HORNBILL

DISCOVER THE LIVING WORLD

OCTOBER-DECEMBER, 2016

BNHS INDIA CONSERVING NATURE SINCE 1883

BOMBAY NATURAL HISTORY SOCIETY

The moment the view turns into something unforgettable.

This is the moment we work for.

FREE* ZEISS CORDURA BAG & HARNESS

The new TERRA® ED. from ZEISS.

Nature has more to offer than meets the eye. Our goal is to make these moments visible. For more than 165 years, we have been striving to reveal undiscovered wonders, letting our curiosity set new standards with our innovative products.

Carl Zeiss India (Bangalore) Pvt. Ltd., Plot No.3, Bommasandra Industrial Area, Bangalore-560 099, India Customer Support: consumeroptics.india@zeiss.com • Tel: 011-45156000
www.zeiss.com/outdoor

CIN: U33125KA2009PTC049465

Distributors:

West India
Colo Venture (Mumbai)
Tel.: 88880 61222 / 74987 04307

Ria Enterprises (Mumbai)
Tel.: 9930155660 / 9820055660

Tinnu International (Ahmedabad)
Tel.: 9819122662

Kirti General Stores (Pune) Tel.: 9822242524

Ajanta Photo (Nagpur) Tel.: 9370199470

United Peripherals (Pune) Tel.: 9823098150

North India
Avit Digital Pvt. Ltd. (New Delhi) Tel.:9811017774

East India
Srishti Digilife Pvt. Ltd. (Kolkata) Tel.: 9477366533

South India
Vivek Infocom (Chennai) Tel.: 9600120881

Srishti Digilife Pvt. Ltd. (Hyderabad)
Tel.: 9399973935

Foto Circle (Bangalore) Tel.: 9844217788

Fourtek Systems (Cochin) Tel.: 9447039709

ZEISS

**Conditions Apply*

HORNBILL

October-December, 2016

Cover: **Sloth Bear** *Melursus ursinus*
Pampayya Malemath

Published and printed quarterly by Dr. A.M. Bhagwat for the Bombay Natural History Society, Printed at Akshata Arts Pvt. Ltd., Lower Parel, Mumbai.
Reg. No. RN 35749/79, ISSN 0441-2370.

For more information on the Society and its activities, write to the Honorary Secretary, Bombay Natural History Society, Dr. Sálim Ali Chowk, S.B. Singh Road, Mumbai 400 001, Maharashtra, India.
Tel.: (91-22) 2282 1811
Fax: (91-22) 2283 7615
E-mail: info@bnhs.org
Website: www.bnhs.org

CONTENTS

FEATURES

Man-Animal Coexistence!
Mandar Sawant and Sanchit More

In times of increasing man-animal conflict, a village close to Nagzira Wildlife Sanctuary has set an example of man-animal coexistence. The villagers lived harmoniously with a female Sloth Bear and her two cubs for over 50 days. Read more …

Helping the Skimmer Skim
Parveen Shaikh

The habitat of riverine island-nesting birds is under heavy anthropogenic pressure. Riverine birds are known to have special feeding and nesting requirements. BNHS has, therefore, initiated a project on Indian Skimmer as a conservation initiative for riverine birds.

Why do birds sing? Secrets behind the melody of birdsong
Anil Kumar

Birds communicate with each other through calls and songs; most of us have heard and enjoyed this communication. Now, learn more about the secrets behind their melodies.

PHOTOFEATURE

The Leopard's Hunt
Sheshadri Vasan

A jungle walk can sometimes be more action-packed than one is prepared for. The images in this feature carry some enthralling moments frozen for eternity.

Others

The beginning of an innovative path...

Recently I had an opportunity to participate in two international meetings, the IUCN Conservation Congress in Hawaii and CBD COP 13 in Cancun Mexico, both destinations for luxury tourism as well as rich biodiversity and endemism. These were classic places to host these two important meetings, as they showcase at every step how disconnected our conservation policies and conservation challenges are. While I listened to intellectuals and policy makers, each representing their own constituencies, it only reinforced my views on how polarized they both are, and I wonder how conservation goals will ever be achieved. When I look back at the day to day conservation challenges that we face at home, I realise that we need to critically evaluate the relevance of these meetings and many such establishments and instruments.

For example, instruments like Ecologically and Biologically Significant Areas (EBSAs), though designed with great intent and scientific rigour, when tested against political realities find little merit. Such instruments are readily accepted as applicable outside each country's territorial limits, but within the country, the same science finds no takers. Does this mean that we should build political consensus first and then only can we progress in science? How regressive would that scenario be! But then, if the best of science can be rejected for lack of political consensus, what is the use of such science? Therefore, conservation advocacy is much more complex now than ever before.

Against this backdrop, when I recollect my first visit to Mishmi Hills in Arunachal, I am reminded that all is not lost and there are those unknown but true green warriors whose mission is saving nature at any cost. Ipra Mekola is one such soul whom we met in the course of our travels in Arunachal, whose mission is saving Mishmi Hills. He starts his day with a gun on his shoulder, patrolling the nooks and corners of the land that belongs to his tribe, to protect it from hunting, encroachment, and tree felling. BNHS's Mishmi Hills conservation programme evolved from our interaction with Ipra, and it is now a full-fledged conservation programme. Peter Lobo, our Life Member and IBA State Co-ordinator for Arunachal Pradesh and Tripura, has not only connected us with some exceptional people but has also donated land to BNHS in Assam. In the course of time you will hear more about it as we continue to expand our wings in the Northeast. We will soon be announcing volunteer opportunities for our life members with skills in the areas of photography, taxonomy, marketing and branding, finance, hospitality, and popular writing, to work in the Mishmi Hills programme.

BNHS's new 10-year research and conservation strategy was ushered in during April 2016. An important item on the agenda was to strengthen our scientific capability and cadre. I am delighted to state that we have inducted 10 bright young ornithologists in our research cadre from 1st January 2017. The team will be working on three programmes: Himalaya & Climate Change, Threatened Species, and Wetlands. It is also homecoming time for some senior scientists. Dr. Nita Shah, a veteran Conservation Ecologist who worked with BNHS for about five years is back with us. She will be spearheading conservation advocacy for our Himalaya & Climate Change, and Threatened Species programmes. She will also be representing BNHS in CBD and Climate COP (Conference of Parties). Dr. Sathiyaselvam, Dr. Girish Jathar, and Dr. Dishant Parasharya who worked with BNHS in the past are back home too, and will be spearheading our Wetlands, Himalaya & Climate Change, and Coastal and Marine programmes respectively.

Along with the new Himalaya & Climate Change programme, we are now reviving our Wetlands and Flyways Programme. Last month, BNHS signed an MoU with the Gujarat State Forest Department to undertake bird ringing and wetland monitoring across the state. More states will be approached soon. The first ringing programme was conducted at Nal Sarovar in November this year. We are expanding our international collaboration as well. We are preparing for collaborative work on bird flyways with research institutes from Russia, Bhutan, and Nepal. Dr. S. Balachandran recently attended the BirdLife regional meeting in Sri Lanka, and a new strategy for the flyways programme is under preparation. We also signed an MoU with Biodiversity Institute, University of Kansas, for the work under our Himalaya & Climate Change programme.

BNHS always had a strong network with national and international organizations working towards wildlife conservation. In the early 1990s, when BNHS became BirdLife Partner, Royal Society for Protection of Birds (RSPB) extended its arms to support BNHS both as knowledge partner and in institution building by providing strong financial support. We executed several flagship projects over the past two decades under this partnership, including Vulture, Great Indian Bustard, Bengal Florican, Lesser Florican, and Jerdon's Courser programmes. While our partnership with RSPB now enters the new domain of regional and international cooperation, the time has come for us to play a larger role of strengthening local and regional NGOs, which will ultimately lead to achieving conservation more effectively. In this direction and aligned to BNHS's strategic plan, we assisted three local NGOs to secure grants worth Rs 2 crores (US$ 3,00,000) for their efforts in the areas of environmental education, sustainable livelihoods, and habitat restoration.

In another landmark programme under the BNHS Citizen Science initiative, Accenture Labs have collaborated with us in the development of a first-of-its-kind 'Internet of Birds' (IoB) platform that identifies bird species found in India. Using artificial intelligence technology, including machine learning and computer vision, the cloud-based service uses an Accenture-created image recognition platform trained with information from BNHS to quickly and accurately identify bird species from digital photos that are uploaded by the public. An agreement to this effect was signed between the two parties to float this platform among the public on 30th December, 2016.

IoB is aimed at beginners to help them identify birds at a click. This platform recognizes approximately 300 species to begin with and will eventually include all the species found in India. This citizen science initiative by BNHS and Accenture Labs invites all birdwatchers to contribute their photographs to help us train IoB. Visit our website to know more about IoB and contribute or send us your images on bnhsenv@gmail.com. Please go to www.internetofbirds.com for more details.

We urge BNHS members to support us in these newly launched initiatives. As you may know, donations to BNHS exclusively for scientific research are exempt under section 35(i)(ii). You will obtain two benefits, 100 or 175% tax exemption for individual or company, and periodic updates about the programme. For more information, please mail me at director@bnhs.org.

Yet one more year comes to an end. We wish all our members and supporters Happy New Year. May this year bring joy and health for each of you and your family. For our wildlife and environment, the year brings new hope and new challenges. Let us fight together to save our remaining wilderness!

Deepak Apte

Man-Animal Coexistence!

MANDAR SAWANT

Text: **Mandar Sawant and Sanchit More**

'Man-Animal Conflict' – does this phrase require any elaboration? But today, if we were to say 'Man-Animal Coexistence', there may be a few raised eyebrows! In times of increasing man-animal conflict, which are leading to panic and fear among people, Aategaon, a village in Sakoli tehsil of Bhandara district, close to the boundary of Nagzira Wildlife Sanctuary, has set an example of man-animal coexistence, winning the praise of several conservationists, wildlife researchers, as well as forest officials. The villagers lived harmoniously with a female sloth bear that had given birth to two cubs in a *kondwada* (a place where firewood and cattle food is stored) for over 50 days.

The story began on the 11th of November at 4:30 p.m., when Vasanta Hatwar, the Deputy Sarpanch of Aategaon, went as usual to the *kondwada* adjacent to his house to get firewood for cooking. While he was busy gathering wood, he heard cries and believed that he had heard puppies crying out. Deciding to check out, he called his brother to accompany him. As they scanned the room with a torch, they saw a huge sloth bear charging at them, then stopping midway and going back. Shaken by the incident, they realized that the bear had given birth to cubs in the *kondwada*.

The news spread like wildfire in the village. The worried villagers soon alerted the Wildlife as well as the Territorial Forest Departments. The Wildlife and Territorial FD team arrived at the spot within no time. They ruled out using a cage to trap or tranquilize the bear, as the *kondwada* was extremely congested and dark, and there was a possibility of the mother bear attacking in self-defence. Some villagers insisted that the bear and her babies should be shifted to some other place. Instead, Sandeep Gaware, Forest Officer of Umarzari Range, decided to persuade the locals to cooperate and gradually convinced them to allow the bear to stay where she was, as the babies could not be shifted until they opened their eyes, which would take about four weeks. His staff, with the help of the locals, set up temporary fencing around the house, and forest

MANDAR SAWANT

▲ Makeshift bamboo barricades were put up on the door and window of the *kondwada* to prevent an unpleasant situation

▼ Newborn bear cubs are ordinarily small, hairless, and blind, remaining blind for from three weeks to a month

MANDAR SAWANT

MANDAR SAWANT

Camera traps were installed to track the movements of the Sloth Bear

guards were posted for round-the-clock vigilance.

Sanchit heard of this incident on a news channel and like other matters on wildlife we talked at length about this one too. We felt that we should spread this news of man-animal coexistence as it may prompt others to replicate it.

We contacted the forest department of Bhandara and the Deputy Sarpanch to discuss our idea and seek permission to visit the village while the bear family was in the *kondwada*. The Range Forest Officer and Deputy Sarpanch not only granted us permission, but also happily promised to help us at every step.

There was need for caution as bears, though generally diurnal, may be crepuscular or nocturnal, particularly in and around human habitations. It was two days since the bear family had been discovered. During our watch we noticed that the mother was using the lake behind the *kondwada*. It dawned upon everyone that the bear was moving about in search of food and water to nurture her cubs, which could

MANDAR SAWANT

Care of the young is left wholly to the mother.
At such a time she is dangerous and prone to attack

The sloth bear has an elongated muzzle and lower lip, long unkempt hair and short hind legs. Most have a whitish V-shaped breast patch. The claws, always longer on the forefeet, are ivory white. The average height at shoulder level is 65 to 85 cm; average length (from tip of nose to tip of tail) is 140 to 170 cm. Males, usually larger, weigh about 127–145 kg; females 85–110 kg.

be a huge risk for people around, as the route used by the villagers to dispose of waste and to collect firewood was the same as the bear's route towards the lake. To avoid a situation, the forest department and volunteers from the village decided to block the door and window of the *kondwada* with a makeshift bamboo barricade from 6:00 a.m. to 6:00 p.m, as the bear was observed moving during this period. Later, a meeting was held in the village and it was decided that no one would venture close to the house or the lake after 6:00 p.m.

