HORNBILL

Vol. 1995, No. 1

BOMBAY NATURAL HISTORY SOCIETY

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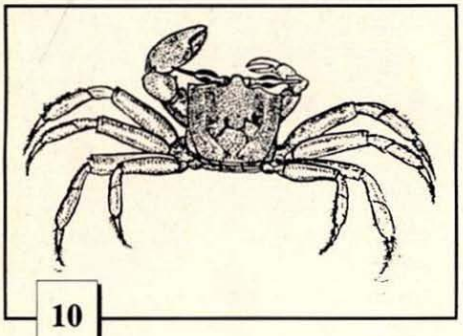

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The Society was founded in 1883 for the purpose of exchanging notes and observations on zoology and exhibiting interesting specimens of animal life. Its funds are devoted to the study of natural history in the Oriental region, and for nature conservation. Individual membership can be either in personal or official capacity. Membership is also open to scientific and educational associations and institutions as well as companies.

Ordinary members get *Hornbill* free, and can subscribe to the Journal of the BNHS (now in its 90th volume) at concessional rates.

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HORNBILL

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The Outcome for *Homo sapiens*

The apparent success of Project Tiger in the late seventies has taken a new and irretrievable turn. According to the experts it is obvious that this animal which symbolises the magnificence of Indian wildlife is heading towards a disastrous end — some even say that by the year 2000 AD it will be extinct. While the writers of our cover story offer a practical solution in suggesting that the potential of Parambikulam Wildlife Sanctuary be tapped to provide shelter for this particular species, our thoughts turn to the larger issues of survival faced by man at the end of the 20th century.

The nature lover derives from the tiger and diverse other fauna and flora all the aesthetic pleasure of a work of art. He is presently not vocal about it, as the current trends demand rather that he be a responsible conservationist primarily and only then an aesthete.

The problems of degradation of the environment, denotification of sanctuaries and extinction of species are not exclusive of man as a species in the web of life. The question is not of a particular species being lost to nature. The world of man is not separate from the world of nature and in his attempts to better it, he makes a relentless bid for its destruction in the name of progress.

The constant addition of pesticides and weedkillers to soil, pollution of rivers and seas from filthy effluents, deforestation and the ever increasing toxification of the atmosphere will lead to a completely sterile man-made desert, another kind of wilderness where neither man nor beast would find a niche for survival — and the thinking man, to wit, our nature lover, will have long since perished.

We need not be so pessimistic, however, for the instinct of human survival, the strongest driving force in the species, will save it yet. In a sense there is an inevitability about extinction. Man may bring about his own end, which will not be as a result of a nuclear Third World War, but rather due to the lack of understanding of simple ecological principles. We may, however, derive consolation from the fact that even as we face all the problems of a developing country, we are still able and willing to set aside sanctuaries and have the foresight to try and strike a balance between sustainable development and sustainable conservation.

GAYATRI UGRA

PARAMBIKULAM WILDLIFE SANCTUARY

A Potential Tiger Reserve

V.K. Uniyal & A.J.T. Johnsingh

SUNIL ZAVERI

Parambikulam exhibits a diversity of habitats — montane grasslands and rocky outcrops at the higher reaches, evergreen and moist deciduous forests in the undulating hills, teak plantations and marsh lands in the valley, and riparian areas along the river banks. Several potential dangers threaten this wildlife-rich area.

The dawn had just broken. Golden streaks of the morning sun were filtering through the tree canopy to the moisture-laden undergrowth. Thin mist drifted past us as we looked at the valley below, still enveloped in a thick fog which floated on top of trees as clouds would in the sky. Slowly the fog below us lifted, breaking up into drifts of whiteness, leaving between them the reflections of the sparkling blue water of Thunacadavu reservoir. As the mist began fading, the breathtaking beauty of the emerald green forests and water bodies left us spellbound. Standing atop the rocky outcrop of the lower Vengoli hills, we were watching a green forest punctuated by blue reservoirs. The forests of Parambikulam Wildlife Sanctuary were around us in all their colour and grandeur.

