Water level in the tank if maintained properly, till the juveniles fledge, will lead to a greater breeding success of these near threatened and endangered birds of global concern. 🐦

ELA Foundation, an IBA partner, supported the ringing exercise with the permission of B. Majumadar, PCCF (Wildlife), Nagpur, Maharashtra, J.C. Daniel, Hon. Secretary and Dr. Asad Rahamani, Director, BNHS.



Dr. Satish Pande is the President of ELA Foundation, Pune. He is an Interventional Vascular Radiologist, author of several books on birds and wildlife.





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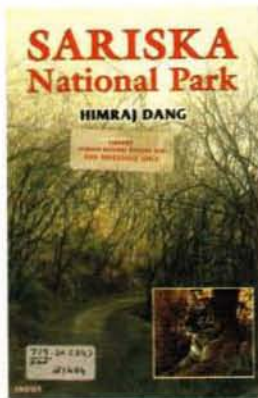
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### SARISKA NATIONAL PARK

by Himraj Dang, 2005.  
Indus Publishing Company,  
New Delhi.  
Pp. 112, (21.5 x 14 cm).  
Price: Rs. 200/-, Paperback

Reviewed by  
Asad R. Rahmani

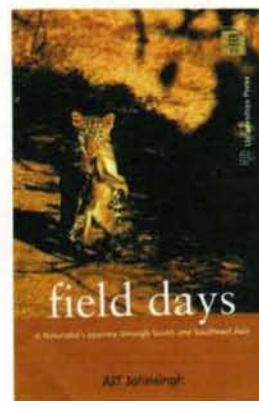
“**SARISKA** without tigers would be hard to imagine”, wrote Himraj Dang just months before it was confirmed that all the tigers of this famous Park had been poached. This book is a ‘quickie’, but the author has done a good job of collating relevant information about this Park and packing it in this 112-page book. He has also consulted almost all the published literature on Sariska, especially papers and reports by the scientists of Wildlife

Institute of India. Although the book is written for laypersons in easy language, I did not find any non-scientific statement – the bane of passionate natural history writers. Every fact is based on published literature or the author’s own observations. The major drawbacks of this book are the checklist of plants, mammals and birds. The checklists

do not follow any conventional classification, nor are the names listed alphabetically.

This book also highlights the perennial problems of Sariska such as over-grazing, lopping and fuel wood collection, unrestricted movement of pilgrims to visit various temples scattered all over the Park, presence of insular villages, mining and a National Highway that bisects the Park. None of them have easy solutions but if we have to protect this northern-most patch of Aravalli forest and bring back the tiger, we have to take some hard decisions. Voluntary and humanly relocation of insular villages, restriction on livestock grazing, at least in the core area, expansion of the core area and realignment of the National Highway could be taken up on priority basis. Another aspect, which is of low priority for the Forest Department, is research. Long-term studies on ungulates and carnivores, bird community, vegetation, pressure of tourists and pilgrims, provision of artificial waterholes near roads and socio-economics should be taken up in Sariska.

For serious minded people, who want to read more about Sariska, its biodiversity and related issues, the four-page bibliography is a great help. I hope the author will publish similar books on other parks and sanctuaries, but he should be careful with the checklists! 🐾



**FIELD DAYS:**  
**A Naturalist's Journey**  
**through South and**  
**Southeast Asia**  
by A.J.T. Johnsingh.  
2006. Universities Press,  
Hyderabad.  
Pp. 340.  
(21.7 cm x 14 cm)  
Price Rs. 350/-, Paperback

Reviewed by  
Asad R. Rahmani

**WHAT** an appropriate title for a book from one of the most itinerant field naturalists of India? During the last 35 years, Dr. A.J.T. Johnsingh has travelled to almost all parts of India, often staying for days in remote guest houses with minimum facilities or sitting for long hours in uncomfortable machans and hides, observing wildlife, taking meticulous notes and guiding students.

Although wildlife research has metamorphosed from simple natural history observations to intricate statistical formulae, computer

programmes that give animal density in decimals and remote sensed maps that give potential distribution of species, there

is no substitute to good fieldwork. Many students of Johnsingh, are experts in biostatistics and have published highly reputed papers in national and international journals, but I have not met any who have not praised Johnsingh for his natural history observations (and his legendary walking ability in the jungle that will tire a person half his age). I thoroughly enjoyed the book though I had read most of the articles earlier.

Almost all the 37 articles have appeared earlier in newspapers, magazines and newsletters, especially the newsletter of the Wildlife Institute of India, where Johnsingh was the Dean, Faculty of Wildlife Sciences, before retiring in October 2005. Many articles are outdated, but the postscript gives an update.

Despite the bad printing and poor binding, I recommend this book to anyone even remotely interested in India’s wildlife, but especially to those so-called field biologists, who assume that complicated statistics and state of the art computer programmes will give them an insight to the intricate world of animals and plants. A good pair of binoculars, a notebook with a pencil, and immense patience is all you need to learn the basics of nature; this is what Johnsingh teaches us through this book. 🐾



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# Lakshadweep

DEEPAK APTE

Text: Deepak Apte

Lakshadweep - a tiny chain of islands - inspires one to think how much time the creator must have spent to make this tranquil place. The smallest Union Territory of India, Lakshadweep is an archipelago of twelve atolls, three reefs and five submerged banks. Of the 36 islands, covering an area of 32 sq. km, each ranging from 0.1-4.9 sq. km, only 10 are inhabited. They lie scattered in the Arabian Sea about 225 to 445 km from the Kerala coast. Kavaratti is the capital of this tiny Union Territory.

Once the ship sails from the Willingdon Island, Cochin, towards Lakshadweep, it can be a quite a memorable experience. As soon as one comes out of the estuary, a school of dolphins appears and races ahead of the ship. Within the next couple of hours, land is far behind and the ship enters the vast, endless and mysterious world of the 'Blue Planet'. For the next 12-15 hours, one can see only deep blue water with breaking waves as the ship cruises through. The distant horizon amidst the cool evening breeze is intoxicating, and the bright night sky will not fail to mesmerize any human.

SIKANDER HUSSAIN / DEEPAK APTE



**Green Turtle (*Chelonia mydas*)**

This olive green sea turtle is mainly confined to the warm tropical waters of both the hemispheres. It is found along the entire east as well as west coast; however, Lakshadweep is its main nesting ground. It grows over a metre in length and weighs up to 155 kg.

DEEPAK APTE



**Blue Sea Star (*Linckia laevigata*)**

This elegant starfish is common in shallow lagoon waters. It is abundant in the lagoons of Minicoy and Kalpeni. This species comes in two colour forms, blue (as illustrated) and brown.



**Redfin Butterflyfish**  
(*Chaetodon trifasciatus*)

The Redfin is the most common butterflyfish. It can be seen in small aggregations, actively feeding on coral polyps.

The disc-like shape and extraordinary colour patterns of butterflyfish make them the most sought after aquarium fishes.



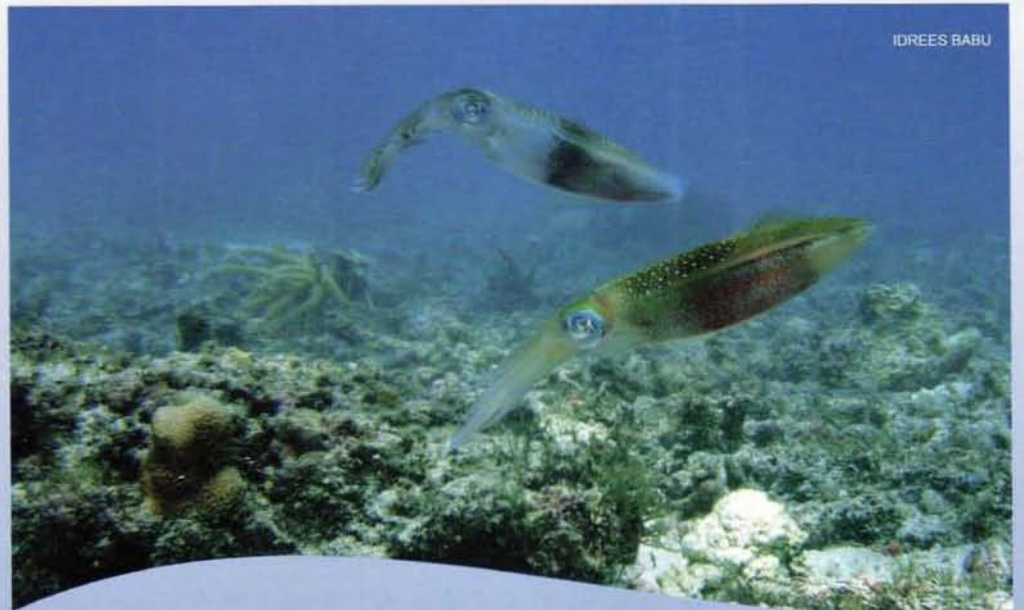
**Emperor Angelfish**  
(*Pomacanthus imperator*)  
(Juvenile)

The Emperor is a beautiful member of the angelfish family.

It is highly territorial and is seen in the lagoon and in deeper waters either single or in pairs. The adult is not as shy as the juvenile and allows proximity. It grows up to 40 cm and feeds mostly on algal matter, tunicates and sponges.

**Squids**

Squids have internal shells and are fast moving. Usually seen in deeper waters, one can see them in pairs in shallow reefs during the breeding season. Due to its perfect camouflage colours, it is virtually difficult to notice a squid unless you encounter them at close range.







### Bubble Anemone

(*Entacmaea quadricolor*)

Anemones are relatives of corals, but they differ both structurally and behaviourally. A special disc at the bottom of the anemone, helps it attach to the substrate.