The job of guarding the *kondwada* was divided into two shifts: 6:00 a.m. to 6:00 p.m. and 6:00 p.m. to 6:00 a.m. During these shifts, three guards of the Territorial and Wildlife FD each accompanied the villagers. Camera traps were set up at strategic points to monitor the bear's movements from a safe distance. As soon as the bear stepped out of the *kondwada*, the flash of the camera traps signalled her movement to the night guards, which proved to be of great help to them. Large quantities of ash were put outside the house daily to ascertain if she had ventured out and returned, based on her footprints. This helped to learn about her movements when the camera traps malfunctioned. Initially the bear only moved out once or twice in four to five days, but later on she started going out every night in search of food.

Now, the million-dollar question was: why did the mother bear choose this place to give birth to her young? Why did she come into a human habitation? When we questioned the villagers they said that sloth bear sighting was common in their village as it is close to Nagzira WLS. Other animals that they frequently sighted were leopard, wild boar, nilgai, and spotted deer. When we spoke to the Forest Department officials they corroborated this and added that the number of animals had doubled since the New Nagzira Wildlife Sanctuary had come into existence. Were these the only reasons why the sloth bear had selected this place to deliver her young?

MANDAR SAWANT

Advocacy and awareness among the locals tilted the balance in favour of the bear family

In Maharashtra, the sloth bear is known for its aggressiveness, both towards humans and other large mammals. A survey conducted by Wildlife Trust of India indicates that between 2006 and 2011, 65 human-sloth bear conflict cases were reported from Gondia, followed by 36 from Chandrapur, and 26 from Bhandara.

In Central India, sloth bears are considered to be among the most fearsome and dangerous wild animals. They seem to have a very low tolerance towards humans. The majority of human-bear conflict cases have occurred either when the human enters sloth bear habitat or when the sloth bear enters kitchen gardens in village homesteads. Due to fragmentation of forests, sloth bears often enter villages to raid agricultural crops and forage on wild ficus and horticultural produce being processed (mango, annona, mahua, groundnut, maize, and sweet potato). The main problems in sloth bear habitats in the state arise from pressure due to livestock grazing, collection of honey, and mahua leaves and flowers, timber extraction, tourism, agricultural and developmental activities, and mining. These are reported to be the major factors leading to habitat degradation, fragmentation of forest patches, and loss of sloth bear habitat. Especially in this case, the village is located on the border of a wildlife sanctuary, so by default the areas for agriculture and cattle grazing come under forest land.

Sloth bear home ranges extend from a few square kilometres to more than a hundred square kilometres; male ranges are much bigger than those of females. In habitats with abundant food resources, home range size is likely to be smaller than in areas where food is scarce.

MANDAR SAWANT

Easy and close access to food and water was probably the reason the bear chose this village to deliver her babies

MANDAR SAWANT

Sloth bears feed extensively on termites and are specially adapted for doing this. Their naked lips can be protruded and the inner pair of upper incisors is missing, which forms a gap through which termites can be sucked in. The sucking noises made by feeding in this manner can be heard more than 100 m away. They also eat eggs, other insects, honeycombs, carrion, and various kinds of vegetation, including fruits

We began reading scientific literature on sloth bears to find the answers to our questions. We moved around the place to understand why she had chosen this place to give birth, as sloth bears are very selective about this. Soon, we realized that she had probably selected the *kondwada* as it was dark and abandoned, with several ber trees around it, as well as a pond. We also discovered signs indicating that the bear had dug up soil from the farms to feast on termites.

In our observations over two weeks, we noticed that the female moved out of the *kondwada* during the night in search of food and water, but returned to her babies within 20 to 25 minutes. She never travelled too far from the *kondwada*. We surveyed a 100 m perimeter around the *kondwada* and discovered seven or eight ber trees, besides ant and termite hills. The bear had found food and water close by, making the *kondwada* ideal for rearing her young. The added advantage in this particular case was the protection provided by the villagers.

About a month had passed, and there had been no incidence of conflict. Things were moving smoothly; the guards were no longer scared when shifting the bamboo barricades each morning and evening. The cubs had grown, their eyes were open, and the beginnings of a furry coat could be seen on their naked bodies.

Our fears were laid to rest, the villagers who had demanded that the mother bear be relocated once the cubs had opened their eyes had developed a special bond with her and her cubs. Our resting place was a cowshed near

In 1989, it was proposed in the CITES that the Sloth Bear be listed in Appendix I. It is a Schedule I species under the Wildlife (Protection) Act, 1972.

MANDAR SAWANT

When strong enough and able to get about, the cubs accompany the mother on her wanderings

the *kondwada*. We could hear long "*kk ka kaa kkkk*" calls from the *kondwada* when the mother was away. The cubs were growing rapidly; by the seventh week black hairs had grown all over their bodies. It was evident from camera trap pictures that the bear now came out daily. There was a significant change in the voice of the cubs too, they sounded like a child calling out to its mom, "*maa maa*".

Last Day:

1st January 2016: We were sitting near a bonfire with the villagers and forest guards, about 50–60 feet away from the *kondwada*. We were talking about man-animal conflict when we

MANDAR SAWANT

This bathtub-sized pit was the resting place of the bear and her cubs for 50 days

PAMPAYYA MALEMATH

After enjoying a 50-day stay with the villagers the mother and cubs returned into the wild to face new challenges

MANDAR SAWANT

BNHS gave a letter of appreciation to the Forest Department and villagers for their remarkable work

were interrupted by the calls of the cubs; when we checked we realized that the mother, as per her daily routine, had left for food and water. She returned within an hour and we too went back to our resting place. It was 4:00 a.m. when we heard the cubs call again; we assumed that they may be hungry and did not check.

At 6:15 a.m., the forest guards before routinely closing the barricade flashed their torches to ensure that the mother was inside. On other days they would see her back while she lay inside the pit she had dug inside the *kondwada*, but today they could not see her. We checked from the window, but saw neither the mother nor the cubs. We waited for 30–45 minutes before entering the *kondwada* to confirm our suspicions. The mother had left the place with her cubs! Everyone was relieved and happy.

That day we saw tears of happiness in Mr. Hatwar's eyes. His routine was going to change one more time. Everyday, morning, afternoon, and night, he would make time to chat with us. The villagers began coming to see the place where the bear had lived with her cubs for almost two months. It was a bathtub-sized pit, almost one and half feet deep. The villagers who had earlier demanded relocation of the bear were now sad; the bear family had become part of their lives. The Forest Department guards continued to remain on duty for two days in case the mother returned, but we were confident that she would not.

Our purpose for visiting the village was not just to acknowledge the work of the villagers and forest officials, but also to bring back an example for people who live near the borders of national parks and wildlife sanctuaries. We have told many stories about man-animal conflict; it is time we begin telling a few about man-animal coexistence ! ■

Mandar Sawant is an Engineering student. A macro photographer and wildlifer, he is interested in travelling.

Sanchit More is a nature enthusiast, wildlife photographer, and trekker. Presently, he is working with The Times Group as a Finance Executive.

Infinity resorts
Closer to Nature

www.infinityresorts.com

Nature is not a place to visit...
...It's Home

EXPERIENCE
INFINITY
COLLECTION
of WILDLIFE
RESORTS

Corbett Wilderness

Bandhavgarh Wilderness

Rann of Kutch

Kanha Wilderness

Kaziranga Wilderness

The Corbett Foundation

Kutch Ecological Research Centre

traveloperatorsfor tigers
Action on responsible use of wild habitats

CONSERVATION CORPORATION OF INDIA

Centre on Global Warming

Helping the Skimmer Skim

Text: **Parveen Shaikh**

Riverine birds are the species that are seen across a riverine ecosystem. Such species nest along sand bars and on sand islands which are formed due to reduced water level in rivers. Riverine island-nesting birds are widely recognized to be ideal indicators of the health of rivers. These birds have special feeding and nesting requirements adapted to suit their particular habitat. Some of the well-known riverine species in India are Black-bellied Tern (Endangered), Indian Skimmer (Vulnerable), River Lapwing (Near Threatened), and Great Thick-knee (Near Threatened).

South Asia, especially India, has the highest known diversity of riverine fauna, including freshwater turtles and riverine nesting birds. However, this is also the region with the least information on specialist fauna of riverine areas. In India, the habitat of riverine island-nesting birds is under heavy anthropogenic pressure. Most of the large river islands are utilized by humans for summer cultivation of vegetables, and most of these rivers are dammed to divert water for irrigation, drinking, or industrial purposes, reducing some parts to narrow streams. Many eggs and chicks of the riverine species are destroyed due to sudden release of water from dams. Increasing human settlements near rivers and temporary settlements on islands bring them into conflict with crows, cats, and dogs that exert additional predation pressure.

Looking at the present declining scenario of riverine nesting birds in India, my team and I decided to initiate a research project on these species. Among all the riverine species in India, we selected the Indian Skimmer as our target species to initiate our research on riverine birds. Our reasons for doing so were: Indian Skimmer population is declining fast. Formerly widely distributed across the Indian Subcontinent, along the major rivers of Myanmar and along the Mekong in Indo-China, they are now confined only to India, Bangladesh, and Pakistan. India is one of the most important breeding grounds of Indian Skimmer.

A flock of Indian Skimmer at the National Chambal Sanctuary

SONAL PATIL

VIKAS CHOUDHARI

Indian Skimmer skims on the surface of water for feeding

Indian Skimmer is one of the three species that belong to the Skimmer family. It is a beautiful species with a specialised feeding apparatus: the upper mandible is shorter than the lower mandible. The species get its name from its feeding mechanism; while foraging for food the bird flies low over water with its bill open and the lower mandible skimming through water. It occurs primarily on larger, sandy, lowland rivers, around lakes and adjacent marshes, and during its non-breeding season along estuaries and coasts. It breeds colonially on large, exposed sand-bars and islands.

Indian Skimmer is listed as 'Vulnerable', and its population is further undergoing a rapid decline due to widespread degradation and disturbance of lowland rivers and lakes. As mentioned earlier, India holds the only remaining known breeding grounds for this species and National Chambal Sanctuary (NCS) is one among very few locations in India that hosts significant breeding populations of Indian Skimmer. Several new dams and water

PARVEEN SHAIKH

The Chambal river, with sandbars, ravines, and scrub vegetation constitutes the landscape of National Chambal Sanctuary

DELIP K. DAS

Indian Skimmer resting on sand bars in the River Chambal

extraction devices are scheduled to be set up on the Chambal river, potentially complicating the management of the Sanctuary for target fauna.

The present global population of Indian Skimmer is estimated at 6,000–10,000 mature individuals. Research attention on this species has been focused almost entirely on very basic natural history observations, and major lacunae in even basic habitat requirements of the species persist. Information on habitat use and preference, the effects of habitat attributes, biotic factors and human disturbances on Indian Skimmer distribution and abundance are either scant or completely lacking, and thus are an impediment to effective understanding of the conservation needs of the species.

Our study aims to identify the current nesting sites of Indian Skimmer in the National Chambal Sanctuary and to understand the ecological and anthropological factors that make sites favourable for this species. We will be surveying the entire stretch of the NCS from Kota, Rajasthan to the confluence of the river with Yamuna at Bhareh to assess the distribution of species in winter, as well as the bird's breeding season. We will soon be introducing a citizen science component to this project, to estimate the distribution of the species throughout its range. The results of this project will help in filling up the lacuna in our knowledge about the ecology and habitat usage of this species, and about the effects of the anthropogenic disturbances on its distribution. Riverine nesting bird species exhibit strong selection of specific nest-site and landscape-scale variables, hence a thorough understanding of the habitat requirements will go a long way in helping establish practical management protocols. This study, therefore, will contribute to our understanding of an important river system and Indian Skimmer nesting ecology.

This project is the first step in our riverine birds conservation initiative. We plan to expand this project to other rivers beyond NCS, and also collaborate with other countries in Southeast Asia that host populations of Indian Skimmer. I believe that if all stakeholders join hands we can come up with a win-win scenario for the conservation of this species. Though it is a long way to go, this project is a small step towards the goal. ■

Parveen Shaikh has been working as a Research Fellow at the BNHS since 2012, on various avian survey projects. Her interests are behavioural ecology of birds, conservation biology, and citizen science.

Eds: This research project is funded by Future Conservationist Award 2016 of the Conservation Leadership Programme, awarded to Parveen Shaikh and her team, BirdLife Preventing Extinctions Programme, UP Bird Festival, as a 'BirdLife Species Champion' for conserving Indian Skimmer in NCS.

Why do birds sing?

Secrets behind the melody of birdsong

Text and Photographs: **Anil Kumar**

Oriental Magpie-robin *Copsychus saularis* is known for its complex melody

Most of us have experienced the chirping of birds around us, sometimes sweet and musical and sometimes loud and harsh! Have you ever wondered why birdcalls are so diverse? That they may have a meaning? If yes, then know that the answers to these questions are hidden in science. Bird calls are an important mode of communication.

Let's start with some historical facts. Darwin was the first ethologist to initiate the idea of animal communication in his book, THE EXPRESSION OF EMOTIONS IN MAN AND ANIMALS, published in 1872. The milestone studies of Karl Von Frisch, Nikolaas Tinbergen, and Konrad Lorenz played a primary role in the development of modern approaches to animal behaviour and communication. These three founders of ethology (the science of animal behaviour) received the Nobel Prize in 1973 for their pioneering studies. Investigations on birdsong were mainly initiated during the early 1950s by Peter Marler, when he published his findings in *Nature*. After that, birdsong and calls became the focus of studies for many ecologists and neurobiologists.