We had gone to Parambikulam on an educational tour with the M.Sc. (Wildlife Science) students of the Wildlife Institute of India. It was an early morning in November and the deciduous trees had begun to shed their leaves. The colours of the *Terminalia tomentosa* leaves had changed to light vermilion to announce the arrival of winter in this part of the country. We had planned this visit in search of the Nilgiri tahr. Having started very early, we left the Thunacadavu — Parambikulam road at the 2nd km mark and started the gentle climb uphill. As we left the teak plantations in the valley below and traversed through the moist deciduous forests, evidence of tahr in the form of pellets started appearing on the granite rock faces. Expectantly we looked around for the tahr but saw none. Perhaps the animals had moved further up. As if to compensate for the absence of tahr, a group of gaur snorted and scampered from our path and a few sambar presented themselves at a distance.

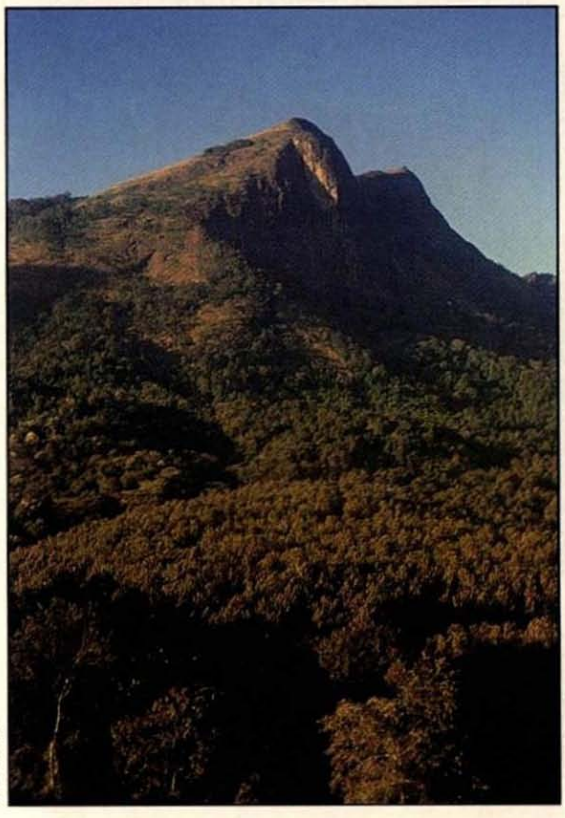
A.J.T. JOHNSINGH

A blue-finned mahseer from Parambikulam

Standing atop Vengoli which forms the eastern boundary of the sanctuary, one gets a panoramic view. Jutting westwards from the north-south running crest of the Anaimalai hill ranges, Karimala hills form the southern boundary wherein Karimala Gopuram (1438 m), the highest twin peaks of the sanctuary are located. Further north from the crest, the Vengoli hills project westwards and gradually slope down to the Bison valley. The Nelliampathy hill ranges running east-west form the northern-most boundary. Between these hill ranges lie the wide valleys of Parambikulam, Thunacadavu and Thutampara which have been historically known for their dense moist deciduous forests containing large teak and rosewood trees. The administrative boundary in the west is formed by the Karappara river which originates in the Nelliampathy hills and flows in a north-south direction. In the east, it is bounded by the Anaimalai Wildlife Sanctuary. Ecologically, the Parambikulam forests are contiguous with the evergreen and moist deciduous forests of the Chalakudi and Sholayar reserved forests in the west and south-west, thus forming a substantial forest cover of more than 500 km^2. The reserved forests in the west link the sanctuary with the Chimmony and Peechi-Vazhani Sanctuaries which constitute the western-most forested face of the Western Ghats in this region. The ecological continuity of the Parambikulam Sanctuary with the outlying forests is severely broken in the north and northwest, where a number of coffee, cardamom, tapioca and rubber estates exist in the Nelliampathy hills on a long-lease basis. The vested forests of the Palghat Special Division provide a linkage between the sanctuary and the montane habitat of the

Nelliampathy. Within the bounds of these described limits, the sanctuary extends to over 285 km^2.