It is capable of moving around by sliding slowly over rocks and dead coral. Tentacles of sea anemones have nematocysts with which contact should be avoided.

Bubble anemone is a beautiful, large sea anemone. Its tentacles are transparent and often bulbous near the tips. This species mostly occurs in shallow lagoon waters.

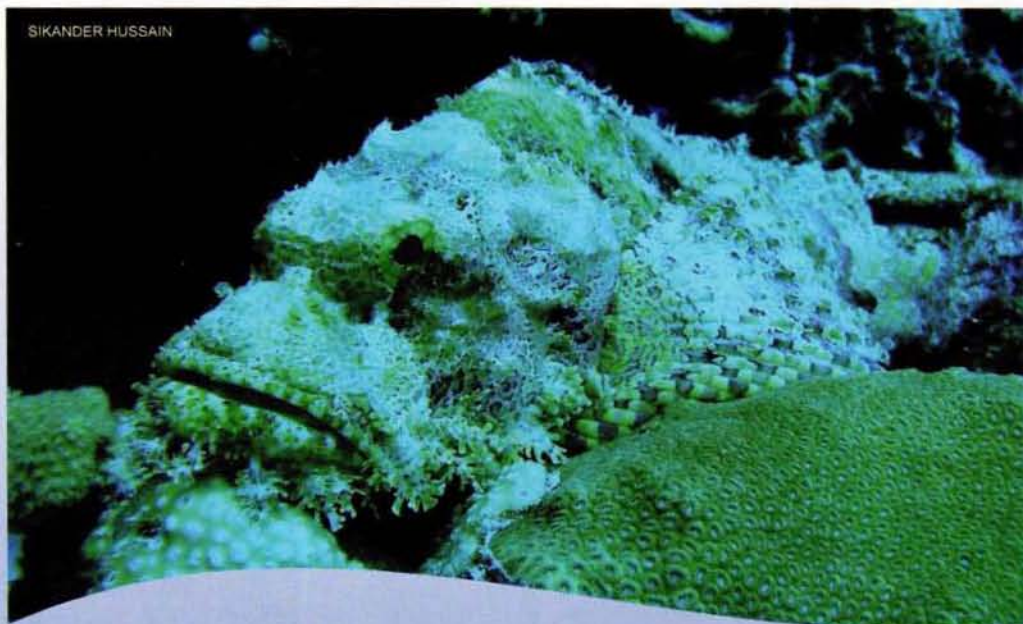
### Christmas-tree Worm (*Spirobranchus giganteus*)

The Christmas-tree like structure, are the tentacles of the worm that captures food from the water. Its life span is up to 20 years. The Christmas tree worm is very sensitive to shadows and vibrations, when disturbed it pulls back quickly into its tube and closes a 'trap door' over the top.

It is a close relative of the earthworm and can bore into massive corals such as *Porites lutea*.



SIKANDER HUSSAIN



### Stonefish

(*Synanceia verrucosa*)

The Stonefish is the most venomous fish in the world. It can grow up to 35 cm and is very common on reef flats. The dorsal fin carries a lethal neurotoxin. Avoid any contact with this fish as it is known to cause fatalities in humans. Most of the deaths are primarily due to careless handling or accidental stepping.



### Whitetip Reef Shark (*Triaenodon obesus*)

The Whitetip Reef Shark is small (225 cm) compared to other sharks like the Grey Reef and Tiger shark. A very common inhabitant of reefs at Lakshadweep, it usually remains in deeper reef slopes. It is harmless and with a little care, you can enjoy its mesmerizing grace and swift movements in water. Indiscriminate killing of large pelagic sharks for fins is a major threat to them.



### Black-blotched Moray Eel (*Gymnothorax permistus*)

The Black-blotched Moray grows up to 70 cm and is a very elegant species. Moray eels are generally encountered with their heads sticking out from under a ledge or cave. Although eels have an aggressive appearance due to the constant opening and closing of their mouths, they are simply pumping water in through the mouth and out through a small opening on the side of the neck; like all fish, eels must extract oxygen from water to breath. Unnecessary provocation can lead to attacks. The powerful jaws of an eel can rip apart chunks of flesh very easily.

## Threats to coral reefs of Lakshadweep

Increasing human population and anthropogenic pressures have severely affected coral distribution. Over the last two decades, the population of the islands has doubled, which has increased density of houses, passenger and cargo traffic.

Activities such as net fishing in shallow waters, boat anchors, commercial exploitation of shell and corals, tourism, oil spills, and waste disposal have had detrimental effect on coral growth.

The rate of siltation in the lagoon of Minicoy and other islands has increased due to sea erosion and increased human activity. Kalpeni, Kavaratti, Minicoy, Agatti, Kadamat and Androth are facing severe coastline erosion.

In 1998, reefs from various islands have shown coral bleaching, due to the El Nino. Though the recovery of some islands is good, there are still others where the reefs are yet to recover from this natural calamity. One of the recent threats is the use of tetrapods to prevent shore erosion. In many islands, it has seriously affected nesting of sea turtles.

It is alarming to note that the sea surface temperature is rising by 0.1 °C every year. Satellite measurements confirm the present sea level rise (SLR) at the rate of 2mm/yr. The important point here to note is that the corals are stenotypic requiring constant environmental conditions. The raising sea level due to global warming would favour the vertical extension of the fast growing species, while slow growing species will die out due to shading effect. Increased UV radiation is also harmful to coral and coral associates.

Deepak Apte is a marine biologist; he heads the Conservation Department at Bombay Natural History Society. He is currently the Principal Scientist for 'Project Giant Clam'. He is an excellent wildlife photographer and Open Water PADI diver.





## ABOUT THE POSTER



GREAT WHITE PELICAN

Pelicans are amongst the most distinctive of birds. Their huge corpulent bodies, their long broad wings, and perhaps most of all, the unique arrangement of their long bill with its voluminous distensible pouch, render them instantly recognizable. Pelicans are most frequently found in large tanks and inland seas, as well as deltas and other extensive wetlands. They eat, almost exclusively, fish, and being gregarious and breeding in large colonies, require an abundant supply of fish, which puts them at odds with fishing communities.

Of the seven Pelican species of the world, three are found in India, they are Spot-billed Pelican *Pelecanus philippensis*, Great White Pelican *Pelecanus onocrotalus* and Dalmatian Pelican *Pelecanus crispus*. Of these, only the Spot-billed Pelican breeds in India, while the other two are migrants to the Indian subcontinent. However, in 1960, Sálím Ali recorded nesting of the Great White Pelican in the Rann of Kachchh, during the expedition to the 'Flamingo City'. One of the distinguishing characters between the three is that the Spot-billed Pelican nests on trees while the other two are ground nesters.

## Plight of the Spot-billed Pelican

The Spot-billed Pelican *Pelecanus philippensis* is one of the most threatened of the seven species. Estimates had put the population in southern India at around 2,000 to 2,500 birds in the 1980s and 1990s. Such a small population spread over a large area, many in unprotected areas, and with a small breeding population, by itself presents a grim picture of the future of the species. Additionally, known threats to pelicans such as over-fishing, pollution, destruction of its wetland habitat, and disturbance or destruction of nesting sites and hunting could push the species to extinction. Hence, there was an urgent need for an assessment of its current population and distribution, and also to carry out studies on habitat requirements and threats facing the species in different sites to help in the species conservation. The Species Survival Commission of the IUCN expressed similar views, and one of its priority issues was for a study of the species in India. A three-year BNHS project on the Spot-billed Pelican was hence initiated in 2000, with the following objectives:

- To assess the status and distribution of the Spot-billed Pelican *Pelecanus philippensis* in southern India (Andhra Pradesh, Tamil Nadu, Karnataka and Kerala).
- To investigate causes for the decline in populations.
- To prepare, on the basis of the data collected, a management plan for the conservation of the species in southern India.

The base camp of the project was established in the Pulicat Lake-Nelapattu area of Andhra Pradesh, which serves as a major foraging and breeding ground of the Pelican in southern India. Extensive surveys were carried out in the other pelican habitats of southern India during the second and third years of the Project. The findings of the project revealed that the population of the Spot-billed Pelican ranged around 2,850-3,700 birds. Though significantly higher than earlier estimates, the numbers are not encouraging since the habitats in most areas, especially foraging grounds, are under severe threats, primarily due to India's crisis of human population growth. ■

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to support the publication of *Hornbill*



GREAT WHITE PELICAN  
(*Pelecanus onocrotalus*)







# The world of Caterpillars

Text: V. Shubhalaxmi

The Common Crow butterfly caterpillars digest plant poisons and store them in their bodies, which makes them as well as the adults distasteful to their predators. The predators soon learn to keep away from such brightly patterned prey after one unpleasant encounter



ISAAC KEHIMKAR



The Great Orange Tip butterfly caterpillar when alarmed resembles a pit viper, a bluff that keeps it safe

ISAAC KEHIMKAR



Hawkmoth caterpillars are leaf-green with a false eyespot on each side that gives them a snake-like appearance

ISAAC KEHIMKAR



Death's Head Hawkmoth caterpillar raises its head like a Sphinx when alarmed, a common behaviour in hawkmoths

ISAAC KEHIMKAR



The pattern of the Common Nawab butterfly caterpillar renders it 'invisible' from its predators

A voracious eating machine, a caterpillar in its final instar, could be 200 times the size of the egg that it hatched from! A caterpillar is the larva of a butterfly or moth, which has a segmented worm-like body. It may be hairy, have warning colouration, or be coloured to resemble its surroundings. Every caterpillar finally undergoes a pupal stage to emerge as a handsome moth or a beautiful butterfly.