India is home to more than 1,260 species of birds. Among them more than half are songbirds, mostly known for their beautiful and elaborate songs. Indian birds include various groups such as flycatchers, warblers, babblers, thrushes, tits, bulbuls, sparrows, wagtails, leafbirds, starlings, drongos, shrikes, larks, broadbills, pipits, flowerpeckers, sunbirds, finches, buntings, and pittas. Like our people and culture, nature in India is highly diverse. We have an array of geographical landscapes, from the hot Thar Desert to the sky-

A young Spotted Nutcracker *Nucifraga caryocatactes* producing contact calls

Black-faced Laughingthrush *Trochalopteron affinis* is known for its chuckling and churring

Strong-footed Bush-warbler *Horornis fortipes* has a peculiar song, an ascending introductory note with two or three frequency modulated elements

Great Barbet *Megalaima virens* has a typical loud call during spring

Himalayan Bulbul *Pycnonotus leucogenys* is an endemic songbird of the Himalaya

Grandala *Grandala coelicolor* is a shiny royal blue bird with a distinctive song

Olive-backed Pipit *Anthus hodgsoni* is a Himalayan songster

high snow-covered mountains of Himalaya, thorny scrubland to lush green, almost impermeable, rain forests of the Northeast. All of these provide suitable environs for a large number of songbirds.

In 1994, I decided to work on birds when a singing Oriental Magpie-robin *Copsychus saularis* overwhelmed my heart. My knowledge about birds then was scanty; the desire to learn more helped me to complete my doctorate on birdsong and I decided to pursue a career in ornithology. Like many other bird lovers, I too had questions: Why do birds sing? Do these songs have a meaning? Can they communicate like us? I read about the research of previous workers and learnt from my own studies on communication systems of Indian birds. Some basic queries that arose are being addressed here.

Why do birds sing?

Generally, birds sing to advertise territory and for mate acquisition. They call to communicate, mate, threaten, beg; they call in flight and when alarmed. To defend natural resources (for foraging and breeding), birds often guard their territory. To maintain their territorial claims and to avoid escalated fights (which are costly in terms of energetics) with intruders, the owners of territory usually produce some vocalization loudly from the top of trees in forested habitats, and electric poles and buildings in urban areas. Some species use a single type of song

Bar-throated Minla *Chrysominla strigula* is a songbird of high altitude Oak and Rhododendron forests in the Himalaya

Mountain Chiffchaff *Phylloscopus sindianus* is known for its extended, complex song

Great Tit *Parus major* is a widespread songbird

Grey-hooded Warbler *Phylloscopus xanthoschistos* sings short and simple songs

for both mate acquisition and territory, while others use two distinct categories, separately for each function.

The difference between a call and a song

In terms of bio-acoustics, vocalizations uttered in a single articulation and generally made up of a single note are known as calls. In contrast, a song may include a continuous series of strophes or phrases (group of elements either similar or dissimilar in structure). In other words, songs are long, relatively structured complicated sounds produced while attracting a mate or defending a territory, whereas calls are shorter, less rhythmic sounds used to communicate a threat or an individual's location.

Who sings, male, female, or both?

In temperate birds, it is believed that songs are 'sung' exclusively by males with a few exceptions. However, in the tropics, females also sing frequently, either solo like males, or in duets. Females of some species like bulbuls and mynas sing commonly, while in some species such as Oriental Magpie-robin, female song is a rare phenomenon. In some cases, the male and female both sing at the same time, often with precise temporal coordination. This is known as 'duet singing'. Often, they sing stereotyped and integrated songs, in which both sexes exchange notes in such a coordinated way that unless the

Rufous-bellied Woodpecker *Hypopicus hyperythrus* is a bright bird which makes soft vocalizations

Mrs Gould's Sunbird *Aethopyga gouldiae* has dramatic striking colours, but a feeble song

Fire-tailed Sunbird *Aethopyga ignicauda* has a soft musical song

Scaly-bellied Woodpecker *Picus squamatus* is a large, green bird with a melodious vibrating voice

listener is standing between the two singers, he may think that only one bird is singing. In some species such as Rusty-cheeked Scimitar-Babbler *Megapomatorhinus erythrogenys,* the male produces one element and the female another, in a simple alternating system called 'antiphonal singing'.

Singing in spring or throughout the year?

Singing in birds is highly diversified. Many species, such as flycatchers, wagtails, thrushes, and chats sing only during the breeding season, while others like bulbuls and mynas sing throughout the year. So far, studies on bulbuls and robins reveal that they have two categories of songs. However, one cannot infer from this that all Indian songbirds have two categories of songs.

Types of songs and calls

Bird vocalizations can be divided into several functional categories. The song may be context-specific, season-specific, based on complexity, time of day, and function. Birdsong is used for sexual selection, threat, provisioning, and foraging. Some signals are time-specific (i.e. dawn singing and nocturnal singing) and season-specific (such as spring song and winter calls). While some signals such as alarm calls, begging calls, and threat calls are relatively 'simple' in structure, 'complex signals' such as the songs of robins comprise frequency/

Black-throated Tit *Aegithalos concinnus* is a restless, colourful tit that has a simple and feeble song

Orange-gorgeted Flycatcher *Ficedula strophiata* is a Himalayan bird known to sing softly

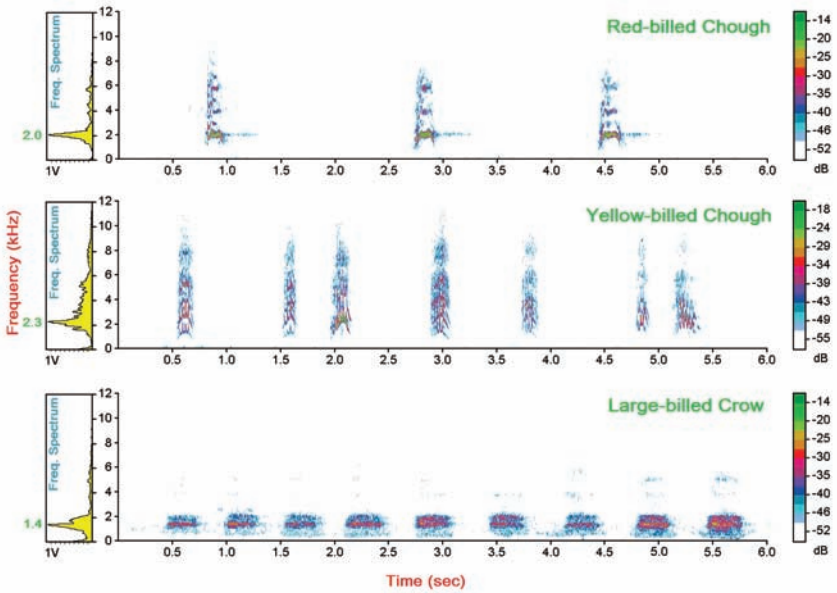
Himalayan Black Bulbul *Hypsipetes leucocephalus* is a daring songster

White-tailed Rubythroat *Calliope pectoralis* sings melodious songs with tail display

amplitude modulated complex elements or phrases. The signals can be phonetically differentiated, such as chip calling, chirping, whistling, and squeaking. According to their function, these may be labelled as territorial calls, mating calls, threat calls, and flight calls.

Discovery of new species, assessment of taxonomic rank and phylogenetic relationships can be established through studies of bird calls. Many new species have been discovered because of their distinct vocalization. Some morphologically similar species can easily be separated by their vocalizations, for example the Eurasian Cuckoo *Cuculus canorus* and Indian Cuckoo *Cuculus micropterus* are almost similar in appearance but their songs are quite different. In the song of Indian Cuckoo, the phrases are composed of four elements, while the Eurasian Cuckoo's song is made up of two elements.

Volume also varies significantly in many species. Many wild species are elusive, hidden in impenetrable vegetation, or high in the canopy. For example, Strong-footed Bush-warbler *Horornis fortipes*, can be identified most easily from its unique call, but sightings are not easy. Recordings of such birds can be played by researchers to attract them towards traps or mist-nets. Playbacks are also used as aural stimuli during census to increase the detectability of a given species or to survey secretive or nocturnal species, such as owls and nightjars.



Spectrograms of the 'caw' call in three sympatric species of crow/choughs, showing distinct structure and physical characteristics of the calls. Bio-acoustic analysis revealed that frequency patterns, band-width, dominant frequency and rate of calls are distinct in all three species. The calls are wide-band in Yellow-billed and Red-billed choughs, and narrow-band in Large-billed Crow. The call rate is about 30 calls per minute in Yellow-billed Chough, 70 calls per min. in Red-billed Chough and 90 calls per min. in Large-billed Crow

Songbirds of Tawang, Arunachal Pradesh

During May 2009 and 2010, I undertook two field visits to Tawang, western Arunachal Pradesh, to document its avifauna and record songs and calls. On May 20, 2009, I went to the western hill slopes of Lumla, a place located near the confluence of Tawang Chu and Nyamjung Chu rivers. Here I heard the call of a scimitar-babbler, which sounded quite different from the Rusty-cheeked Scimitar-Babbler *Pomatorhinus erythrogenys*, a species familiar to me. Failing to locate it due to dense vegetation, I recorded a long bout of its vocalizations. Surprisingly, as soon as I played back the call, it immediately responded and aggressively came out of the bushes. I was able to locate another individual (female) similarly. Looking through field guides, I was able to confirm that it was a Spot-breasted Scimitar-Babbler *Pomatorhinus mcclellandi*, my first sighting of this uncommon species. Similarly, I covered both valley (such as Jung, Kitpi, Lumla, Mukto, Zemithang) and high altitude areas (such as Sangetsar Lake, Panggang Teng Tso, Y-junction, Bumla). I recorded more than 40 species, over half of them new to my collection.

What are Spectrograms?

Spectrograms or sonograms are graphical representations of song frequency (pitch) changes over time. Simply put, spectrograms are a tool that allow birders to see inside a bird vocalization and can provide important clues on how to differentiate one call or song from another. The sonogram has become the standard way to illustrate a song and has enabled researchers to dissect the elements of individual songs in much greater detail than otherwise possible. Besides learning to recognize calls, sonograms are used to study the same species for regional differences in calls, identifying and following groups or even individual birds, finding out if bird calls are learned or genetically determined, if calls change with the seasons or over the years, or are influenced by other nearby birds of the same species or other species, or for comparing original calls with their mimicked versions, and so on.

On the basis of structure and biological significance, the signals can be named, classified and described, accordingly. For example, crows usually produce a call for contact/group cohesiveness, phonetically rendered as '*caw….caw….*'. I recorded and analyzed this call in three sympatric species (namely Red-billed Chough *Pyrrhocorax pyrrhocorax* Yellow-billed Chough *P. graculus*, and Large-billed Crow *Corvus macrorhynchos*). Phonetically they appeared quite similar, even though all three species' calls had distinct and species-specific structure (phonetics, syntax, and temporal organization).

Why conserve songbirds?

The relationship between songbirds and their habitat is reciprocal, and bird populations are excellent indicators of ecological change. Conservation of songbird diversity and habitats helps to protect many other elements of biodiversity. In Europe and America, recent studies indicate that the main reason for songbird decline is loss of habitat. Fortunately, in our country, the Himalaya still has pristine forests, which are intact and represent healthy habitats of birds. Our priority should be to save these sacred forests, so that we can also save our songbirds and their habitats. ■

Anil Kumar is a scientist in Zoological Survey of India, Dehradun. Over two decades, he is working on songs and calls of birds, avifauna and some mammals of the Himalaya.

Ashok Kumar
(1935–2016)

I met Mr. Ashok Kumar in 1983, when he invited Dr. Sálim Ali and me to Dubai to discuss conservation issues with the UAE rulers. He was a gracious host and arranged our meetings meticulously, but more memorable for me were the field trips he arranged for us to some of the most beautiful though extremely arid areas of the UAE. He was one of the founders of Dubai Natural History Society. During his ten years in the Dubai corporate world, after his stint in Tata Steel, he discovered to his horror that Dubai was one of the major hubs of wildlife smuggling. Through his connections he tried to convince the ruler to put a stop to this nefarious trade. While he was not so successful in Dubai, he was instrumental in curbing the open sale of wildlife products in India. After returning to India in 1990, he set up a Wildlife Trade and Monitoring Unit in WWF-India that later became TRAFFIC-India.

Mr. Ashok Kumar and his colleagues were able to bring the unlawful trade of tiger bones and claws into the limelight through his investigative and sometimes daring raids.

Mr. Ashok Kumar, Ashok bhai for many of us, had the grit and strong determination needed to do what he wanted to do for saving a species, whether through his position in WWF-India or in the MoEF, where he was a consultant for many years.

Along with Belinda Wright, he established the Wildlife Protection Society of India (WPSI), which did some pioneering work on the illegal wildlife trade. Later, he joined Wildlife Trust of India where he mentored many enthusiastic young people. Ashok bhai was affable, accessible, friendly, and helpful to anyone interested in wildlife conservation. He was a father figure in WTI, where he continued to be involved even after his faculties had begun to fail. His presence gave strength to many.

Along with his numerous admirers, he will be missed by elephants, tigers, mongooses, birds, and turtles, whose illegal trade he kept under control through his grit, determination, and policy interventions. ■

Asad R. Rahmani

ABOUT THE POSTER

Himalayan Lady's Slipper Orchid *Cypripedium himalaicum*

Cypripedium is one of five genera that together compose the subfamily of lady's slipper orchids (Cypripedioideae). They are widespread across much of the Northern Hemisphere, including most of Europe (one species), Russia, China, Central Asia, Canada, the United States, Mexico, and Central America. The name *Cypripedium* is derived from the Late Latin: *Cypris*, from Ancient Greek: *Kypris*, an early reference in Greek mythology to Aphrodite, and Greek: *pedilon*, meaning "sandal".