Many streams such as Thellikal, Parambikulam and Thunacadavu originate from these hills and discharge into the Karappara at Orukombankutty. The Karappara finally drains into the Chalakudi river which plays an important role in the life and culture of the people of Trichur district. During the early 1960s, the Parambikulam river system was impounded at Parambikulam, Thunacadavu and Peruvaripallam and these dams were commissioned under the Parambikulam-Aliyar Project. Similarly, the Sholayar river system in the south of the sanctuary was also commissioned to generate hydroelectricity and provide irrigation facilities to the farmers of the plains of Tamil Nadu. Within Parambikulam Sanctuary, the three reservoirs occupy about 28 km^2, Parambikulam being the largest with about 21 km^2 reservoir spread. These reservoirs and rivers form one of the two fine abodes for the bluefinned mahseer, the other being Periyar river and lake. This mahseer grows to 10 kg and is an excellent candidate for promoting ecotourism.



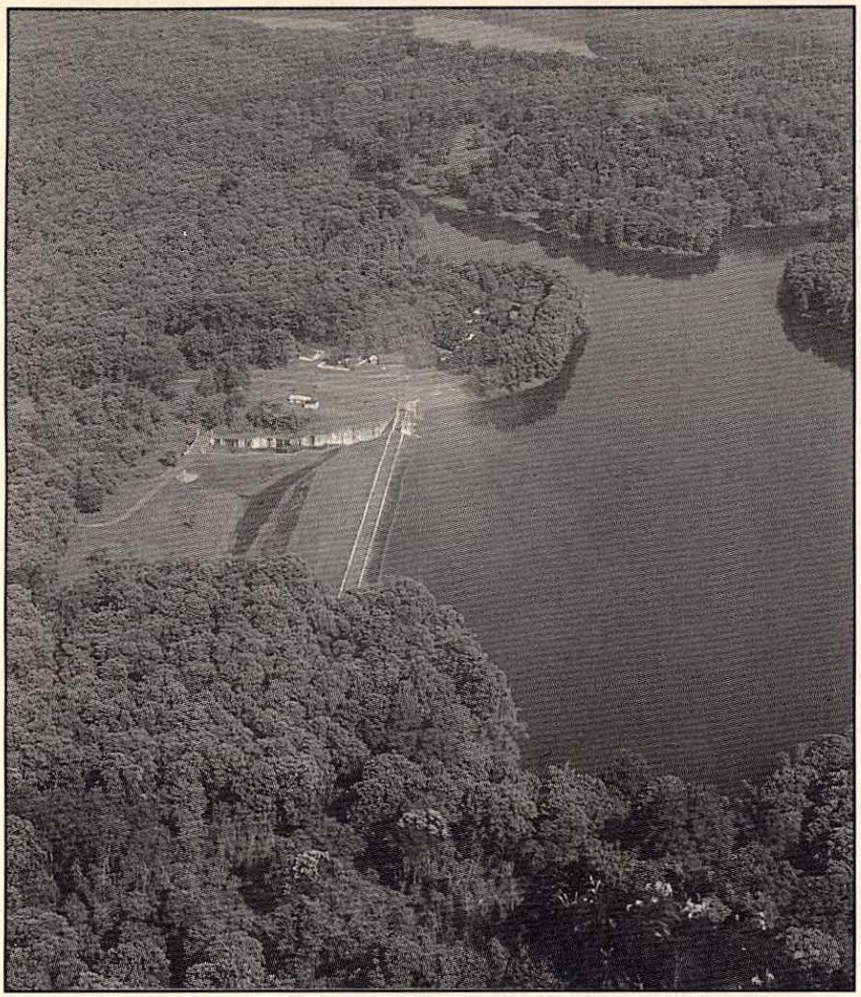
V.K. UNIYAL

Karimalai gopuram — a tahr habitat in Parambikulam

The Parambikulam valley has long been recognised as a valuable area in terms of the availability of exploitable commercial timber, mostly teak and rosewood. The history of timber extraction from this area goes back to the times of the Maharajah of Cochin. Later on, these forests were leased out to the administrators of the then Madras Presidency, who brought in scientific forest management. Along with the forests of Top Slip in the Anaimalai Wildlife Sanctuary, the forests of Parambikulam were managed under the selection system of forestry in which only certain tree species were felled. A tramway run by steam engine was commissioned between Chalakudi and Parambikulam in 1907 to transport the timber from these forests to the plains of Kerala. In 1842, man-made teak plantations were started at Nilambur in Kerala and these experiments reached Parambikulam in 1912. However, extensive activity of clearfelling and raising plantations began only from 1961 and continued until 1981 when, on the recommendation of a high-powered committee, it was given up in favour of wildlife conservation. Over the years, the plantations have grown successfully and are managed silviculturally in order to gradually reconvert them back to the original moist deciduous forests.