Caterpillars are generally smooth bodied; some are armoured with hairs and spines, especially those of moths. The caterpillar body is mostly cylindrical and segmented, it has simple eyes, which can judge the intensity of light. It is designed for eating and therefore has well-developed jaws (mandibles) to cut leaves and two cheeks (maxillae) to taste edible and inedible food. The tiny antennae near mouthparts sense smells. Three pairs of true legs are present close to the head, and 5 pairs of prolegs or false legs are present on the entire length of a caterpillar's body. If you find a larva with more than 5 pairs of prolegs then it is a larva of the parasitic wasp, Sawfly. Caterpillars move in a rippling fashion by contracting and relaxing their muscles.

Caterpillar blood is greenish yellow and its pulsating heart can be seen along its upperside. The spiracles (air openings) present on the lateral side of the body take in

air, while an internal network of trachea act as "lungs". Spinning silk is exclusively a caterpillar's privilege. The caterpillar draws silk from a tube in the spinneret, which is present on the lower lip (labium) that contains the silk glands. It uses silk for support and to make shelter webs and cocoons. For pupation, all butterfly caterpillars use silk to anchor their pupa onto a substrate, but moth caterpillars exclusively use silk to weave cocoons around their pupae. These cocoons could be of pure silk, leaf litter or mud. But the most interesting way of using silk as "emergency lift" can be seen only in moth caterpillars.

Lepidopterans, i.e. butterflies and moths, don't make good parents. The males separate from females after mating and the females forget about their eggs once they are laid, but they instinctively provide meals for their babies. The first thing a caterpillar eats after hatching is its egg case, which not only provides nutrition but also removes evidence of its presence. After this vital dose, it proceeds to taste the tender leaves of the food plant selected by its mother.

It is believed that Lepidopterans are good botanists! The female identifies the larval food plants by its odour and with the taste buds situated on her feet. But the female



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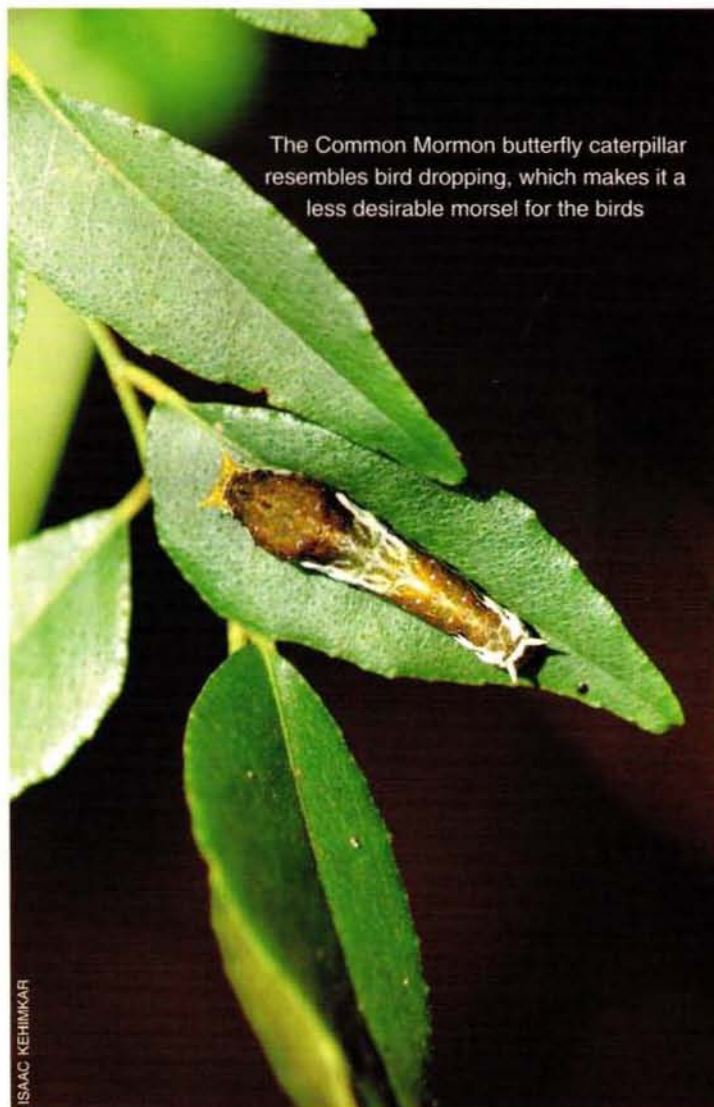
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can occasionally make a mistake. The mistake made by the female in locating the right food plant, leaves the caterpillars to fend for themselves.

A caterpillar literally eats until it splits! Its skin cannot keep up with its growing body. As the old skin gets tight, a new skin forms underneath. The caterpillar puffs itself up by gulping air to split the weakened old skin behind the head. It remains puffed up until the new skin hardens. Then it releases the air. The new skin is now a little larger so the caterpillar has space to grow. The old skin shrivels up and the caterpillar may eat it, so that it does not waste precious nutrients. A caterpillar moults about 5-6 times before it pupates. The phase between two periods of moulting is called as instar.

Caterpillars grow faster in monsoon, while in winter and summer the growth is slower. Quick-growing caterpillars feed on flowers and leaves, while bark, wood, roots, ferns, and fungi feeding caterpillars are tiny and slow growing. The size and growth rate in caterpillars may vary in various species. Smaller species would take a week's time (e.g. Grass Yellow butterfly), while larger species may take more than a month to mature (e.g. Atlas moth). As the caterpillar grows, there are remarkable changes in its body colouration and patterns. These changes are very evident in moth caterpillars, but not in caterpillars of butterflies. A newly born caterpillar is usually yellow and may further change to various hues of green. Sometimes it may startle us by changing into brown or black. In fact,



The Common Mormon butterfly caterpillar resembles bird dropping, which makes it a less desirable morsel for the birds

ISAAC KEHIMKAR



The Common Barron has a unique structural design that gives it perfect camouflage while feeding on a mango leaf

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Predators soon learn to keep away from the brightly patterned Slug caterpillar after one sharp sting from its venomous spines

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polymorphism (different colour forms) is very common in moth caterpillars.

Caterpillars are generally herbivores, but some are carnivores. Caterpillars of the Brownie butterfly feed on aphids, those of the Ape Fly butterfly and Ermine moth feed on scale insects and that of Moth butterfly feed on grubs of tree ants. Also in overcrowded conditions, caterpillars may turn cannibals.

Caterpillars have better “table manners” in

comparison to other herbivore insects. The leaves are nibbled in a systematic manner with almost no wastage. The feeding rate increases as the caterpillar enters the third instar, it becomes a voracious eater and its food-plant supply is hard to keep up with. Interestingly, in the absence of the right food plant, a caterpillar may try other closely related plants belonging to the same plant family, and it works for them.

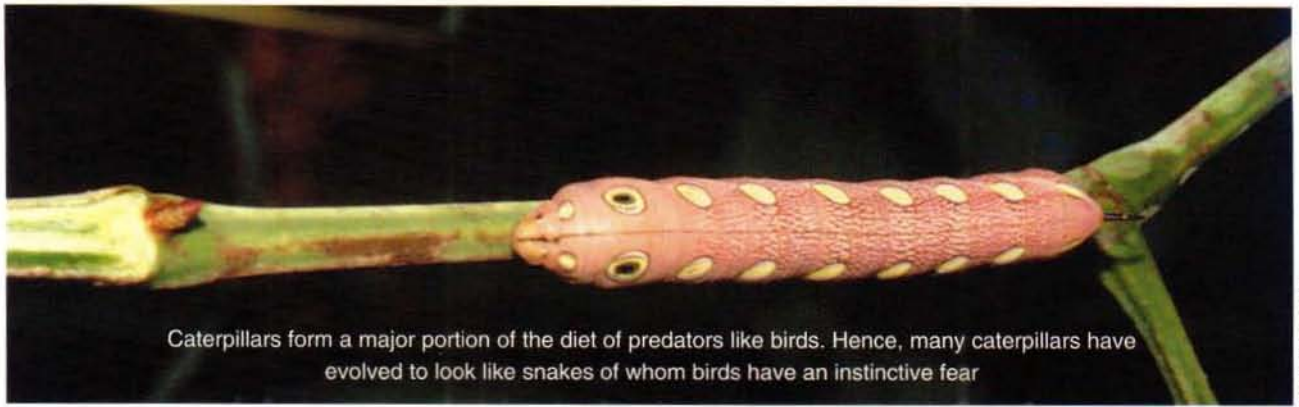
Caterpillars are soft bodied and slow moving. This



The Fruit Piercing Moth caterpillar has a series of false eyespots, which helps in confusing or scaring away its predators

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Caterpillars form a major portion of the diet of predators like birds. Hence, many caterpillars have evolved to look like snakes of whom birds have an instinctive fear

ISAAC KEHIMKAR

makes them easy prey for predators of all sizes and category. The endless foes list includes mammals, birds, reptiles, amphibians, arachnids, predatory insects, parasitic flies and wasps. But there are amazing methods of survival, which these caterpillars adopt.

- Some species prefer to bury or hide within their food plants so that their predators don't see them. This is combined with scheduling their feeding time when their predators are not active.

The Pyralid moth and Skipper butterfly's caterpillars roll up the leaves of their food plant around them with silk and feed on the leaf while remaining hidden inside. The Bagworm has a mobile home that is woven of dry twigs, around it. The caterpillar moves freely with its case, on its favourite food plant. The Red Pierrot butterfly caterpillars are leaf miners and feed inside the fleshy leaves of *Kalanchoe*, but pupate outside.