Cypripedium himalaicum occurs at 3,000–4,300 m above msl in northern India, Nepal, Sikkim, Bhutan, southeast Xizang (Tibet), and possibly southwest China. It occurs in light forests, open slopes, and small shrubs. This species needs a specific microhabitat feature such as steep grassy slopes (about 50°) amidst *Danthonia* grass. *C. himalaicum* prefers wet limestone boulders, nooks, and crevices in partial shade, and flowers in June and July. The flower is about 5 cm across; sepals and petals are green with red veins, and shorter than the lip, which is globular, with a wavy margined mouth.

Cypripedium himalaicum is sensitive to changes in the environment and is typically associated with a specific set of habitat conditions, such as associating mycorrhizal fungi, steep slopes, nutrient availability, and shade. A very rare species, it is known only from a few scattered subpopulations (now severely fragmented), mostly in very small colonies. It is assessed as Endangered (EN) by the IUCN, included under Appendix II of CITES, listed as Rare in the Red Data book of Indian plants and is protected in Nanda Devi National Park.

The species is under numerous threats, especially overgrazing, ruthless collection, habitat loss, and disturbance of its restricted range due to trampling, deforestation, clear-felling, logging practices, and climate change, which cause a decline of the species in all the locations and the destruction of some subpopulations. In addition to human interference, environmental risks to this species include drought, as it does not tolerate dry conditions, and climate change. ■

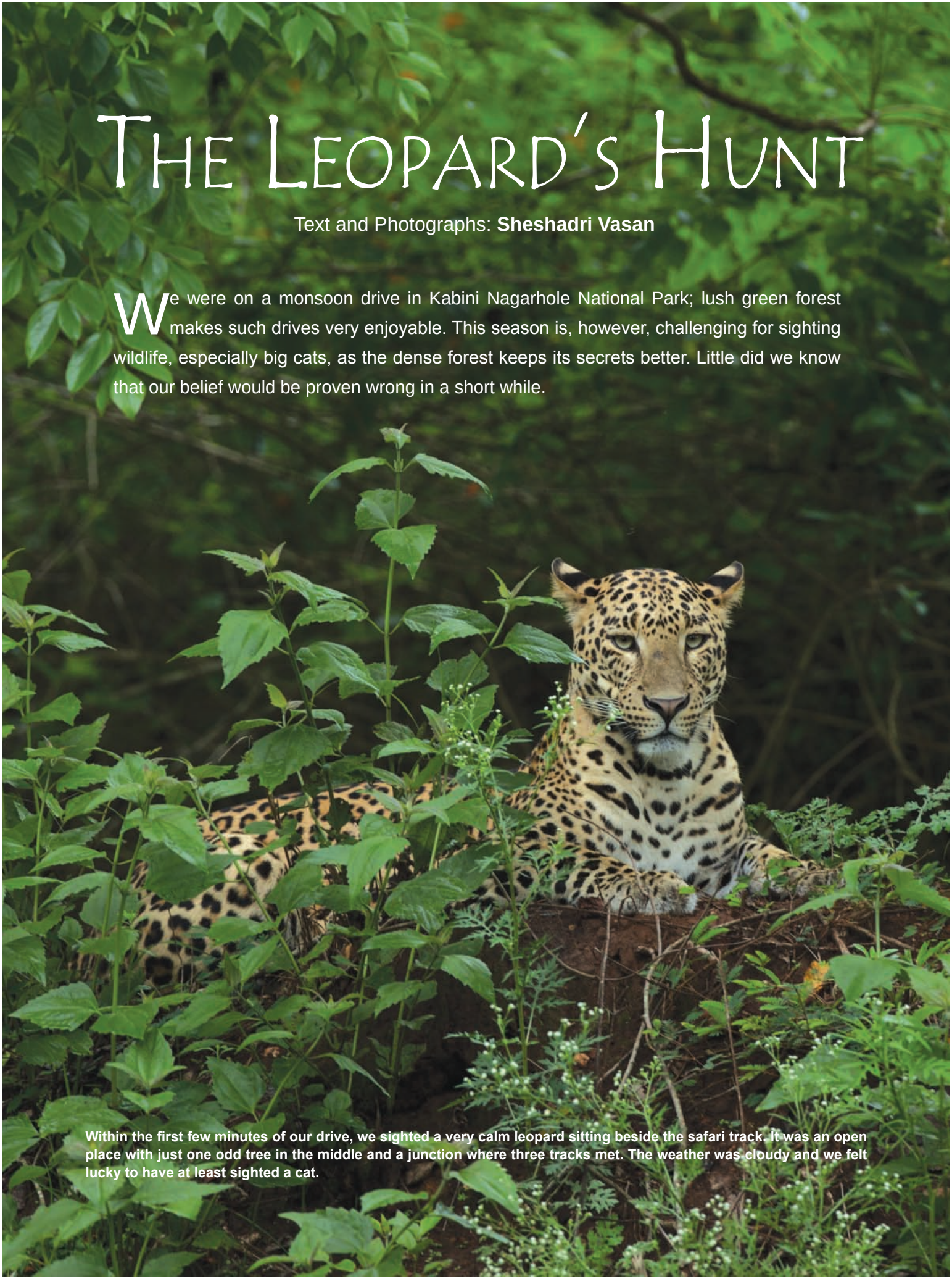
Himalayan Lady's Slipper Orchid
Cypripedium himalaicum


SAKET BADOLA

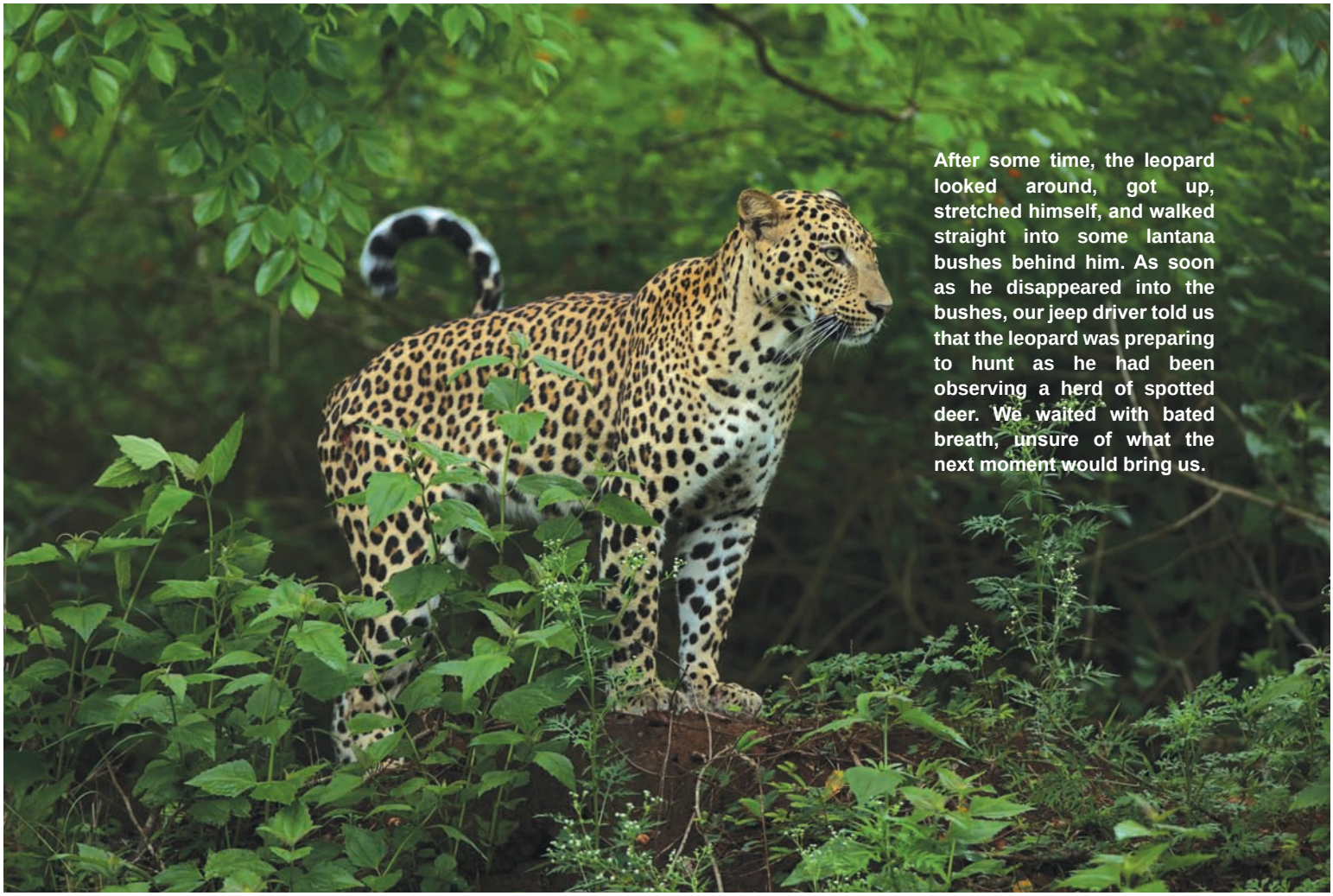
The Leopard's Hunt

Text and Photographs: **Sheshadri Vasan**

We were on a monsoon drive in Kabini Nagarhole National Park; lush green forest makes such drives very enjoyable. This season is, however, challenging for sighting wildlife, especially big cats, as the dense forest keeps its secrets better. Little did we know that our belief would be proven wrong in a short while.



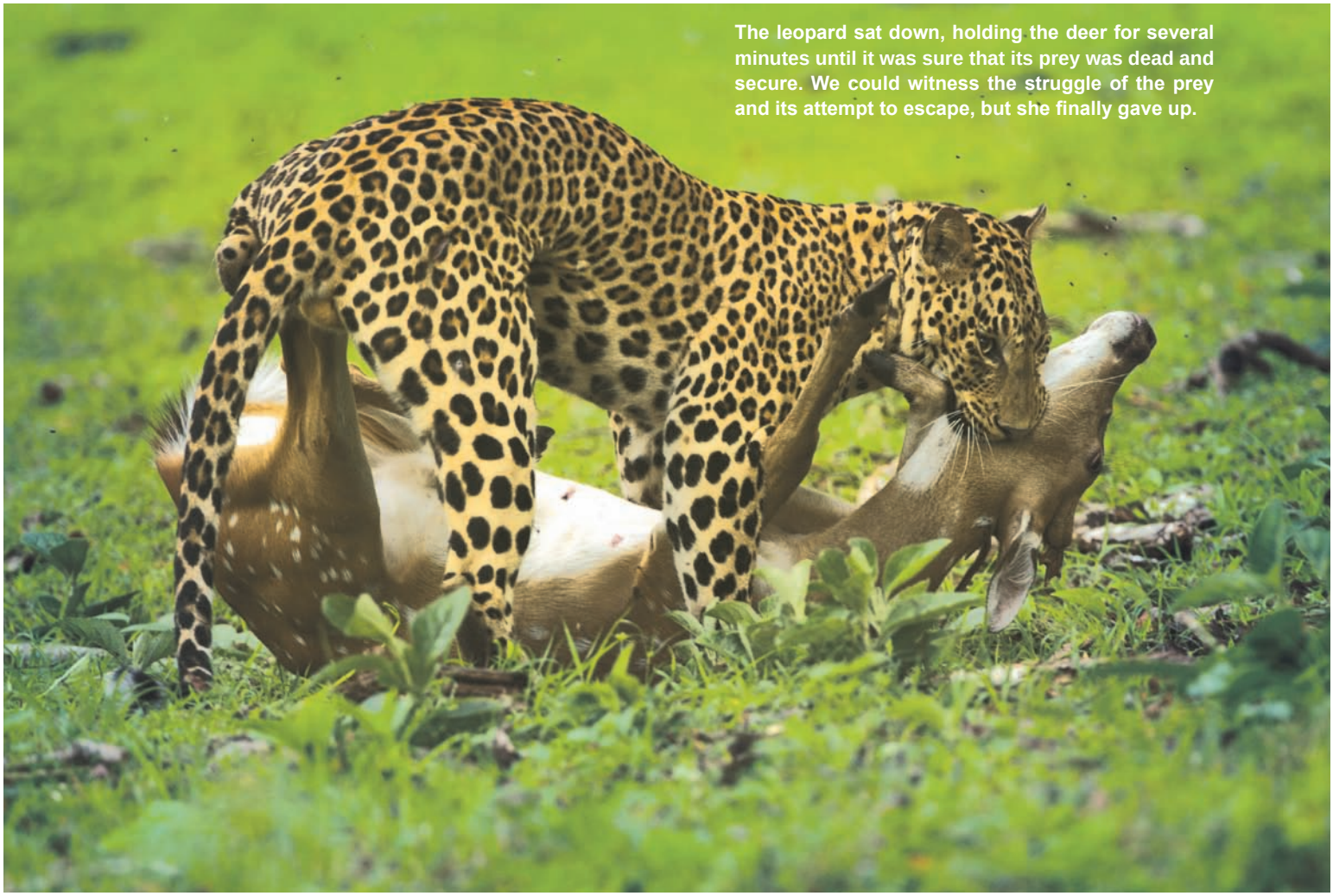
Within the first few minutes of our drive, we sighted a very calm leopard sitting beside the safari track. It was an open place with just one odd tree in the middle and a junction where three tracks met. The weather was cloudy and we felt lucky to have at least sighted a cat.