Most of the plantations in the sanctuary were raised by Kadar tribals who were employed by the Forest Department as labourers. The Kadars later settled down in the sanctuary in makeshift settlements. The original inhabitants of these forests were, however, Muduvans and Malasars. The Muduvans are dry land farmers having a long history of being shifting cultivators. Considered to be a royal tribe, they live in the southern boundary of the sanctuary away from the other tribal groups. The Malasars have been living in these forests since time immemorial and sustain themselves through the collection of minor forest produce such as honey and fishing. Over the years all the tribals have switched to forest labour as a primary life-sustaining enterprise. There are 120 families living in 5 settlements, 4 of them in the valley and the Muduvans in the hills.

Owing to its location and contiguity with the outlying forests, Parambikulam exhibits a diversity of habitats — montane grasslands and rocky



A.J.T. JOHNSINGH

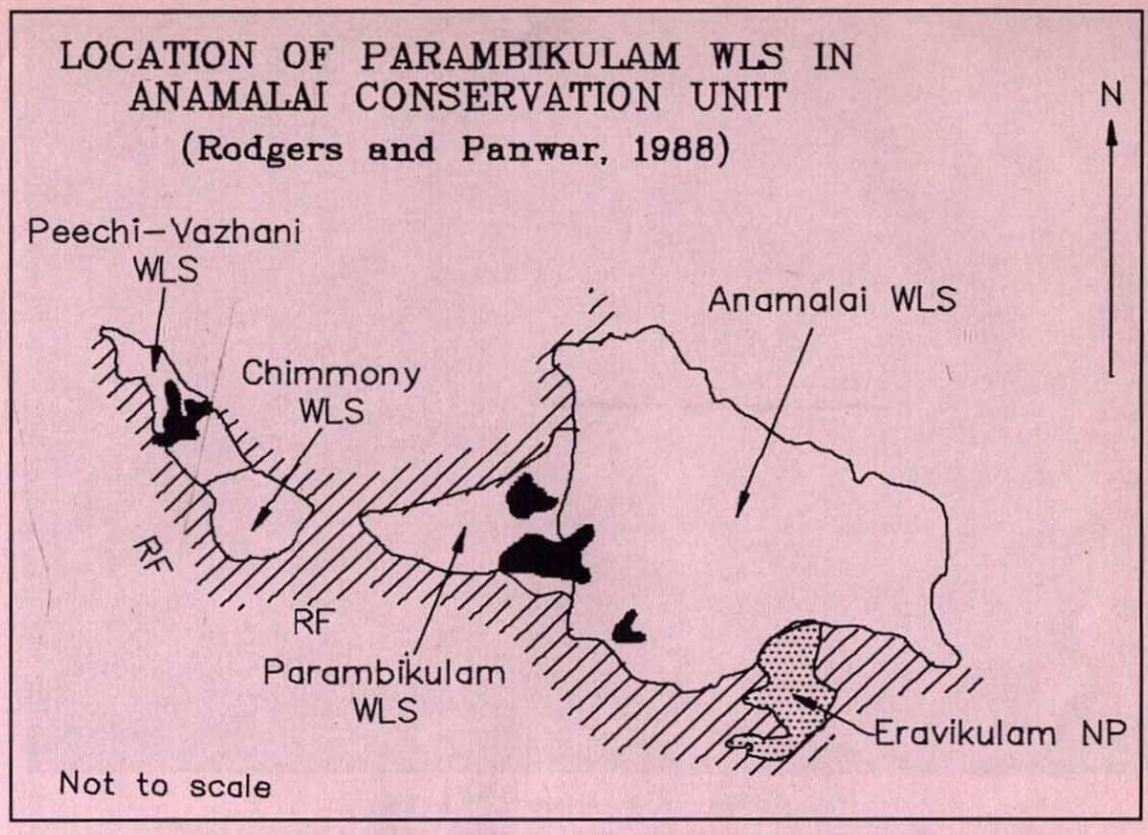
Thunakadavu reservoir — one of the fine blue-finned mahseer (*Tor khudree*) habitats in South India