- Green and brown are the dominant body colours, which help caterpillars to remain camouflaged among their food-plants.

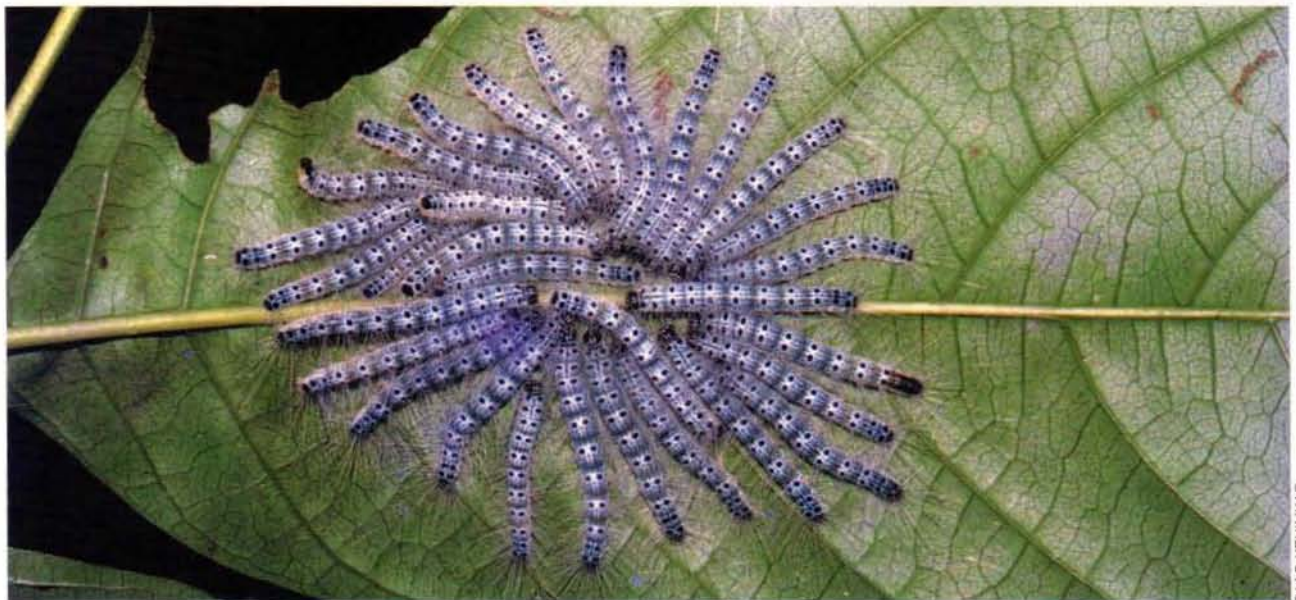
The Geometrid looper caterpillars attach themselves

to twigs in a manner that makes them look like a part of the plant. The Common Nawab butterfly caterpillar body segments mimic the leaflets of its Acacia food-plant.

- Either looking like a bigger animal or having weird shapes that confuse the tormentor, is a defence that fools the predator

The Fruit Piercing Moth (*Otheris fullonia*) caterpillar, has a series of false eyes. When threatened, the caterpillar curls its head inside and raises its tail end and gives a fearsome look. The caterpillar of Great Orange Tip butterfly puts up an act to look like a small pit viper and scare its potential attackers, thinking they had tried to take on a snake. The Lobster Moth caterpillar (*Stauropus fagi*) has a bizarre shape and it is difficult to differentiate the head and tail. The caterpillar at least convinces its tormentor that it is not the food it was looking for. The Common Mormon butterfly caterpillar resembles a bird dropping in its initial instars. Even they know that the birds don't like to have their own droppings!

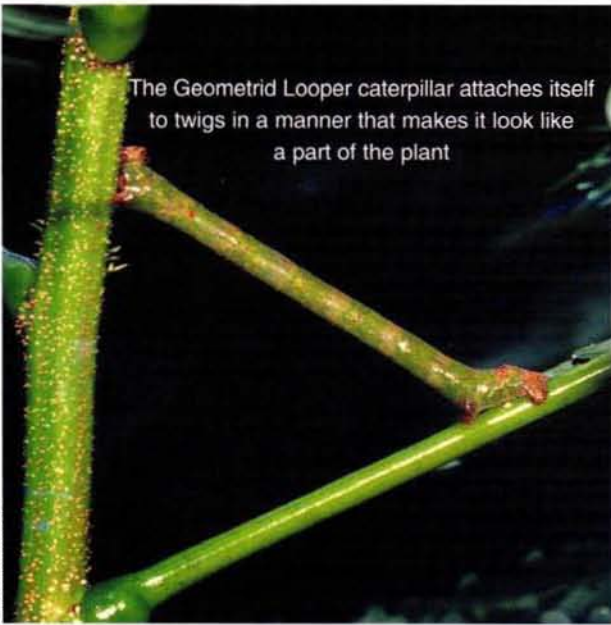
- The caterpillar of the Acacia Blue butterfly has a



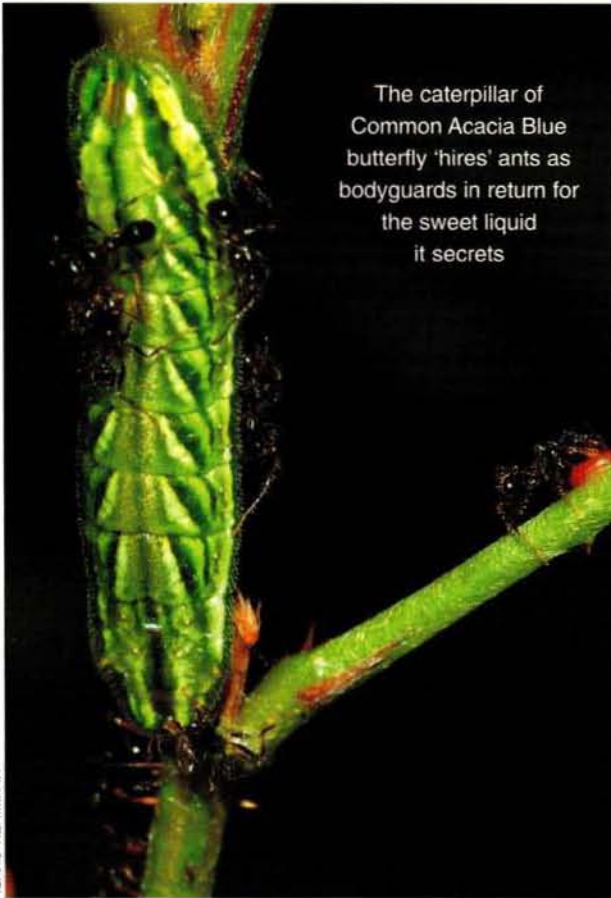
ISAAC KEHIMKAR

Although these hairy moth caterpillars are capable of defending themselves individually, forming a group helps them ward off their predators more effectively





The Geometrid Looper caterpillar attaches itself to twigs in a manner that makes it look like a part of the plant



The caterpillar of Common Acacia Blue butterfly 'hires' ants as bodyguards in return for the sweet liquid it secretes

'honey gland' on the abdomen, which secretes a sweet liquid that is used to bribe ants. The ants feed on the liquid and in return they protect the caterpillar, mainly from wasps.

■ Caterpillars warn their predators to keep off or face the consequences. The weapon they use is a fatal plant chemical loaded in their bodies.

Caterpillars of Plain Tiger butterfly and Oleander Hawkmoth (*Daphnis nerii*) are distasteful to their predators as they feed on poisonous milkweed plants that contain cardiac glycosides. The Puss moth (*Cerura vinula*) and Lime butterfly eject obnoxious gases through their spines and osmeterium to deter their opponents.

■ Most moth caterpillars are covered by irritating hairs, which have toxins stored in their bodies that are used for retaliation.

The Woolly Bear caterpillars are protected by an armour of irritating hair, which helps keep off parasitic wasps and flies. The Stinging caterpillars possess hollow quill like hairs, connected to poison sacs that are used as defensive weapons.

By the end of the monsoon, if you happen to be moving on forest pathways, very often there would be at least one hairy caterpillar that would be descending on its silken lift. This is the time when they sway midair and one may accidentally land down the back of your neck, if you missed noticing it. Use a stick or other object to remove the caterpillar carefully instead of your hand. Handling caterpillars can result in reactions that can range from mild itching to more severe pain, dermatitis, and even intestinal disturbances. Washing the area thoroughly with soap and water may help remove some of the irritating venom. Adhesive tape may be used to pull out some of the broken spines in the affected area. Prompt application of an ice pack or baking soda may help to reduce pain and prevent swelling. Consult a physician if severe reactions occur.

Caterpillars are perceived as destroyers of crops and garden plants, but we need to blame ourselves for this. Monoculture plantations have proved a haven for pest species. Usage of pesticides caused a decline in predatory insects, but enabled pest species to have generations that were immune to pesticides. Instead, mixed plantation with usage of biological controls over insecticides is always a better option. One should not forget that caterpillars are the most vital link in the food web, as they are widely relished by both invertebrates and vertebrates (including humans). They are the first level of recyclers that convert plant matter into animal matter. No human made machinery can ever provide these priceless services to nature. Caterpillars are an indispensable part of nature's gigantic web of life. 🦋



V. Shubhalaxmi has been with BNHS for the last 14 years. She is an environmental educator by profession and an Entomologist by passion. She specializes on moths and believes in popularizing entomology



## Wetland Protection



Gavier lake is situated about 7 km from the buzzing city of Surat in Gavier village; it provides water for nearly 7 villages around it. As it is very near to the city and the surrounding areas are developing into housing colonies, this lake has become very important to environmentalists and civic authorities. It once belonged to the village, but now the lake is under the Gujarat Water Supply and Sewage Board. Till 1990, the wetland housed many migratory and residential water birds. The surrounding areas of the lake had private farms so that birds could take extra advantage. But now, most of them have become housing colonies, so the birds only have the limited place surrounding the lake. The lake is rain fed and through a canal from Kakrapar dam and is one kilometre in circumference.