After some time, the leopard looked around, got up, stretched himself, and walked straight into some lantana bushes behind him. As soon as he disappeared into the bushes, our jeep driver told us that the leopard was preparing to hunt as he had been observing a herd of spotted deer. We waited with bated breath, unsure of what the next moment would bring us.

We noticed a herd of spotted deer coming in from a different direction close to the place where the leopard had disappeared. As the deer did not raise any alarm calls, we were unsure if the leopard was still hiding in the bushes or had moved on. It was then that we noticed that the wind was blowing in the opposite direction. The deer were unaware of the predator and kept grazing peacefully.

And then, suddenly, we heard an alarm call and the herd of more than 50 spotted deer panicked and began to flee. At the same instant, we saw the leopard come out of the bushes at lightning speed and catch his prey. The camouflage was so perfect that it took several seconds for some people in our jeep to realize that a hunt had occurred in front of our eyes. The leopard held firmly onto the throat of the massive female, while her family and friends continued to alert the rest of the forest with their loud alarm calls.



The leopard sat down, holding the deer for several minutes until it was sure that its prey was dead and secure. We could witness the struggle of the prey and its attempt to escape, but she finally gave up.

Once the leopard was confident that the deer was dead, he started to drag it towards the bush. As the prize catch of the day was quite heavy, the leopard constantly changed its position and tossed the prey about to carry it into the bushes.

Just before he disappeared into the bushes, the leopard stopped and turned around for a few seconds giving us one last glimpse of his catch. We watched the victor and the vanquished disappear into the bushes... what an experience. The stronger of the two had survived!

**Sheshadri Vasan is a Sales & Marketing professional from the telecom industry in Bengaluru.
He complements his interest in wildlife by freezing his memories of the jungle with his photography skills.**

Chandoli: The last piece of a Green Jigsaw

Text and Photographs: **Gangadharan Menon**

In 2010, Chandoli National Park (NP) was declared as a part of the Sahyadri Tiger Reserve. With this, the missing piece of a 'green jigsaw' fell in place. Large tracts of forest in the Western Ghats in Maharashtra became one continuous stretch, thereby providing a corridor for tigers and leopards to reach the forests of Goa, just in case they chose to take a long walk! Chandoli NP on one side adjoins Koyna Sanctuary, and on the other Radhanagari Sanctuary.

To reach the legendary 'Janabai's mango tree' was an exercise in mud-track rally driving. The looming mango tree is at least 100 years old and has a story of its own. Janabai, a generous woman of her times, had given money to the shepherd community, called the dhangars, helping them to pay their land tax to the British. In her honour, they planted a mango sapling, and today it towers over 200 feet, and is seen head and shoulders above the other forest trees from as far away as 5 km!

Back at the base, we attended a training programme conducted under the able guidance of Mohan Karnat, the Chief Conservator of Forests, Kolhapur. A team of about 80 guards and officers were learning the latest methods of GPS tracking, using the best wireless systems, setting camera traps, and familiarizing themselves with new laws. This was jointly conducted by their senior officers and special visiting faculty from other states.

A birding trip was on the agenda the following morning. Soon after we left the road and walked onto the forest path, we entered primary forest. The excitement was palpable as we came across massive hoof-marks of a herd of Gaur that must have cascaded down the hill-slope. In another patch, wild boars had uprooted edible plants for dinner the previous night. Then there were tree pies, babblers, paradise flycatchers, woodpeckers, drongos, and scarlet minivets to give us company.

When we returned, Mohan told me with paternal glee that some tiger cubs had just been sighted in the Reserve. But the location was not disclosed as it was a closely guarded secret, known to just a couple of trusted officers. He then introduced us to the living Encyclopedia Botanica, the amazing plant expert Shrirang Shinde, who is a forest guard based at Koyna.

Shrirang accompanied us all the way from Chandoli to Satara, where I was to drop him off. Right through our journey, which turned out to be a real botanical expedition, he opened out his green book, a leaf at a time. Even as I was driving at 60 kmph, he would spot a plant whizzing past, and would ask me to stop. He gave up studies after Class 10, as his parents could not afford to support further studies. And he considers himself fortunate that he met his guru Dr. Sanjay Limaye, who opened a whole new green world for him. Together, they traversed the length and breadth of the Sahyadris on foot, discovering the secret lives of local plants. Unfortunately, Shrirang lost his guru to the dreaded tsunami of 2004.

Balanophora is a parasitc plant species found in undisturbed habitat

Soon after we left Chandoli, he made us stop near a waterbody. Here, I witnessed one of the most innovative uses of two different devices. Since he had a small camera with no zoom

Glory Lily is also known as Flame Lily in other parts of the world because of its bright red-orange petals seen at maturity

Yellow Orange Tip is usually seen throughout the year in forested areas

White-bellied Blue Flycatcher is seen singly or in pairs

Long-horn beetles are so named from their antennae which are longer than the body

lens, he would hold his magnifying glass close to the plant and would photograph it through the glass to get a magnified image!

Near Karad, on a stopover to see a plant, he realized he could not identify it. So, he took a picture to show his go-to authority, his octogenarian mother who was extremely knowledgeable about the plants in that area.

Shrirang then showed us a whole lot of incredible plants: Bamburti, a plant that's used by locals to preserve dead bodies; Daatpadi that's fed to cattle to increase their weight just before a village auction; Chirkha, which on being fed to a dying cow will make it stand up, albeit for a few minutes; Agara, the grain of which is used by locals for food during drought, as it is the only plant that survives extreme lack of water.

At Kaas, I was fortunate to witness a beautiful sight. Shrirang Shinde, who has been studying the flora of the Western Ghats for almost three decades, was part of a team that discovered a new species of grass. It was named *Eulalia shrirangi* after the master botanist Shrirang R. Yadav. And as Shrirang Shinde was his namesake, I saw the unforgettable sight of Shrirang holding a *shrirangi* in his hand! ■

Gangadharan Menon has published over 120 articles on nature in India's leading newspapers. He has published two books, EVERGREEN LEAVES and TALES OF A DRIFTWOOD.

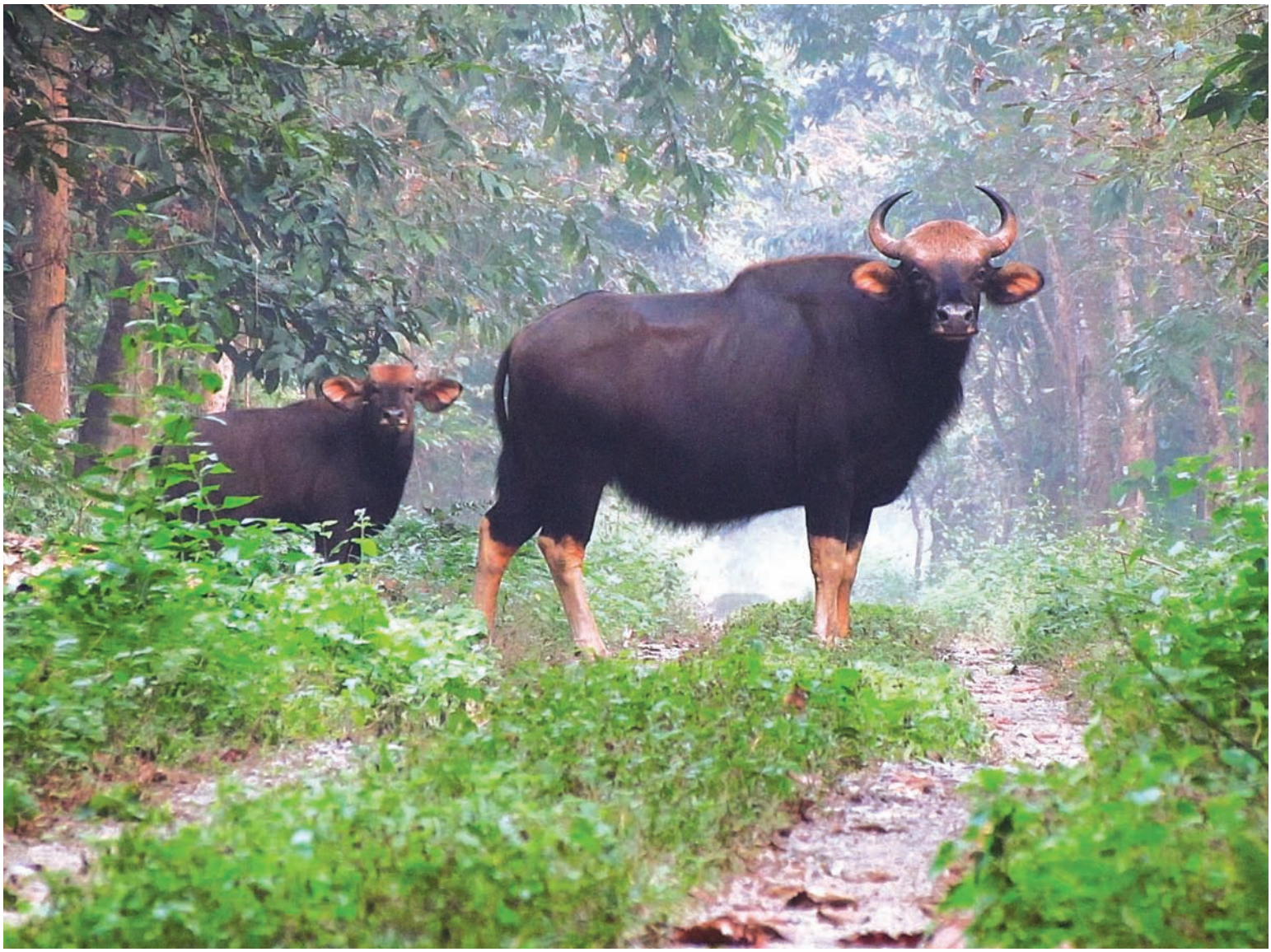
How to get there: Chandoli is 380 km from Mumbai. Turn at Islampur after driving along the Mumbai-Kolhapur highway, and proceed another 35 km from there.
Best season: November to March.
Where to stay: Inspection Bungalow at Warnavati. Write to the Executive Engineer, Irrigation Department, Mandur, Kolhapur 416 002. Tel: 0234-5226318 or 0234-2224539.

The Mystery Land – Buxa

Text and Photographs: **Tamaghna Sengupta**

Buxa Tiger Reserve (TR) is well-known globally for its variety of flora and fauna. Spread across 760.87 sq. km in the Alipurduar district of West Bengal, Buxa Tiger Reserve lies in the moist tropical zone and includes the entire erstwhile Buxa Forest Division (702.44 sq. km). The northern boundary of Buxa TR is connected to Bhutan. Alipurduar city and Cooch Behar district are to the south. The eastern boundary touches the Assam border, and Chilapata and Jaldapara Wildlife Sanctuary are to the west of Buxa.

Gaur are by nature shy and timid animals; their defence is their massive size and acute sense of smell



Mudpuddling usually invovles newly hatched males; it is often a social activity where male butterflies of one or more species gather to suck salts along with water

The avifauna of Buxa is rich and diverse; (L-R): White-capped Water-Redstart, Oriental Pied Hornbill, Great Pied Hornbill

Buxa TR has a variety of habitats as it is spread across plains and hills. There are as many as eight forest types in Buxa TR: Sal, Riverine, Evergreen, Hill, Dry-mixed, Wet-mixed, Semi-evergreen, and Savannah forests. The Reserve is surrounded by tea gardens and ever expanding villages that house workers from these tea gardens.

As an amateur photographer from Alipurduar, I often visit Buxa forest and have photographed mammals like leopard, spotted deer, barking deer, elephant, gaur, wild boar, and wild dog (dhole) and more than 200 butterflies. According to some butterfly enthusiasts, the number of butterfly species in Buxa could be from 500 to 600.

The railway track that connects Alipurduar Junction to Siliguri Junction passes through Buxa forest, Jaldapara, Chapramari, and Mahananda Wildlife Sanctuary. Elephants die every year, hit by trains while crossing the track. This is a major issue not only in Buxa TR but in the entire Duars-Terai region of West Bengal. Both the Northeast Frontier Railway and Forest Department of West Bengal have discussed this issue several times to find a solution but the train hits continue. It is obvious that the suggestions implemented are not enough! The entire metre-gauge railway track between Siliguri and Guwahati was converted into broad gauge line. This involved cutting down of a large number of trees, and also an increasing number of faster trains which cause deaths of wildlife, especially the Asian Elephant.

I have had some unbelievable experiences in Buxa TR. During my visit to the Park, I have faced elephants several times while photographing butterflies. I have also encountered Gaur, Spotted and Barking Deer, Leopard, and Wild Boar a couple of times. Birds like Crested Serpent Eagle, Collared Falconet, Oriental Pied Hornbill, Scarlet Minivet, Crested Kingfisher, and Mountain Bulbul can easily be seen in and around the forest. The hilly areas are ideal for photographing birds like Chestnut-crowned Laughingthrush, Green Magpie, and Great Hornbill.

Bala river in the core of Buxa TR causes major floods in its adjacent areas

Elephants die every year due to train-hits

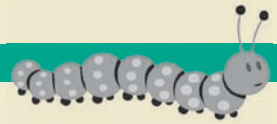
A nature lover can visit Buxa through the year. However, the best time to visit this tiger reserve from my experience is from March–April or from October–November. ■

A wildlife photographer and naturalist from Alipurduar, Tamaghna Sengupta enjoys writing wildlife and travel related articles.