outcrops at the higher reaches, evergreen and moist deciduous forests in the undulating hills, teak plantations and marsh lands in the valley, and riparian areas along the river banks. There are many endemic plants especially in the evergreen forests. Being situated in the Western Ghats, species endemic to the Western Ghats, such as the lion-tailed macaque, Nilgiri langur, Nilgiri tahr and Nilgiri marten are common. In conjunction with the surrounding forest areas, Parambikulam could form the centre of one of the few habitats in the country that could support viable populations of elephant, gaur, tiger and sloth bear. Parambikulam was one of the favourite places of the late Dr. Salim Ali during his active bird-watching days. The Ceylon frogmouth and rufous-bellied hawk eagle have a home here and the great Indian hornbill a future.

Several potential dangers threaten this wildlife-rich area. A proposal is pending with the Government of Kerala to construct a series of dams on the Thellikkal river called the Kuriarkutty — Karappara Project. Although the project is considered to be shelved for the time being, the fear exists that political expediency may once again sacrifice these forests for popular political gains. Another problem relates to the lack of direct accessibility from Kerala to this sanctuary. Tourism has grown manifold in the past few years and visitors have to reach Parambikulam via Tamil Nadu. Periodically, pressure is exerted to open either the Vazhachal — Parambikulam road in the west or the Chemnampathy-Thekkady road in the north. Any of these roads would make this area vulnerable to poaching and jeopardize the abundance of mammals. To save Parambikulam from these threats the best option could be to elevate its legal status.

Parambikulam Sanctuary can continue to be a sanctuary with all its values and problems remaining the same. Alternatively, it can be upgraded to a National Park to foreclose all developmental activities. To declare it a National Park, the settlement of the rights of the people before the final notification will be impossible as the tribals living in the sanctuary cannot be relocated in the land-starved state of Kerala.

One manner in which Parambikulam could be saved from the future onslaught of developmental activities is to declare it a Tiger Reserve. The proposed zonation of Parambikulam as a Tiger Reserve takes into account the ecological contiguity of the sanctuary with the outlying forests. The central valley with plantations, reservoirs and tribal


LOCATION OF PARAMBIKULAM WLS IN ANAMALAI CONSERVATION UNIT
(Rodgers and Panwar, 1988)
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Peechi–Vazhani WLS
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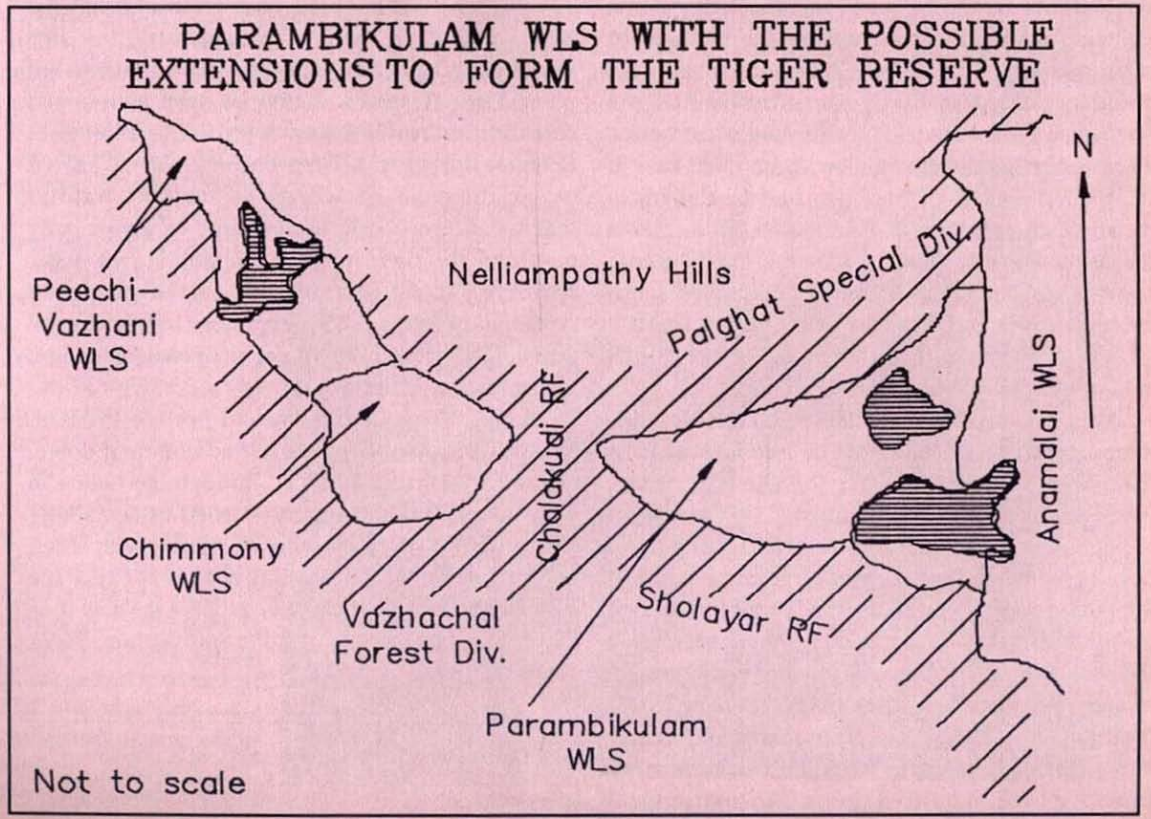
Eravikulam NP
Not to scale