About 14 years ago, Gujarat Water Supply and Sewage Board wanted to deepen the lake so that more water could be stored. We went to court and were able to put up a stay on the project. With out-of-court settlement, the Gujarat Water Supply and Sewage Board made arrangement for plants to be planted near the lake, and the lake was deepened to accommodate more water. But nature has its own way, and the lake collected more sediment in the course of years, making it a wetland again. Now there are two lakes; one belongs to the village and the other belongs to the Gujarat Water Supply and Sewage Board.

Members of the Nature Club Surat are constant visitors to the lake. The waterfowl in the lake are counted during every Asian Waterfowl Census for the last 18 years. It was noticed that the number of migratory and resident birds were on a decline. The



last 3 years were the worst. So we thought of improving the situation at the lake. Funds were a problem, but manageable. Plans were made to fence the lake with chain links to a height of c. 2 m and then plant trees like Banyan, Peepal, Umro and Coral, which would attract birds and butterflies. Necessary permissions were obtained from the Gujarat Water Supply and Sewage Board and the village Panchayat.

Clearing the periphery started in March 2004. The place was covered with thorny shrubs and trees. The fencing work was over by May. On June 5 'World Environment Day' tree plantation was started. The lake has c. 6 m of land between the waterfront and the fence. Volunteers of Nature Club Surat visit the lake every Sunday to plant trees and to water them. So far, 500 trees have been planted. A full time watchman is employed to prevent the fencing being robbed and to keep the fisherman and bird trappers out.

The result of the work started showing in the same month itself. Birds and butterflies made their presence felt. In the month of September, we checklisted 74 different birds as compared to last years 38. From June 2004 to September 2004, we spotted the nests of Baya, Streaked weaver bird, Paradise Flycatcher, Plain Wren Warbler, Bronze-winged Jacana, Purple Moorhen, Purple Heron, Red-vented Bulbul, White-throated Munia,

Red Munia, Golden Oriole and Black Drongo. All the nests were successful with the fledglings flying away at the right time, making the members of Nature Club Surat proud of their work.

Snehal Patel,  
Nature Club of Surat.



## Disappearing Sparrows



I have been reading with interest, the various letters appearing in the Indian Express regarding the disappearance of sparrows in our city. The reason given 'the proliferation of crows' is certainly valid. It may be noted that besides sparrows; barbets, flower-peckers, magpie-robins and sunbirds have also shown a decline in numbers. Two pairs of bulbuls have been trying to raise a family in our garden, but without much success; the culprits are, of course, crows.

As for my part, I have decided not to keep/throw any food or garbage open for crows to eat. Also, for the last several years, I have built and kept small nesting boxes in my garage for sparrows, with feeders containing their favourite foods: kang, bajra and crushed biscuits, which they love. This has given wonderful results. Generations of sparrows have been born in my garage, and their chirp and twitters are constantly heard in my garden.

I suggest your readers try the same.

N. S. Vaidya  
Mumbai.





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A pair of House Sparrows was once found in a 600 m underground coal mine and survived only on the food given by the miners!

In southern India, it was considered a good omen when a House Sparrow built a nest inside the house. Such was the bond between man and sparrow, that the sparrow was classified as a domestic species, and hence the name *Passer domesticus*.

House Sparrow was once a very common bird all over the world, whether it was a bustling urban area or a small hamlet, as its breeding habitat is mostly associated with human modified environments such as farms, and residential areas; it is absent from extensive woodlands, forests, grasslands and deserts. It is thought that the House Sparrow originated in the Mediterranean and gradually expanded its range into Europe and Asia. It soon became one of the most widely distributed land birds in the world. Today, it is absent from the north-eastern parts of Asia, tropical Africa and some part of South America.

House Sparrows feed primarily on seeds, however, insects such as aphids and caterpillars form an important part of the diet of young chicks.

The disappearance of House Sparrows from urban areas is neither new, nor restricted by political boundaries. Although, a gradual decrease in the sparrow population in India has been quite visible, the responses to this disappearance, unlike elsewhere, have been substantially muted. Very few people are keeping records of the sparrow population. According to an ornithological survey conducted by Indian Council of Agricultural Research (ICAR), the sparrow population in Andhra Pradesh alone has dropped by 80 per cent, and

# Disappearing House Sparrows

Text: Mohammed Dilawar

in other states like Kerala, Gujarat and Rajasthan it has dipped by 20 per cent. The survey also revealed that there is a drastic 70 to 80 percent decline in the House Sparrow population in the coastal areas.

The reasons for decline in the House Sparrow population are unclear, but a number of theories have been suggested.

**Predation:** Increase in population of predators like crows and cats may have resulted in the decline of the sparrow population.

**Food scarcity:** Sparrows were used to pecking at grains in backyards of homes where housewives cleaned them. Grain spills outside godowns or provision stores drew a number of sparrows. But now, with backyard cleaning virtually extinct, and most grains arriving in pre-cleaned polythene packaging, there are no spills and no sparrows twittering outside provision stores.

**Eco friendly fuels:** The so-called 'eco friendly' unleaded fuel uses Methyl Tertiary Butyl Ether (MTBE) as an



NIKHIL DEVASAR

Loss of nesting places is one of the reasons that has resulted in decrease in House Sparrow population





NIKHIL DEVASAR

Walls and wirefences have replaced hedges, which used to provide roosting for the sparrow population

anti-knocking agent. The by-products of combustion has an insecticidal effect. The decline in insect population has led to scarcity of food for insectivores. Adult House Sparrows can survive without insects, but the young ones cannot, as their survival rate decreases in the absence of an insectivorous diet.

A study in Hamburg, blames insufficient supply of aphids in early spring for breeding failures in House Sparrows. A decline in the availability of insects (such as aphids) for feeding young is suggested as a major factor in House Sparrow decline.

**Effects of pesticides and changes in farming practices:** The green revolution has changed farming practices in India completely. Today, India is one of the largest user of chemical pesticides and fertilizers in the world. This has resulted in tremendous ecological disturbances. The widespread use of chemical pesticides in farmlands has resulted in the killing of insects, on which these birds depend.

**Changes in gardening patterns:** Until recent times, chemical

insecticides were not used in gardens. These gardens had native variety of grass, which needed constant mowing. But this kind of native grass did not need pampering except a good spray of water. These lawns were also harbouring a variety of insect life. House Sparrows forage in these gardens for insects to feed their young ones. Now, the native plants are replaced with fancy exotic varieties of plants. The exotic grass needs a lot of support with fertilizers and plant protection sprays and supports less insect life. The sparrows therefore have fewer insects to feed their chicks. Changes in gardening patterns, are probably another reason for the decline.

**Changing architecture:** Changing lifestyles and architectural evolution have wreaked havoc on the bird's habitat. Earlier houses had a number of crevices and holes, which were used by the sparrows to build nests. These days, however, houses have little space for making nests. Modern buildings are devoid of eaves and crannies; this coupled with

disappearing home gardens, are playing a part in the disappearing act of the House Sparrows.

**Effect of Microwave pollution:** Since mid-nineties, base stations for mobile telecommunication have been spreading across the country. These base stations have increased the Electromagnetic contamination, i.e. "electrosmog". These base stations produce pulsating waves of 900 MHz for analog and 1800 MHz for digital transmission that interfere in the nervous system of living beings.

There exist, many scientific studies warning about the dangers of this kind of electro-magnetic radiation (microwave radiation) for health in human and living beings. Research in Spain has proved a gradual disappearance of sparrows in the most contaminated electro-magnetic fields (EMF) streets and squares. The number of sparrows decreased in the city centre, increasing in the outskirts. Some specimens presented partial albinism in their feathers or couldn't fly properly.

Electromagnetic radiation could:

- Affect reproduction.
- Affect the circulatory and central nervous system.
- Affect the bird's health and their well being (microwave syndrome).

### How can you help?

**Eco friendly gardening:** Use organic fertilizers and avoid using pesticides/insecticides as they often kill or remove vital food, which are important for House Sparrow chicks. Grow a range of native plants in the garden to provide food, shelter and a possible place to nest. The seeds, shoots, bud and berries of many wild and cultivated plants provide food throughout the year. Many of these plants also attract the insect





MOHAMMED DILAWAR

Once you start feeding the birds, you should not stop, as the birds will start depending on you

that a House Sparrow enjoys eating.

**Provide nest sites:** House sparrows nest in a variety of places, often within a building, under the eaves of the roof. They will also nest in thick, usually evergreen bushes and in well-established wall climbers. A nest box can be easily made out of used shoeboxes or wooden boxes. A nest box 29 x 13 cms, with a depth of 19 cms and a hole of diameter 3.2 cm to 4.0 cm is most ideal.

**Feeding Sparrows:** The House Sparrow is highly adaptable and through its association with man, has learned to supplement its diet with a wide range of household scraps. Avoid providing salty, oily, stale food, bread,

and large pieces of food such as whole peanuts, wheat grains. House Sparrows cannot digest these easily and may choke on them. Simple feeders can be installed by putting two shallow bowls one with grains and other with water. Change the water and refill the grains regularly. Once you start feeding the birds, you should not stop, as the birds start depending on you. A regular supply of clean, fresh water is invaluable to birds for drinking and bathing in.