How to reach Buxa: Buxa Tiger Reserve is well connected with the nearest town Alipurduar, a district headquarter in West Bengal. Siliguri is *c*. 140 km and Guwahati *c*. 300 km from Alipurduar. Tourists have to take permit from the Rajabhatkhawa check post to enter the core to reach Jayanti, which is 30 km from Alipurduar.

Where to stay: There are several Homestays/Lodges in Jayanti as well as on the Buxa hills.





Letter to a Caterpillar

Dear Catti,

It all started with you! I clearly remember, the sun was already up and I was reluctant to leave my slumber. Among a host of other morning household noises, my Granny's voice calling out for me from the ground floor of our house was pouring into my ears. Immediately, I sprang from my bed and rushed to her, almost preventing her from climbing up forty stairs to me. She had a surprise for me in a small bamboo basket.

It was a chilly morning in December 2010 when you were presented to me by my octogenarian Granny. From that tiny basket you appeared to be a fat worm probably 4 cm long, black at the top with brownish ochre head and underparts. You also had a tiny brown tail and large black eyespots outlined in black. By the sides of the black section you had a line of vertical white marks, perfect to motivate apparel designers. But honestly, you looked devilish and creepy. Seeing the horrified expression on my face, my Granny calmly reminded me that I had enrolled for a biodiversity conservation course. And that it was time to realize the practical side of all the theories and stories of conservation that I had been sharing till then In fact, this was not my first encounter with another 'species', I had been to the forest with my parents, collected and connected with the life there. But I had kept myself away from strange creepy creatures like you, as I was warned that you may be dangerous and should not be touched. My Granny assured me that I would not regret having you and that you would grow up to be a beautiful butterfly. Granny had rescued you while you were crawling on our verandah, probably looking for shelter, or were you hungry? But you didn't eat any of the leaves that I offered you on Granny's advice. I captured photos from every possible angle before placing you back in the bamboo basket. I covered the basket with a transparent lid so that I could observe you every day. I returned to my room happily and began browsing through my books to learn more about you. I remembered a book on butterflies and moths gifted to me by Isaac Kehimkar. I found it on my old book

rack lying untouched; it was gifted to me when I didn't even know how to read or write, but to see the colourful pictures in it. I shared the book with my Granny as it contained information about your fellow creatures, but we could not find you in it.

During one of our dinner parties, I shared my newfound love for you with the guests, and one of my Baba's friends immediately gave me a book 'Dictionary of Butterflies and Moths' by Allan Watson and Paul E.S. Walley from his collection. The books and Google did not succeed in revealing your identity to me.

After four or five days you transformed into a pupa and would twist and turn when I touched the hard brown layer that now covered you, that made my hairs stand on end! Granny and I waited patiently day after day. After about 20 or 21 days when you did not respond to any touch, my Granny declared you dead. I was upset and about to throw you out, when I saw you sitting camouflaged in army prints. What an unbelievable tranformation. You had a large body and head and feather-like antennae ... you were a moth and not a butterfly! We confirmed that you were a moth. Your bright green wings were fascinating. I felt as if you were our own child. Granny and I took great pride and pleasure in showing you off to everyone. I finally learnt that your name was Oleander Hawkmoth *Daphnis nerii*. As I read further, I realised that we met when you were about to become a pupa. I learnt that when you hatch out of the egg you are bluish and that your first food is your eggshell; you move to feed on the leaves of your host plants (mostly Oleander). Gradually you grow bright green and turn black-brown before you turn into a pupa. After this first meeting, I began looking for you in your host plants mentioned in moth books. When I found you, I kept a distance lest I disturb you.

So, I promise to protect you in my mother's pesticide-free rooftop garden, which will provide you with sunlight and shelter. I will grow many host plants for you and your friends, and help your diversity survive. In fact, I have already motivated a few friends to do the same.

Love,

Medha

Medha Nayak is currently pursuing her Ph.D. in Sociology at National Institute of Science Education and Research. She enjoys trailing winged beauties in eastern India.

Karvi blooms again

Part of Sanjay Gandhi National Park, Mumbai, and next to Film City is the Conservation Education Centre (CEC) of the BNHS. Set across 33 acres of tranquil dense deciduous forest and home to a large variety of flora and fauna, this year the CEC was a must visit destination for wildlife enthusiasts. Large patches of the delicate purple blue Karvi *Strobilanthes callosa*, which blooms once in eight years, had adorned the hillsides and pathways at CEC! I did not want to wait until the next mass flowering in 2024 and so I joined fellow enthusiasts for the Karvi Fest organized by BNHS.

The forest was lush in all shades of green with beautiful butterflies flitting everywhere. We could hear the cicadas call, interrupted intermittently by the shrill call of a peacock, and the intense call of a tailorbird, and as we moved deeper into the forest we heard the crowing of the Grey Junglefowl.

Our group walked the Sálim Ali trail with Atul Sathe as our expert. The roots of trees crisscrossing everywhere on the uneven rocky and at times slushy mud paths which in some places ran under the bowers of Karvi flowers. We were told that the Karvi shrub belongs to the genus *Strobilanthes*; about 46 species of this genus are found in India. Most of these species show unusual flowering behaviour, varying from annual to 16-year blooming cycles. The mass flowering covers many forest areas. *Strobilanthes callosa* typically takes seven years to grow and bursts into bloom in its eighth year; after this once in a lifetime mass flowering the bush finally dies out. The flowers are rich in pollen and nectar and attract a wide range of species of butterflies, birds, and insects. Typically the lifespan of a single *Strobilanthes callosa* bloom lasts between 15 and 20 days and its mass blooming usually extends from mid-August to September-end. The fruits ripen during the cold and hot seasons and are dry by the next year. With the coming of the monsoon and the first rains in the next year, the dried fruits absorb moisture and burst open with a pop. The hillsides where *Strobilanthes callosa* grows are filled with loud popping sounds of dried seed pods bursting open explosively, dehiscing their seeds for dispersal and soon new plants germinate and take root in the wet forest floor.

Besides the Karvi, we saw many other wild flowers: white and pink wild Turmeric, smooth white Spiral Ginger, orange Glory Lily, huge leafed Lace plants, Balsam shrubs amidst Sheesham, Teak, Peepal, Banyan, Flame of the Forest, Red and Yellow Silk Cotton trees, the Elephant Fruit tree, Ghost tree, and clumps of bamboo trees. Enroute we sighted many insects, crabs, snails, beetles and tadpoles, and some strange looking fungi, mosses, and ferns. As we neared the Sálim Ali Point we heard the gurgling of a brook – a sound unimagined in the cacophony of city traffic. When we reached the Point, we could see the clear blue waters of Vihar lake and realized how crucial forests were for the catchment lakes (otherwise the silt from the hillside would have silted it a long time ago).

An unforgettable experience, amidst the squalor and urban chaos of Mumbai, but my most memorable sight was the pathway to the back gate of CEC through bushes of the glorious Karvi flowers! We were all asked to block our dates for a CEC visit at the onset of the monsoon to witness the *Strobilanthes* 'orchestra'; how many of us will return I'll learn only next year. ■

Humera Ahmed
Maharashtra

A Disturbing Phenomenon

Over the last two years, the absence of frogs of all species has been very noticeable in the area where I live, 10 kilometres out of Kodaikanal in the Pallangi valley. I have been working on conservation over the last 32 years in the Palni Hills and am constantly worried about the state of agriculture here.

When I first came to live in this area, at the onset of monsoon or rain of any sort the entire garden would be a cacophony of calls from all the frogs both tree and ground, and the sound was amazing. But in 2015, though we had good rains, there was not a single frog and this is a very sad indictment of the pesticide runoff in the stream at the bottom of my garden.

Although we have 15 acres of completely organic land around us, the marginal farmers use pesticides that are lethal to virtually all creatures, including humans. Of the three major ingredients of the pesticides used here, two ingredients – Methyl Parathion or cotton poison and Phorate a neurotoxin – have been banned by the Supreme Court. The third ingredient is Mancozeb or Manzate, a Dupont product. All three cause carcinoma, liver and kidney damage, deterioration of brain function and other side effects in humans. In frogs, I hate to think what harm they cause and the result in this agricultural valley (Pallangi) is a huge increase in mosquitoes and other insects, which the frogs devour avidly.

Apart from frogs and other animals dying because of these appalling pesticides, humans wear no protective clothing and often the wife of the farmer will mix this costly powder in a bucketful of water, with her hands. The last thing we need in this country is a deterioration of brain activity that will increase the possibility of farmers being unwilling to change their farming techniques, which seems quite inexplicable as the cost of these chemicals is very high and makes their margins slimmer.

I have written letters to the Ministry of Environment, Forest & Climate Change (earlier MoEF) about this situation, but with no response even though the letters were sent registered A/D, so what else can be done? I have also spoken to some of the farmers and given them potatoes (which are the main crop) that are disease resistant, but they are unwilling to try anything new and seem oblivious to the fact that they might die from the pesticides. ■

Pippa Mukherjee
Tamil Nadu

Predation Strategies

Nature for me has always been unpredictable and surprising. It leaves me wondering how a predator becomes prey; it appears that size doesn't matter. I observed an event which changed my perception of predation strategies. Continuous calls of a bird caught the attention of our group while trekking at Malvan near Goa. Curious, we looked around and discovered an Asian Paradise Flycatcher entangled in the web of a Giant Wood Spider. The bird was calling and struggling to free itself from the web. With time it became tired and eventually stopped calling and trying to free itself. We waited for almost an hour, hoping that it would succeed.

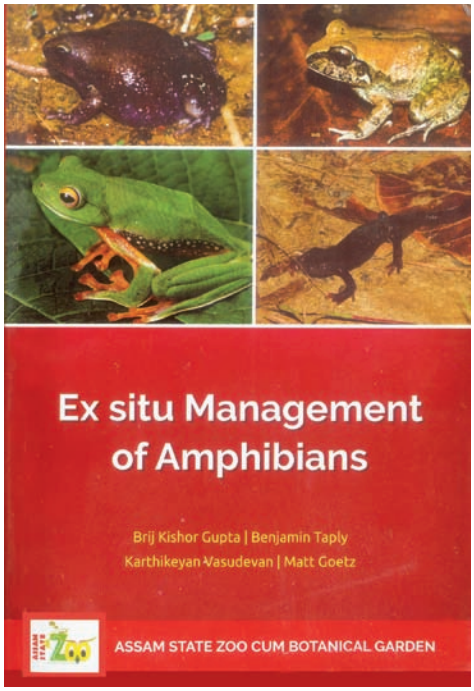
The Paradise Flycatcher is a reasonably large bird of about 20 cm, while the female Giant Wood Spider, one of the largest spiders in India, grows to 35 to 40 mm (male is smaller, about 2 to 4 mm).


VIKRANT VILAS KOLAPE

The bird may have got entangled in the web while looking for food. A spider is known to inject neurotoxic venom into its prey's body, paralyzing it and eventually causing death.

It was getting dark so our group decided to move on. We did not free the bird as we did not wish to interfere with nature. The end of the story remains a question … did the paradise flycatcher succeed in freeing itself or become prey for a predator? Like I said earlier, nature never fails to surprise! ■

Shristi Bhargava
Maharashtra



Ex situ Management of Amphibians
by Brij Kishor Gupta, Benjamin Taply, Karthikeyan Vasudevan and Matt Goetz.
Published by Assam State Zoo cum Botanical Garden, Guwahati. 2015.
Size: 21.5 x 14 cm
Pages: 72
Price: Rs. 300/-
Paperback

Reviewed by: **Mrugank Prabhu**

The book titled EX SITU MANAGEMENT OF AMPHIBIANS is a unique addition to the literature on Indian Batrachology. This booklet has been authored by eminent scientists and subject experts – Brij Kishor Gupta, Evaluation and Monitoring Officer, Central Zoo Authority; Benjamin Taply, Team Leader at the Herpetology Department, Zoological Society of London; Karthikeyan Vasudevan, Senior Principal Scientist, Laboratory for Conservation of Endangered Species; and Matt Goetz, Head of the Herpetology Department, Durrell Wildlife Conservation Trust, United Kingdom.

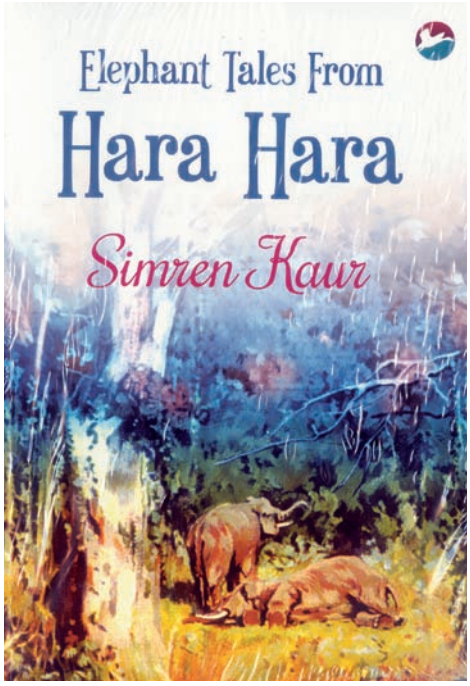
Population decline of amphibians is one of the contemporary concerns in the conservation of global biodiversity and there is need for a multidisciplinary approach towards their conservation. Along with in situ conservation, it is also important to promote ex situ management of amphibians to understand the life cycle and reproductive biology in human-controlled conditions as this would help in overall amphibian conservation.