PARAMBIKULAM WLS WITH THE POSSIBLE EXTENSIONS TO FORM THE TIGER RESERVE
N
Peechi–Vazhani WLS
Nelliampathy Hills
Palghat Special Div.
Chalakudi RF
Anamalai WLS
Chimmony WLS
Vazhachal Forest Div.
Sholayar RF
Parambikulam WLS
Not to scale

V.K. UNIYAL

Mala-malassar — an indigenous tribe of Parambikulam

settlements would be kept in the buffer zone, allowing management authorities the latitude for manipulation. The entire Chimmony Sanctuary could be added as the western buffer and the Vazhachal Forest Division as the southwest buffer. The total buffer zone would be around 300 km^2. If the natural forests of Sholayar and Chalakudi in the south and west and part of the vested forests in the north are incorporated into the existing core zone, a 300 km^2 area of moist deciduous, semi-evergreen and evergreen core area could be formed. The Tiger Reserve, therefore, would have a total area of nearly 600 km^2.

By upgrading Parambikulam to a Tiger Reserve, the proposed core area would be free forever from major biotic disturbances, thereby allowing natural processes to continue unhindered.

Parambikulam would come into the limelight and developmental activities would be rationalised in the buffer zone. The tribals would still enjoy their traditional rights in the buffer zone and sustain themselves by getting regular employment through forestry, associated activities and ecotourism. Under the umbrella of Project Tiger, the area would receive more financial assistance from the Government of India, which would help in infrastructural development, enhancing protection and habitat improvement. In terms of management, the area would get greater feedback from the experiences of other Tiger Reserves. Activities such as tourism, research and monitoring could be streamlined. Special efforts could be made to improve the habitat by eradication of weeds as well as habitat manipulation to build up the large carnivore prey base and the tiger number. Parambikulam Tiger Reserve would remain part of the proposed Anaimalai Elephant Conservation Unit as several other Tiger Reserves in the proposed Elephant Conservation Units would.

On the Vengoli peak we did not see the tahr. When it became warm we started climbing down. A sambar alarm call echoed through the valley in front of us. Was the sambar startled by a stalking tiger? Or did it see an indolent tigress with a full belly allowing the cubs to play over her? Could the sambar and the tiger be allowed to live the way they like? Maybe, yes, in the Parambikulam Tiger Reserve. ❑

Dr. A.J.T. Johnsingh, Joint Director, Wildlife Institute of India, Dehradun, is an expert wild lifer. Mr. V. K. Uniyal is also working at same institution.