It is very important to recognize the seriousness of the situation and take preventive measures to ensure the survival of our small beautiful companions. Although time has changed our way of life, we can still follow a few simple steps in sharing

this planet with other species and save them from extinction.

Like vultures, a widespread species that became 'critically endangered' in the span of just one decade, the House Sparrow too has been the casualty of of changing human lifestyles. The House Sparrow is not just a part of Indian avifauna, but also a part of our rich folklore. 'Prevention is better than cure' say the wise. The House Sparrow needs our immediate attention, now! ■



Mohammed Dilawar is a member of the BNHS and, at present, is the Project Officer in the IBA Department, BNHS. A Masters in Environmental Science and Ecology, he is interested in nature photography.

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## Nature Watch

Text and Photograph: Raju Vyas

During a herpetofauna survey of Purna Wildlife Sanctuary (WLS), in Gujarat, I came across the most unusual use of turtles at Dhuldha, a Dangi tribal village. This is the only village that is surrounded by Purna WLS.

At Dhuldha village I saw a small girl, about seven years old, playing with a toy. Her toy was tied with a string; she was running and dragging the toy with her, nothing unusual for most children her age. But then children her age do not play with dead turtles. The toy that this little girl had was a dead dried Indian Flap-shell Turtle (*Lissemys punctata*) about 8 cm long (carapace size)! The string was tightly wound around the head of the turtle in front of the carapace.

Turtles are exploited for a variety of reasons, especially for food and medicine. Their shells are used as ornaments and utensils, and they also



A tribal girl playing with a dead Indian flap-shell turtle at Dhuldha, Gujarat

feature in religious practices. During the survey, I observed that the Dangi tribe believes that powdered turtle shells are a remedy for diseases like smallpox and chicken pox. *Kotwaliya* – a Dangi tribe, collects young turtles

during the rainy season and rears them in the village well. When the turtles grow to over 15 cm, they eat them. Because of this, and also due to habitat destruction the population of the species has depleted in the area. ■

## A trunk full of Water



The water that jets out of the trunk of *Terminalia elliptica*, is yellowish and salty with urine like smell, yet the village people drink it unmindful of the flavour and taste

Text: R. Manikandan, P. Lakshminarasimhan, P. S. N. Rao

During a recent plant exploration tour to the Nagarahole forests in Karnataka, we observed local villagers occasionally quench their thirst with the watery sap from the trunk of *Terminalia elliptica*. The villagers would pierce the trunk of a relatively grown up tree, at a height of about 3-4 m, with a sharp edged weapon, the water that jets out of the trunk for about 2-3 minutes was then collected in small containers.

The chemical analysis of the sap revealed that the total solids were 1.14%, dissolved solids 1.2%, chlorides 3862 ppm, hardness as  $\text{CaCO}_3$  94 ppm and pH. 6.87. Since  $\text{CaCO}_3$  content is high in the sap, it may be harmful if consumed in large quantity.

This rare and unique phenomenon of water jetting at considerable force also indicates that the transpiration rate is higher during noon. It is yet to be ascertained if this interesting phenomenon is widespread in this species occurring in all the areas, as it is a deciduous element, or found only in those trees that grow where the water table is near the surface soils. ■



# Birds and People

## A TRADITIONAL ASSOCIATION

Text: Neema Pathak and Ashish Kothari

Neema Pathak and Ashish Kothari are members of Kalpavriksh-Environment and Action Group

India is probably among the few countries where hundreds of villages support the nesting, roosting, or feeding sites of birds. Many of these are considered Important Bird Habitats. How common are these conservation efforts? When did they start? And why are the villagers protecting these birds? A comprehensive answer to these questions is not available, but there are good indications from the work of naturalists and travellers, such as S. Subramanya of University of Agricultural Sciences, Bangalore, who has documented community-protected heronries.

In this article, we will explore traditional conservation-oriented communities while focusing only on initiatives specifically aimed at birds, but it should be noted that the more general ecosystem conservation efforts of communities (which we have written about earlier in the issue of January-March 2006 *Hornbill*) also help in bird conservation.



ASAD R. RAHMANI

The Bustard population has survived only because the pastoralists and farmers, on whose lands this grassland bird thrives, are extremely tolerant of its presence



## Community Conserves

### Where, how and what do people protect?

Uttar Pradesh seems to be one locus of traditional waterbird conservation. In Amakhera village of Aligarh district, lies a wetland, used traditionally for irrigation and fishing. The wetland is home to a large number of migratory birds, which the villagers are careful not to disturb. Lake Patna in Etah district can support up to 100,000 waterbirds in a favorable season. The lake was declared a wildlife sanctuary in 1991, but has been protected for centuries by the locals as a sacred pond. Sareli village in Kheri district supports a nesting population of over 1000 Openbill Storks, considered harbingers of a good monsoon. As they feed on snails, villagers also consider them useful in controlling disease-spreading helminths.

In Tamil Nadu, the classic example of bird protection is the 7 sq. km. Chittarangudi tank, built in 1800. Chittarangudi attracts storks, ibises, herons, egrets, cormorants and other migratory birds. Villagers do not allow any hunting or stealing of bird eggs. They go to the extent of not bursting crackers during Diwali, and avoiding commercial fishing.

Probably the most well known community protected heronry is at Kokkare Bellur village in Mysore district, Karnataka. The villagers look after the birds, sometimes

Pedullupalle village of Cuddapah district protects Painted Storks, White Ibises, and cormorants, which have been nesting here for over a century. Immature storks and White Ibises are often seen resting on haystacks and rooftops of the village. Openbilled Storks, White Ibises, and cranes have, from ancient times, been visiting Nellapattu and Vedurapattu, in Nellore district of Andhra Pradesh. Some of these species feed on the neighbouring Lake Pulicat and breed on the tamarind trees at Vedurapattu. Villagers have zealously looked after them, with women even taking care of injured and fallen chicks, and sending them to the neighboring Tirupati National Park. Given the importance of these tanks for birds, Nellapattu was declared a wildlife sanctuary in 1997.

Demoiselle Cranes, after passing through a long treacherous migratory route, probably heave a sigh of relief when they reach Kheechan village of Rajasthan. About 5000 of them land here at the crack of dawn. Soon the villagers make their way to the birds with containers full of grains. It's a sight to behold! The villagers, who belong to the Jain community, are supported by their relatives, well-established elsewhere, to procure sufficient amounts of grain to feed these birds for six months.

These are just a few of probably hundreds of such sites across the country. In addition, there are numerous examples of passive co-existence. Dr. Asad Rahmani of the Bombay Natural History Society notes that the Great Indian Bustard population in India has survived because the pastoralists and farmers on whose lands this grassland bird thrives are extremely tolerant of its presence. Similarly, in many parts of India, large populations of peacocks survive because the surrounding villagers do not harm them. In fact, in some cases, such as Chincholi Morachi in Maharashtra, villagers have gone out of their way to protect the peacocks and their habitat.

This co-existence has sometimes led to critical discoveries. For example, the range of the greatly endangered Black-necked Crane in India, once believed to be restricted to Ladakh, was extended when in 1990 Prakash Gole found a population in the Sangti Valley of Arunachal Pradesh. The Buddhist Morpa community here has traditionally co-existed with these birds, whose insect-feeding habits have led the community to believe them as a harbinger of better rice yields.



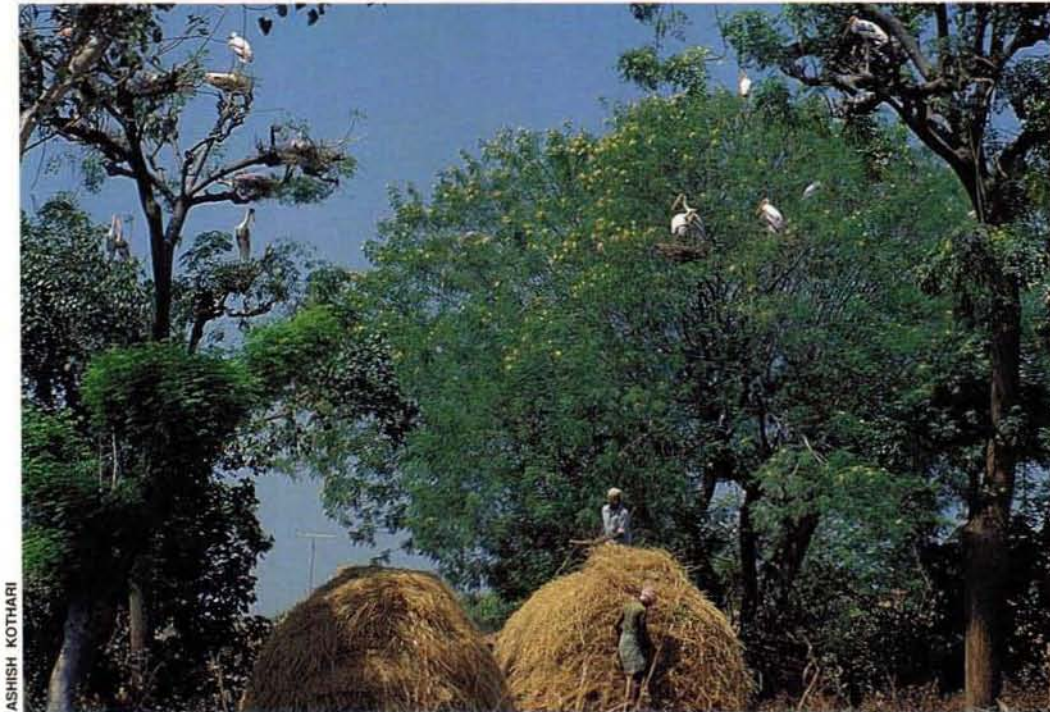
ASHISH KOTHARI

Many villagers have been protecting the Durgubai grove in Maharashtra, believing that it is sacred

even foregoing their tamarind yield so that nesting birds are not disturbed. The birds are considered a sign of good fortune and also provide them with guano (bird excreta) for their agricultural fields.