Amphibians are considered ideal candidates for captive breeding programmes because of their small body size, low space requirement, high fecundity, applicability of reproductive technologies, short reproductive period, lack of parental care, hardwired behaviour, low maintenance requirements, and relative cost effectiveness. Implementation of ex situ breeding programmes of amphibians in zoos would help to increase awareness about them among common people through exhibits, making people more sensitive to amphibian conservation.

This booklet is the proceedings of a workshop on Building National Capacity for Ex situ Amphibian Management and Conservation held at Assam State Zoo in 2013. Out of 13 chapters, seven chapters cover the diverse amphibian fauna found in India, like toads, tree frogs, stream dwelling frogs, pond and marsh dwelling frogs, and bush frogs, while others cover topics such as marking amphibians, culturing food for amphibians, enrichment of amphibian exhibits, and amphibian diseases.

The compiled chapters are systematic and user friendly, with brief information on species description, distribution, conservation status, habitats and ecology, reproduction biology, captive management, captive reproduction, and health. The booklet also gives information on marking amphibians using advanced tools, such as Passive Integrated Transponder (PIT) tags and Visible Implant Fluorescent Elastomer (VIE) tags for unique identification of individuals and long-term monitoring in such programmes. Also, there is a chapter on culturing food for amphibians, including culturing of Indian house crickets and drosophila. The last chapter discusses the establishment of an amphibian exhibit, and precaution and care of species when nurtured and bred in captivity.

This handbook with valuable information is worth its price and useful for a wide range of readers interested in amphibians and their captive breeding. ■



Elephant Tales from Hara Hara

Author: Simren Kaur
Published by: Cinnamon Teal Publishing, Goa. 2015.
Size: 21 x 14.5 cm
Pages: 118
Price: Rs. 150.00
Paperback

Reviewed by: **Gayatri Ugra**

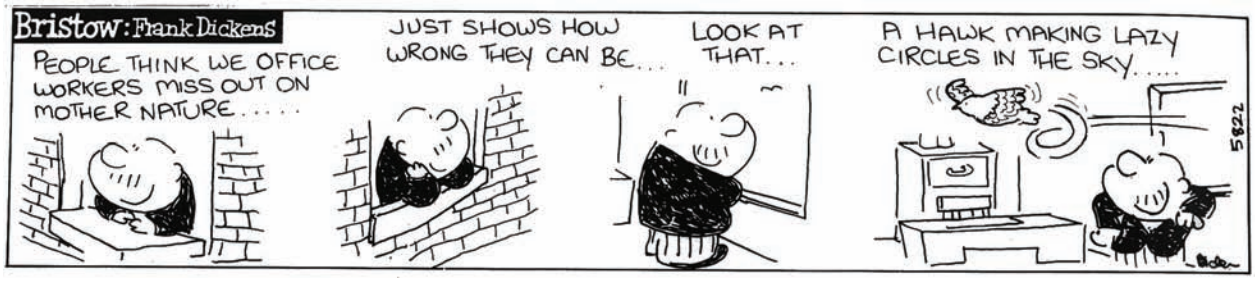
Simren Kaur is the author of several books of fiction. In ELEPHANT TALES FROM HARA HARA, she adds to the fictional tales her knowledge of animals and plants in the wild, which she acquired during extensive travels. Obviously a writer who cares about nature, she succeeds in bringing alive the jungles of Hara Hara in a village called Salguria that she describes. So realistic is her effort that I scoured the internet for a link to the place, but with no luck, and came to the conclusion that it was in fact the output of a vivid imagination.

Interesting little sketches of plants, birds, and animals have been used in the book with great effect. Some of the smaller sketches have been repeated, which is acceptable, but the large sketch on page 103 is a repeat of the one on page 111. This could have been avoided.

On page 8, "koomeriahbund" is described as a "very special quality in the elephant kingdom". This aroused my curiosity and I searched all over Google to find out what this quality is, but with no success. It did not help that the spelling on page 15 is "kumeriahband", and elsewhere "kumeriahbund".

Making a strong case for elephant conservation and condemnation of illegal ivory trade, the writer puts apt words into the mouth of an experienced old mahout on page 15: "How sick can humans get! ... To first torture and kill a live elephant for its magnificent tusks and then remake a dead ivory replica from the same ivory to sell in the market for even more sick people to buy." That neatly sums up her case. ■

EDITORS' CHOICE



Courtesy: Earth Mirth, The Kingwood Press

We are grateful to

SETH PURSHOTAMDAS THAKURDAS & DIVALIBA CHARITABLE TRUST

for a generous donation to the

Pratap Saraiya Hornbill Fund

to support the publication of *Hornbill*

Mishmi Hills – A Conservation Initiative

Text and Photographs: **Girish Jathar**

The biggest threat to wildlife globally is loss of habitat and India is not an exception to this reality. The protected area (PA) regime in our country can only protect the species present within demarcated protected areas. However, wildlife does not recognize these boundaries and exists outside protected areas as well. Land outside the PA regime can be owned by communities, private land owners, or the private sector. Such land needs to be protected if wildlife, which is our national wealth, is to survive. However, the current laws of our country discourage land owners from protecting wildlife. This paradox is the root cause of conflict between people and wildlife. Unless we address this issue and seek the support of land owners, communities, and the private sector, little can be done to conserve wildlife outside protected areas. Without their support, the PAs will become island ecosystems, and the future of animals existing in these lands will be in jeopardy. Such areas are therefore good contenders for *Community Conservancy* programmes or *Community Conserved Areas*.

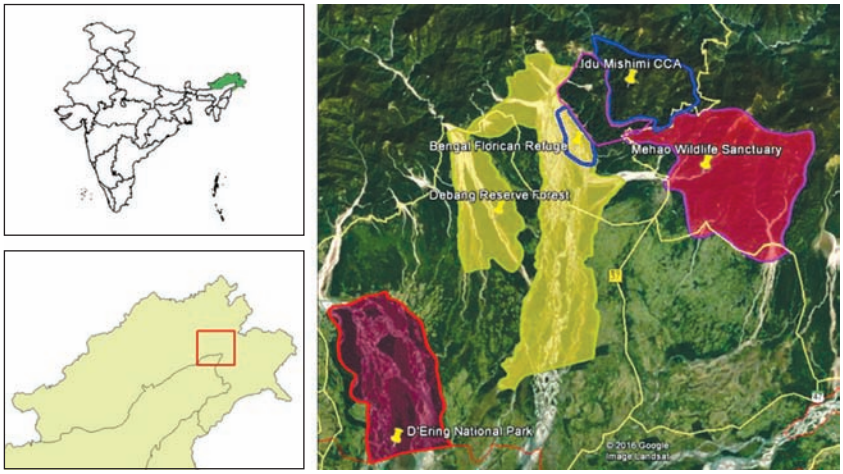
A Community Conserved Area (CCA) is land set aside by a community for the purpose of conservation of wildlife and biodiversity. It can be established by the concerned communities, based on values identified by them, and administered with the help of local rules and regulations, and through local institutions. This system can bring improved security, better land management, income to the communities through employment, and support to

community projects. Most importantly, a CCA helps in conservation of wildlife and ecosystems at large. CCAs can work as a catalyst and model for conservation of wildlife and its habitat outside the protected area regime. The CCA model involves protection of species, community engagement and support, community development programmes, and education and awareness of neighbouring communities. It is essentially a bottom-up approach, with the involvement of local communities and stakeholders at the grassroots level playing an important role in wildlife conservation, where the chances of success are higher than in conventional systems. A sense of ownership and pride in local wild habitats and biodiversity are key components of the success of such an enterprise.

Such initiatives are important as they help to protect critical ecosystems and biodiversity hotspots by providing buffers, corridors, and linkages for animal movement between protected areas, which help to maintain essential ecosystem services, especially provisioning and regulatory services. CCA initiatives help in safeguarding traditional knowledge systems of local communities, offer insights into the integration of customary and statutory laws in conservation systems, and provide useful methods of resolving conflicts between protected area management and local people.

The Northeast's rich repository of flora and fauna includes a number of endangered species, making conservation of this region crucial. Bombay Natural History Society

A large number and variety of butterflies are seen inhabiting the Mishmi hills



Map of the Idu Mishmi Land proposed for Community Conserved Area

(BNHS) has reached out to a local community, the Idu Mishmi, residing in the Mishmi Hills of Arunachal Pradesh, as role models for Community Conservancy. The Mishmi Hills programme is an attempt by the BNHS to support communities playing a proactive role in the conservation of threatened wildlife.

Mishmi Hills – a Biodiversity Hotspeck

Mishmi Hills, a biodiversity hotspeck, is situated in one of the richest states of the Himalayan zone in terms of biogeographical wealth, and is among the mega biodiversity hotspots of the world. (A biodiversity hotspeck is a subset of a biodiversity hotspot, and a network of hotspecks forms a hotspot.) The altitude in this region ranges from 200 m at the foothills to 5,500 m up to the snowline. This complex hill system of varying elevations receives heavy rainfall, which can be as much as 4,500–5,000 mm annually in the foothill areas. This diversity of topographical and climatic conditions has favoured the growth of luxuriant forests, which are home to myriad plant and animal forms. The vegetation here can be classified into Tropical Evergreen, Tropical Semi-evergreen, Sub-Tropical Broad-leaf, Sub-Tropical Pine, Temperate Broad-leaf, Temperate Conifer, Sub-Alpine Woody Shrub, Alpine Meadow, Bamboo, and Grasslands. It supports about 6,000 plant species (including 500 orchids and 50 rhododendrons), 100 mammals, and 680 birds, besides a large number of butterflies and other insects. This unique assemblage of life forms can be attributed to its geographical location, which is at the junction of the Palaearctic, Indo-Chinese, and Indo-Malayan biogeographic zones. The only human footprints in this region are small hamlets and patches of subsistence agriculture on the edges of the forest and paddy fields in the foothills.

Grassland at the foothills of Mishmi hills – an abode of Bengal Florican

Idu Mishmi land

Amidst this mega biodiverse region, close to Roing town in the foothills of Mishmi Hills in Lower Dibang Valley district, rests a hotspeck owned by the Idu Mishmi tribe. The area is owned by the Mekola clan, which is settled in Gimbo village adjoining Mehao Wildlife Sanctuary. The entire hotspeck covers *c.* 50 sq. km, and has diverse vegetation types due to its altitudinal gradient, from 200 m to 3,500 m. This piece of land is important for all forms of biodiversity, especially the globally threatened and near threatened species found in this region.

About 165 bird species have been recorded from Mehao Wildlife Sanctuary, including three very rare restricted range endemics sought after by birdwatchers across the globe.

This unique assemblage qualifies the Idu Mishmi land as a perfect candidate for designation as a biodiversity hotspeck. The Mishmi hotspeck is threatened by the timber

mafia, illegal poaching, hydroelectric projects, and other developmental work. The area lies between two wildlife sanctuaries and serves as a corridor for wildlife. Unless given proper protection, this corridor will be lost forever. Saving such areas which are outside the protected area regime is very important for the conservation of biodiversity.

Globally Threatened and Near Threatened mammal & bird species found on Idu Mishmi land

S. No.	Species	Global Status
	Mammal	
1	Hoolock Gibbon *Bunopithecus hoolock*	Endangered
2	Red Panda *Ailurus fulgens*	Endangered
3	Bengal Tiger *Panthera tigris*	Endangered
4	Leopard *Panthera pardus*	Vulnerable
5	Mishmi Takin *Budorcas taxicolor taxicolor*	Vulnerable
6	Chinese Goral *Naemorhedus griseus*	Vulnerable
7	Himalayan Serow *Capricornis thar*	Near Threatened
	Bird	
8	Bengal Florican *Houbaropsis bengalensis*	Critically Endangered
9	White-rumped Vulture *Gyps bengalensis*	Critically Endangered
10	Slender-billed Vulture *Gyps tenuirostris*	Critically Endangered
11	Red-headed Vulture *Sarcogyps calvus*	Critically Endangered
12	Greater Adjutant *Leptoptilos dubius*	Endangered
13	Black-bellied Tern *Sterna acuticauda*	Endangered
14	Swamp Francolin *Francolinus gularis*	Vulnerable
15	Chestnut-breasted Partridge *Arborophila mandellii*	Vulnerable
16	Blyth's Tragopan *Tragopan blythii*	Vulnerable
17	Sclater's Monal *Lophophorus sclateri*	Vulnerable
18	Swamp Francolin *Francolinus gularis*	Vulnerable
19	Rufous-necked Hornbill *Aceros nipalensis*	Vulnerable
20	Pale-capped Pigeon *Columba punicea*	Vulnerable
21	Lesser Adjutant *Leptoptilos javanicus*	Vulnerable
22	Rusty-bellied Shortwing *Brachypteryx hyperythra*	Vulnerable
23	Beautiful Nuthatch *Sitta formosa*	Vulnerable
24	Marsh Babbler *Pellorneum palustre*	Vulnerable
25	Jerdon's Babbler *Chrysomma altirostre*	Vulnerable
26	Black-breasted Parrotbill *Paradoxornis flavirostris*	Vulnerable
27	White-cheeked Partridge *Arborophila atrogularis*	Near Threatened
28	Yellow-rumped Honeyguide *Indicator xanthonotus*	Near Threatened
29	Great Hornbill *Buceros bicornis*	Near Threatened
30	Ward's Trogon *Harpactes wardi*	Near Threatened
31	Blyth's Kingfisher *Alcedo hercules*	Near Threatened
32	White-tailed Eagle *Haliaeetus albicilla*	Near Threatened
33	Black-necked Stork *Ephippiorhynchus asiaticus*	Near Threatened
34	Great Thick-knee *Esacus recurvirostris*	Near Threatened
35	River Lapwing *Vanellus duvaucelii*	Near Threatened
36	Red-breasted Parakeet *Psittacula alexandri*	Near Threatened

Conservation through community participation

The primary objective of BNHS's initiative is the conservation of the Idu Mishmi land hotspeck through community participation. In order to achieve this goal, BNHS is planning to set up a Community Conserved Area. The first step towards conservation is to create a consensus among the community members for protection of the land. The Idu belief system is entirely based on natural elements, hence cultural reconnection is the best way forward in this case. Initiation of *People's Biodiversity Register* will enable the community to reconnect with the biodiversity around them and also help to bring them together. It will also enable and empower the community to understand and establish their rights over the resources. Once empowered, the community will shape and design sustainability, and future conservation actions.