CHINESE PAPERCUTS ON SHOW

Chinese papercut work is the delicate art of cutting paper to bring out forms of desired shapes. During festivals in China, such papercuts are pasted on to window panes and in the evenings, light filtering through the intricate cutwork brings these forms to life.

Jilpa Khatri, a forestry graduate from Konkan Krishi Vidyapeeth and member of the BNHS read about this art form in a magazine and took to it to create pictures of birds, butterflies and other animals that fascinate her. Jilpa's exhibition of more than 100 such intricately worked papercuts of various animals was held on 13th December 1994 at Hornbill House. Mr. S P Godrej inaugurated the exhibition. The exhibition was open to the public for five days. The demoiselle crane illustrated here is only one of the many fine examples of Chinese papercuts prepared by Jilpa Khatri.

NATURE EDUCATION ACTIVITIES

The place of humans in nature is equal to other living creatures, but they behave as if they are the only users of natural resources. This is the main cause of natural imbalance. And that is why it is essential to create love, awareness and concern for nature among our people.

Several non-governmental organisations are working towards this end. But it is essential to educate school students as well. Keeping in view this goal and to generate concern for nature among children, Bombay Natural History Society's Nature Education Wing has been conducting exclusive nature education programmes for school children for the last 40 years.

Several programmes like nature trails, slide shows and film shows on natural history, painting competition, essay and quiz competition, nature games, nature camps in sanctuaries and national parks are exclusively organised for schools. All these programmes are conducted on no profit no loss basis.

All these programmes are not necessarily meant for urban schools alone. The BNHS Nature Education Wing always has a special interest in rural camps. BNHS provides the resources to schools interested in taking the initiative to conduct such programmes.

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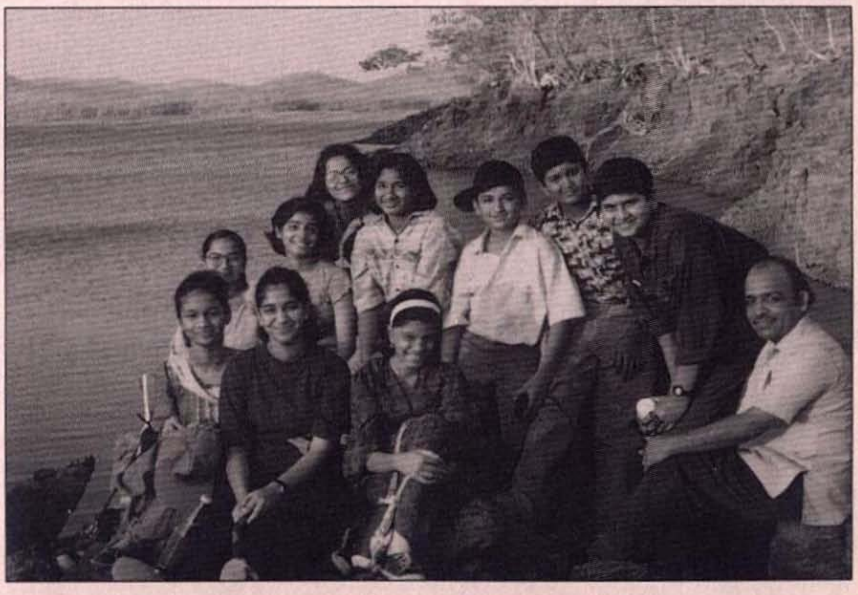
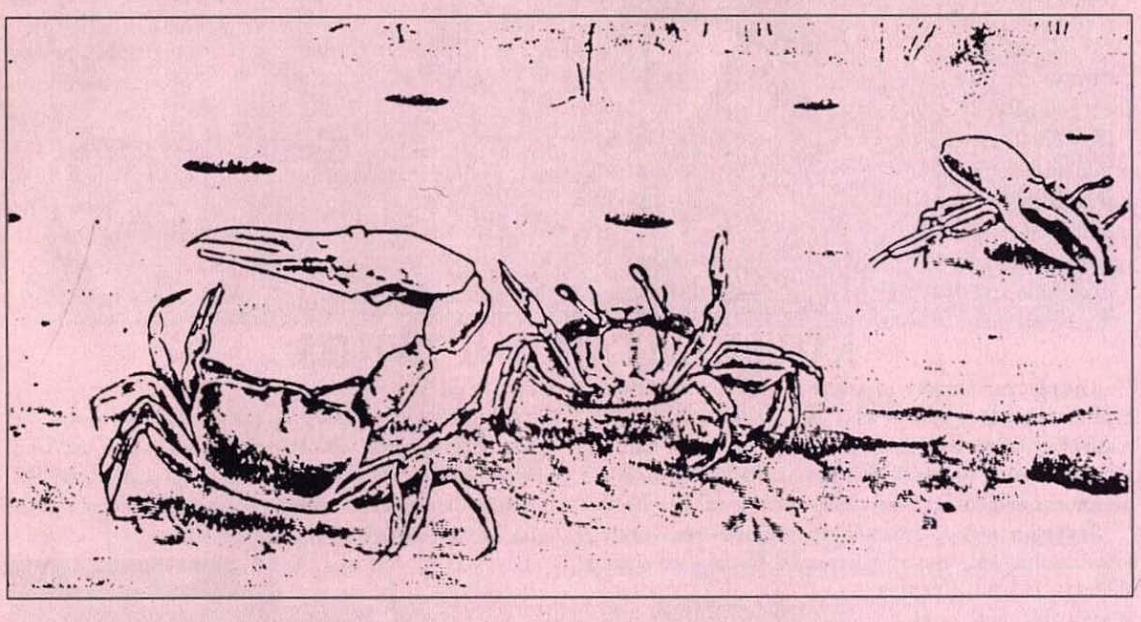