Painted Storks, pelicans and White Ibises have been nesting since ages in Veerapuram village of Andhra Pradesh, at times in numbers exceeding 5000. Villagers perceive their arrival as a good omen and protect them.





Commercial felling of trees by some owners at Kokkare Bellur is one threat, though small, to the age-old protection given to nesting birds

ASHISH KOTHARI

### Emerging threats

Not all is well with traditional bird conservation in India. In some villages, like Sareli recent fuel wood shortages has led some residents to lop trees on which birds roost. In Kokkare Bellur, some tree-owners have preferred to cut the nesting trees for commercial gain. There is sometimes conflict with neighbouring villages or hunting communities, who come to hunt birds, steal eggs, or carry out commercial fishing.


One major problem is increasing use of pesticides and chemical fertilizers in agriculture. Even where peacocks are otherwise protected, there are instances of mass deaths due to consuming pesticide-laden crops. Some wetlands, such as Amakhera village, are polluted by the chemical run-off. Construction or expansion of roads, expansion of agriculture into the draw down area of wetlands, or into grasslands, adds to the threats.

Aspirations of the younger generation are changing, and letting go of a season of tamarind produce, or tolerating crop damage by birds is considered too much of a financial burden.

Where wetlands like Lake Patna, Chittarangudi and Nellapattu have been declared wildlife sanctuaries by the government, conflicts between the villagers and the forest department have emerged. This is understandable, as communities that had traditionally protected them were neither informed, nor given any rights or responsibilities

in the sanctuary. The conflicts created by declaring grasslands as sanctuaries for bustards, which have backfired on the species, have already been well-documented by Dr. Rahmani and others.

### What can be done?

Urgent attention is needed to ensure that traditional bird conservation continues to flourish. Greater documentation of local practices and an understanding of threats coupled with a renewed pride in conservation in village youth; with inputs of modern science to supplement the traditional knowledge of their elders. Sensitive NGO or government inputs would help, e.g. in Kokkare Bellur, the NGO Mysore Amateur Naturalists has formed a village youth club to look after injured birds, and has extended health services to the villagers. Awareness needs to be raised in adjacent urban areas, so that town-dwellers can appreciate the efforts of communities and extend a supporting hand including through sensitive community-based bird tourism. At wetlands where wildlife sanctuaries have been notified over traditionally conserved areas, management and conservation responsibilities need to be given back to villages in some form of collaborative management. Legal backing that helps maintain the control of villagers, but wards off developmental or other threats, can be provided to ongoing community initiatives. 





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**TATA MOTORS**





Wroughton's Free-tailed Bat is one of the fifteen most critically endangered bat species in the world

# Wroughton's Freetailed Bat

## - Is it flying free?

Text: Payal Bal

Recent developments of the modern world with diverse technological advances, occurring all around, never fail to overwhelm us. Be it six-lane highways, booming cities or the impressive set-ups of the corporate world, they are all, as we cleverly label them, '*comforts of the day*'. They beckon us to take the plunge into a sea of materialism and consumerism and forget what surrounds it all. What lies on the outside? What they actually cost?

The cost we would know only if we were to awaken to the fact that there is another face to it that is much more unsightly and repulsive. We only

need to lean over onto the 'other side' of this developmental big-bang. What we will witness is far more overwhelming! Toxic brown rivers, a jagged and hollowed earth, rotting mounds of city waste and vanishing greens. The language may seem ostentatious and exaggerated, but these are the ground realities. In a world devoid of any emotion and subtlety, it is only fair that we tap some of the melodrama for a greater cause! The Wroughton's Freetailed Bat (*Otomops wroughtoni*) is yet another "victim" of development, a key species among others that is being grossly overlooked.



## Conservation Notes

NIRANJAN SANT



Illegal felling of trees, in protected areas, is a threat to these critically endangered species

Thomas named the bat in 1913; he based his observations on about 30 specimens that were collected for the first time from the Barapede Caves, 0.5 km from Talewadi village in Karnataka, south-west India. Currently, the species is listed as one of the fifteen most critically endangered bat species in the world. The current status of the bat was based primarily on the fact that only one roosting colony had ever been located (with one more site recently discovered in north-east India)<sup>1</sup>, and that it is extremely vulnerable to disturbance and destruction. It is included in the 1996 IUCN Red List as threatened species with the notation CR B1+2c indicating 'Critically endangered with a small distribution and showing a decline in the area, extent or quality of the habitat'.

The bats and their habitats of the evergreen forests of the Western Ghats of Karnataka (Belgaum Forest Division) are under high risk, due to large scale illicit tree felling, burning of forest lands and unlawful mining activities, which have started recently on these steep and highly precipitous slopes. Some of these areas are roosting sites to thousands of bats such as the *Otomops wroughtoni*, *Taphozous theobaldi*, *Megaderma lyra* and other unidentified species. Besides bats, the area also holds endangered animals such as the tiger, leopard and elephant. Considering its importance

and ecological sensitivity, the MoEF (Ministry of Environment and Forests) team had visited the area in 2004.

There has been a continuing decline in the quality of habitats and observations show that, as a consequence, there has been a very sharp drop in the number of bats. In some places, which had colonies of thousands of bats about 2-3 years back, there are none anymore. Burning of forests and large-scale monoculture plantations of *Acacia auriculiformis* has razed these places to the ground giving them a synthetic rather than a natural feel.

Listed below are some case studies of the areas surveyed by *Paryavaran*, an NGO associated with wildlife conservation in Karnataka, to assess habitat destruction and threats to the South Asian Chiroptera, especially the Wroughton's Freetail Bat. Most of the area surveyed, i.e. Belgaum Forest Division in the Western Ghats, is private ownership land while some of it is part of the Reserve Forest Land.

The ecologically sensitive forested areas vary from Southern Hill Top Tropical Evergreen to West Coast Semi-Evergreen type and are recognized for biodiversity conservation. The Working Plan<sup>2</sup> for 2002 for these areas clearly prohibits any kind of non-forest activity, such as tree felling and burning of forests. It also states that no mining activities are to be permitted.

<sup>1</sup>Thabab, A. and P.J.J. Bates (2002) Recent record of *Otomops wroughtoni* (Thomas, 1913) (Chiroptera: Molossidae) from Meghalaya, North-east India. *Acta Zoologica Academiae Scientiarum Hungaricae* 48 (3): 251-253.

<sup>2</sup>A written scheme of management aiming at continuity of policy and action and controlling the treatment of a forest.



## Case Study I: Maan village (Malki land), Chorla

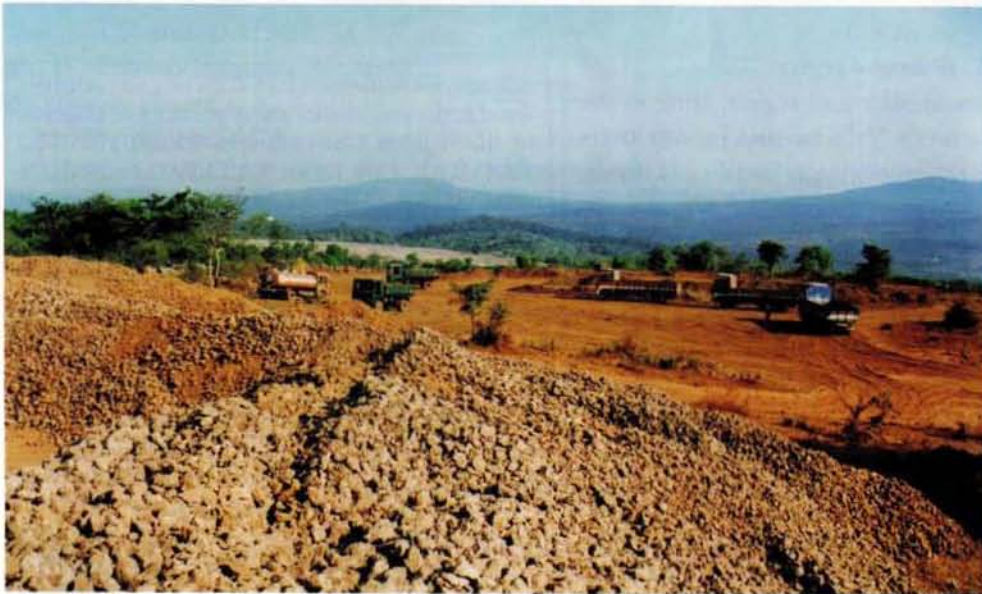
Spread over 508 acres, this ecologically sensitive area forms the major catchment area for the Tilari river, which flows down to Maharashtra into the Tilari Dam. In spite of the ban by the Working Plan of the Forest Department, this area is subjected to large-scale illegal tree felling and burning of the forest. What is even more surprising is that about a year back, the entire area was leased out to a local mining contractor for a period of 20 years! The Reserve Forest surrounds the mining area.