This area has great potential for wildlife tourism, especially for birds. We plan to promote wildlife tourism as a viable alternative livelihood for the community, but first the capacity of the community needs to be built. A successful enterprise will require individuals to be trained in hospitality, accounting, housekeeping, marketing, human resource management, and leadership. We plan to impart systematically in capacity building of the community to justify this intervention. If successful, this model can be replicated elsewhere for wildlife conservation outside the protected area regime, to safeguard corridors and bring communities together for the cause of conservation. ■

Girish Jathar is a Senior Scientist with Bombay Natural History Society. He is currently handling the programme on Climate Change and Himalaya.

Book on Indian biodiversity released

BNHS PHOTO LIBRARY

(L–R): Dr. A.R. Rahmani, author of the book, Mr. Ashok Mahindra, Mr. Shantanu Moitra, the guest of honour, Mr. Homi Khusrokhan, President, BNHS, and Mr. Dhritiman Mukherjee, photographer of the book, during the book release

A premium quality book capturing the essence of the rich biodiversity of India, MAGICAL BIODIVERSITY OF INDIA authored by Dr. Asad R. Rahmani with photographs by Dhritiman Mukherjee was released on June 30 by the well-known music director – Shantanu Moitra. An unbeatable combination of two experts, an ornithologist and a star wildlife photographer, the book showcases the richness and splendour of the biodiversity of our country. The book is a visual treat of stunning photographs of animal and plant diversity on land and in water.

The evening included a presentation on the book by Dr. Rahmani, a talk by Shantanu Moitra, and a session by Dhritiman Mukherjee who spoke about his experiences while capturing the photographs published in the book. ■

BNHS turns 133 years old

BNHS PHOTO LIBRARY

Dr. Ashok Bhagwat, Honorary Secretary and Mr. Homi Khusrokhan released a special issue of *Hornbill* on BNHS stalwarts on the occasion

BNHS PHOTO LIBRARY

Mr. Homi Khusrokhan and Dr. Deepak Apte, Director, BNHS, along with the artists, Sangeetha Kadur and Vydehi Kadur during the release of 'HUMMINGBIRDS' Volume I

The BNHS completed 133 years of nature conservation on September 15, 2016. To mark this day, a function was organized for members at the Coomaraswamy Hall, Chhatrapati Shivaji Maharaj Vastu Sangrahalaya, Mumbai on September 19.

Mr. Homi Khusrokhan, President, BNHS, welcomed the guests, followed by a presentation by Dr. Deepak Apte, Director, BNHS. Dr. Apte updated the members on the work done by the Society in the last one year and unveiled the future strategy for new conservation programmes. BNHS on this occasion announced the initiation of an innovative community conservancy programme in the Mishmi Hills of Arunachal Pradesh. Member of the Governing Council of BNHS Mr. Satish Pradhan spoke about the programme and the need to retain and safeguard the endangered flora and fauna of the Northeast. A Memorandum of Understanding was signed between BNHS and Mr. Ipra Mekola (member of the State Wildlife Advisory Board and Honorary Wildlife Warden, Lower Dibang Valley, Arunachal Pradesh and Head of the Mekola clan of the Idu Mishmi tribe) for conservation of biodiversity through community engagement in Mishmi Hills.

The guest speaker for the evening, Dr. Y.V. Jhala, Scientist, Wildlife Institute of India, delivered an enlightening talk on the conservation scenario in India and the road ahead. The function also included felicitation of supporters and well-wishers of BNHS. A special issue of *Hornbill* on the stalwarts who built BNHS and a book 'HUMMINGBIRDS Volume I' illustrated by artists Sangeetha Kadur and her cousin Vydehi Kadur, were released. ■

Breakfast with Butterflies

Post-monsoon, when forests are lush green, is the best season to spot butterflies that attract young and old alike. Abundant larvae, eggs, and adult butterflies can be seen during October–November. BNHS-Conservation Education Centre, Mumbai, organized 'Breakfast with Butterflies' on October 16 to acquaint common people with these winged jewels.

The programme began with a trail through CEC nature reserve to spot butterflies, guided by BNHS resource persons Dr. Raju Kasambe and Ms. Neha Mujumdar. The highlights of the trail were spotting of Malabar Spotted Flat – an endemic to Western Ghats, and observing eggs and caterpillars of Great Orange Tip and Common Nawab, which are rare in urban areas. The trail was followed by a presentation by Dr. Kasambe elaborating on the common butterflies of Maharashtra, their life cycle, migratory pattern, butterfly gardening, and the importance of butterflies in our ecosystem. Participants were provided with a booklet containing basic information about butterflies. ■

BNHS PHOTO LIBRARY

'Breakfast with Butterflies' included a trail led by BNHS experts, followed by an informative presentation for the participants

In case of snake bite…

BNHS PHOTO LIBRARY

Doctors, snake experts, forest department staff, and locals participated in this workshop

A capacity building programme to address one of the most important issues, snake bite, was organized by BNHS, Rajasthan Forest Department, and Youth Aranya on October 6 at Desert National Park in Jaisalmer, Rajasthan. The workshop focused on snake identification, basic ecology, identifying venomous and non-venomous snakes, first aid in case of snake bite, the role of snakes in the ecosystem and more. It involved doctors, snake experts, forest department staff, and local people. Snake expert Mr. Sharad Purohit conducted lectures, a slide show and a film show. First aid training on snake bites was imparted by local doctors who delivered presentations on snake bite management. Similar programmes will be conducted across the Thar Desert in the near future. ■

Social innovation award for BNHS

BNHS PHOTO LIBRARY

BNHS initiative of community conservancy in Mishmi Hills recognized

Pune International Centre, Tata Institute of Social Sciences, and National Innovation Foundation jointly awarded BNHS for its initiative of community conservancy in Mishmi Hills on November 17. The 'social innovation award' recognizes this initiative which involves protection of species, community engagement and support, community development, education, and awareness. The programme is currently being conducted by Dr. Girish Jathar and his team in Mishmi Hills, Arunachal Pradesh. The objective of this programme is to bridge the gap between biodiversity conservation and community welfare. ■

BUTTERFLIES OF INDIA released

BNHS PHOTO LIBRARY

(L–R): Mr. Homi Khusrokhan, President, BNHS, Mr. Bittu Sahgal, guest of honour, and Mr. Isaac Kehimkar, the author, releasing the book

One of the most awaited books from BNHS Publications, BUTTERFLIES OF INDIA, was released at a function at Hornbill House on November 18. Mr. Bittu Sahgal, Founding Editor of Sanctuary Asia, a renowned conservationist and friend of BNHS released the book. The audience was presented an opportunity to hear the author Mr. Isaac Kehimkar share his experiences while writing his magnum opus and the journey of this book through ten years from its inception to date. Mr. Bittu Sahgal articulated his thoughts not only about the book, but also about his friend of many years Mr. Kehimkar.

This book, the first of its kind, covers more than 1,000 species and subspecies of butterflies photographed in their natural habitat. Apart from India, this book covers the butterfly fauna of Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan, and Myanmar. With his easy and simple writing style, the author leaves out technical jargon, reaching out to amateurs and other butterfly enthusiasts, creating a book that is a must for every butterfly enthusiast.

BNHS for the first time attempted to live stream an event for members who could not be present. We would love to have your views on this trial. The video is available on http://www.ustream.tv/recorded/92813425 for those who missed the live streaming. ■

BNHS to study Climate Change impact in Himalaya

BNHS recently launched a programme to study impact of climate change in Central Himalaya. The objective of this programme is to assess the status of pheasants and finches, particularly globally threatened species found in Himalaya and evaluate their distribution outside protected areas. The study is funded by Oracle and facilitated by CAF-India. The expected outcomes from this project are: generating an inventory of threatened pheasants and finches of Himalaya, documentation of locale-specific conservation issues, identification of priority sites outside protected areas for future conservation action on these species, documentation of dependencies of the communities on the key sites with respect to physical, cultural, and socioeconomic requirements, assessment of impact of climate change using ecological niche modeling and locale- and species-specific conservation action plan. ■

Migratory birds ringed at the BNHS centre, Point Calimere

Point Calimere Wildlife and Bird Sanctuary, unlike many other wildlife refuges in India, has both terrestrial and aquatic ecosystems. The premises of BNHS Bird Migration Study Centre were acquired as barren land, which now attracts a lot of birds as a result of the native trees planted there. On realizing the significance of the campus for landbirds, BNHS ringed birds in two phases. During the first phase, between October 5–12, 51 songbirds of 16 species were ringed, while in the second phase, conducted between October 13–28, 405 birds were caught, among which 77% were migrants. Information generated through this 16-day netting was extremely useful to understand the movement of common passerine migrants of Point Calimere during autumn passage. The highlight among the catches is the Black-naped Oriole *Oriolus chinensis,* which is not only the first record for Point Calimere, but also one of the rare records for the plains of Tamil Nadu. ■

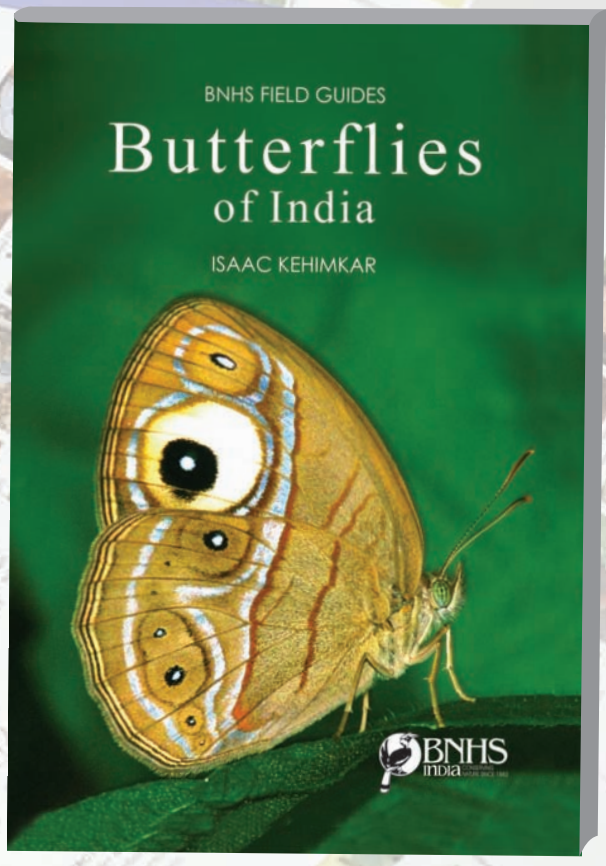
Follow us for regular updates about the Society on our YouTube channel 'Bombay Natural History Society' on https://www.youtube.com/channel/UCUbWTE2WLyQHn8kh4LsM3jA

Published on December 23, 2016, by Dr. A.M. Bhagwat for Bombay Natural History Society, Hornbill House, Dr. Sálim Ali Chowk, Shaheed Bhagat Singh Road, Mumbai 400 001, Maharashtra, India.

Butterflies of India

Isaac Kehimkar

Now Available



Read all about the biology and identification of more than 1,000 species and subspecies of butterflies from the Indian subcontinent, and much more in this colour guide to the winged jewels.

ORDER FORM

✂

☐ I would like to buy _____copy/copies of **Butterflies of India** at the price of Rs. 2,200/- (Postage applicable)

Name: Ms. / Mr._____

Mailing Address:_____

City:_____Pincode:_____State:_____Tel. No. Off:_____Resi:_____

Mobile:_____Email:_____

BNHS India CONSERVING NATURE SINCE 1883

For further details contact: Central Marketing Department, Bombay Natural History Society, Hornbill House, S.B. Singh Road, Opp. Lion Gate, Mumbai 400 001, Maharashtra, India.
Tel: (91-22) 2282 1811; Mob: 8879101310; Email: cmd@bnhs.org / info@bnhs.org

Registered with Registrar of Newspapers under No. **RN 35749/79**

BALDOTA
WE ARE LIFE

There is a bit of us in every adventure

From scaling the Everest to setting foot on the moon, adventures of exploration and discovery have dominated the human imagination across time. Deep down, we've always known that adventures are what transform mere existence to a life well lived.

At Baldota Group, for more than 50 years we have explored, mined and processed iron ore, the key ingredient of steel - a metal that

makes adventures more achievable and life more exciting.

www.mspllimited.com

cognito