The area harbours rich endemic flora and fauna. Large numbers of caves with huge bat colonies, forming roosting sites, are also found. The species

## Case Study III: Kelil Krishnapur

This area was surveyed in two parts; one lying close to the banks of the Mahadayi River, of which it forms the catchment area, en route to Talewadi village, and the other along the banks of Pistachi Panseer River – a tributary of Mhayadi River. Both the areas have repeatedly been subjected to slow and small scale illegal tree felling and burning of forest land on the slopes and along the bank since 1997 and cashew plantations. These ecologically sensitive areas have specifically been stressed for biodiversity conservation owing to the presence of some endemic and endangered species. The most endemic, Wroughton's Freetailed Bat (*Otomops wroughtoni*) is known to roost just 3 km from here, the only identified site in the world! Another endemic

NIPANJAN SANT



A year ago, the entire area of Maan Village, Chorla was leased to a local mining contractor for a period of 20 years

of the bat present, however, are yet to be identified. The area also forms an important corridor for elephant migration. It has vast open patches of grasslands, a suitable habitat for Gaur and other mammals and bird life.

## Case Study II: Gavali village and Holda village

An area of 537.02 acres, the slopes of the Gavali village face a situation similar to that in the Maan village. The village lies near the Shitoda and Vajra waterfalls and is a major catchment area for the Mahadayi river, called the Mandovi in Goa. Illegal tree felling and repeated burning of forest land has been going on since 1997.

species found here is Theobald's Tomb Bat (*Tapbozous theobaldi*), the area being its third known roost site in India. The species mentioned are highly habitat specific. Any further destruction of this land will destroy these last remaining feeding and roosting sites, edging the species towards extinction.

## Case Study IV: Kalmani village

The village lies on the slopes of Jamboti ridge line, along the Belgaum – Goa National Highway. It is the catchment area for the Mallaprabha River. Like most of the other areas, it faces illegal felling and deforestation since 1997. Large-scale illegal mining has also been in practice here over the past years.



# Conservation Notes

NIRANJAN SANT



The working plan for 2002, for protected areas, clearly prohibits any kind of non-forest activity such as tree felling and burning of forest

## Case Study V: Bhimgad region

↑ The 3 acres of Bhimgad region, lying in the delta region between Mahadayi and Panseer rivers and close to Krishnapur village, face illegal burning of forest land. Out of the total of 378.10 acres of land in Gavali village, up to 100 acres were clear felled in 1998 for cashew plantation on the slopes.

The facts, stated above, clearly indicate that unregulated activities such as those witnessed in the fragile ecosystems of the Belgaum Forest Division of Western Ghats, in the name of development, will have long-term impacts on the

It is relevant to mention that all the ongoing activities listed in the case studies above are in gross violation of the Supreme Court ruling in W.P.202/1995 T.N. GODAVARMAN THRIJUMULKPAD vs. UNION OF INDIA & OTHERS dt: 12-12-1996

survival of the endangered species of the area. Unless there is some sort of meaningful intervention, the present situation is bound to aggravate and the future of 'less-charismatic' species like the Wroughton's Freetailed Bat and others, seems to be doomed in the race towards modernization. ■

NIRANJAN SANT



Habitat destruction is the major threat to these already endangered species



## A BNHS pocket book on birds

On June 4, the Bombay Natural History Society released a booklet 'Birds of Sanjay Gandhi National Park' at the Society's Nature Information Centre at SGNP, Mumbai. The booklet contains a comprehensive list of the birds at SGNP along with other details of interest. Sujan, a 13-year-old bird lover, and the youngest participant of the bird watching trail at Silonda in SGNP, conducted by the BNHS and led by the author Mr. Sunjoy Monga, released the booklet.

Mr. Prem P.S. Yaduvendu, CCF (Wildlife) Maharashtra, Dr. P.N. Munde CF and Director, SGNP, Mr. J.C. Daniel, Honorary Secretary, BNHS were present at the function.

Mr. Daniel briefed the audience about the history of the Bombay Natural History Society and its



Publications. Mr. Yaduvendu and Dr. Munde shared their views about the Park and the Society's association

with the forest department.

Mr. Monga in his speech said, "today's generation is lucky to have the maximum resources to know and learn about wildlife and environment, however this is ironical that they do not have much of wilderness." He further added, "we must strengthen the hands of the government systems to protect our natural resources and wildlife with much more active participation in conservation efforts."

The function concluded with gratitude to Mrs. K.F. Mehta, Trustee, Gulestan and Rustom Billimoria Charity Trust; and the Gulestan and Rustom Billimoria Charity Trust, the sponsor of the booklet.

This booklet is available at Rs.50/- for non-members and Rs. 40/- for members. ■

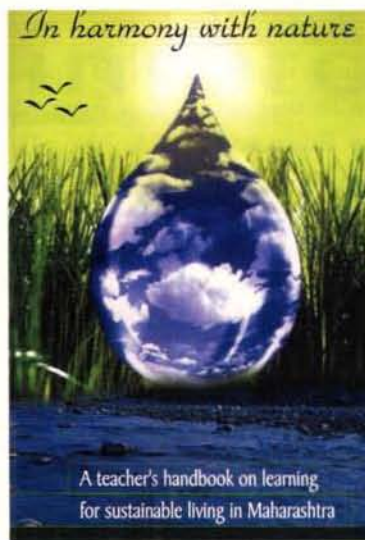
## 'A road to a sustainable living'

On the occasion of World Environment Day, June 5, 2006, the BNHS-Conservation Education Centre, Goregaon, Mumbai, released a handbook 'In Harmony with Nature - a teacher's handbook on learning for sustainable living'. The handbook is a guide for teachers which will assist them to communicate with students on how to adopt sustainable lifestyles.

Mr. B.G. Deshmukh, President, BNHS, released the book. In his address, he said, 'Sustainable living is rooted in the traditional civilizations world over. Such a living demands small but firm steps towards achieving the goal of most balanced lifestyle in harmony with nature. We are confident that this handbook would help to understand and imbibe various ways in which we can adopt a sustainable lifestyle.'

The handbook was published as part of the Maharashtra Education Project. Dr. V. Shubhalaxmi, In-charge, CEC, Mumbai, briefed the audience about the project.

The Maharashtra Education Project was initiated in 2003 and is a



collaborative effort of the BNHS and the RSPB (Royal Society for Protection of Birds). This Project is the brainchild of RSPB, which had conducted similar projects in South Africa and Seychelles. The Handbook will be disseminated among secondary school teachers through a series of workshops.

The handbook comprises of six themes – biodiversity, air, water, soil, energy and people. Each chapter is divided into two sections; first section contains basic information for teaching the topic. The second section deals with activities to complement the information.

The Handbook is generously supported by Sir Dorabji Tata Trust and partly by ICICI bank.

This handbook is available at Rs.350/- for non-members and Rs. 315/- for members. ■



### A Generous contribution



L-R: Mr. B.L. Javeri General Manager, Union Bank of India, Mr. Narayan Rao Director Union Bank of India, Mr. Chaturvedi Curator, BNHS and Mr. Asad R. Rahmani Director, BNHS at the Collections at BNHS

On June 29, 2006, Mrs. Godrej and all well-wishers of the BNHS came to thank the Union Bank of India for their generous donations. Mr. Narayan Rao, Director, and Mr. B.L. Javeri, General Manager of Union Bank of India were also present.

Mr. B.G. Deshmukh, President, BNHS, received a cheque of Rs. 10 lacs, from Mr. B.L. Javeri. Mr. Deshmukh, in his address, said, "The Union Bank of India, our corporate member, is a Friend of BNHS. The Bank, with this membership, has committed to support and work together with BNHS. The Bank has supported us in the areas where funds are most needed, but least received. We have received grants from Union Bank to maintain and upgrade the Natural History Collections at the Society. The Union Bank has also supported us to raise funds for conservation through special events. Understanding the most needed funding area, the Union Bank has chosen to support us for the maintenance of Conservation Education Centre."

The funds donated by the Bank will be utilised for the maintenance of the Conservation Education Centre building at Goregaon, Mumbai. This maintenance will include plastering from outside and waterproofing works.

After the event, Mr. Narayan Rao and Mr. Javeri were shown the BNHS natural history collections and the library. ■

### A workshop for Forest Employees

On July 13, 2006, the Nature Information Center of BNHS, in collaboration with Reptile Rescue & Study Center organised "Olakh Sapanchi aani Kalaje Nisarga Sewakanchi" (Introduction to snakes for the safety of the protectors of nature), a workshop specially designed to impart knowledge about snake identification, how to avoid snakebites and the use of first-aid for on-field Forest Officers.

Forty Forest Officers participated in the workshop. Dr. P.N. Munde, Conservator of Forests & Director, SGNP distributed the snake encounter kit and first-aid kit to all the 50 beats of SGNP and Tungreshwar Wildlife Sanctuary.

The snake encounter kit included a metal hook and a specially designed snake bag. The first-aid kit included a crêpe bandage, band-aid, antiseptic solution, tablets, and cotton.

A key to distinguish five common venomous snakes from other snakes, especially their harmless mimics, was described. A pocket folder depicting pictures of Cobra, Krait, Russell's Viper, Saw-scaled Viper and Green Pit Viper was distributed to help identify venomous snakes in the field.

The workshop helped to increase awareness levels of the forest officials on snake identification, how to avoid snakebites and the use of first-aid for on-field Forest Officers. ■

### Monsoon Magic

The Conservation Education Centre of BNHS at Goregaon, Mumbai organised Monsoon Magic on July 23, 2006. This half-day programme included nature trails and educational indoor sessions, namely, slide show on monsoon flora and fauna, quiz, puppet show, face painting, water harvesting and inhabitants of the rain forests. Each participant was given a handout containing interesting information about monsoon flora, fauna and water conservation.

Over 150 individuals, including children, participated to make this event successful and encouraging for the CEC volunteers and staff. ■





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