Participants of the summer camp at Tansa

SEASHORE LORE

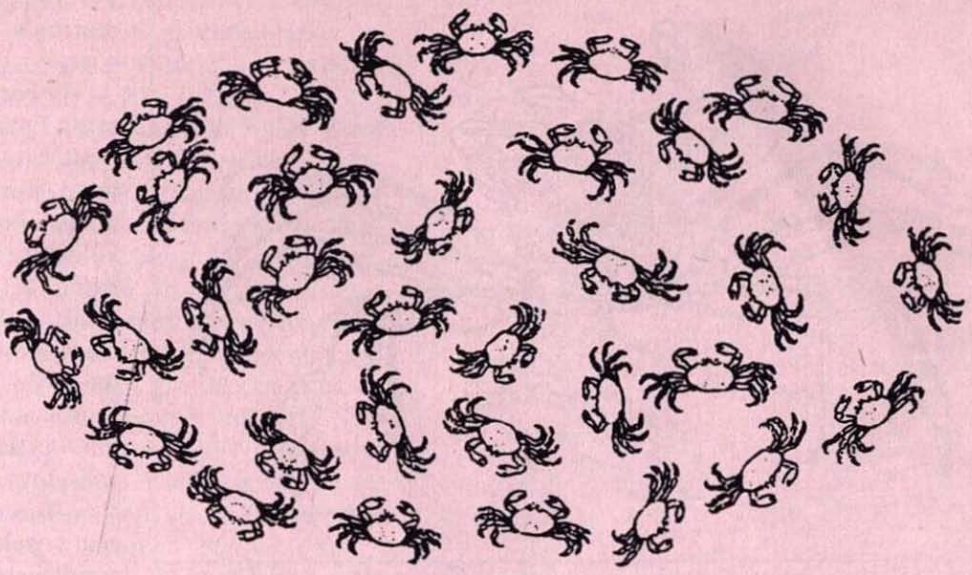
18. Beach Buddies

Beefsea



"Fell shears the passage to their mouth command,
From out their flesh their bones by nature stand;
Broad spread their backs, their shining shoulders rise,
Unnumber'd joints distort their lengthen'd thighs.
With stony gloves their hands are firmly cased,
Their round black eyeballs in their bosom placed;
On eight long feet the wondrous warriors tread,
And either end alike supplies a head,
These, mortal wits to name as Crabs agree—
The Gods have other names for things than we."

Battle of the Frogs and Mice



Crabs are well protected by their hard, armour-like shell and have powerful claws, so one would expect them to move fearlessly about, hurling defiance at their enemies. On the sandy beaches and mudflats of our seashores, however, what do we find? Timid creatures with a lot of bravado, but no inclination to fight.

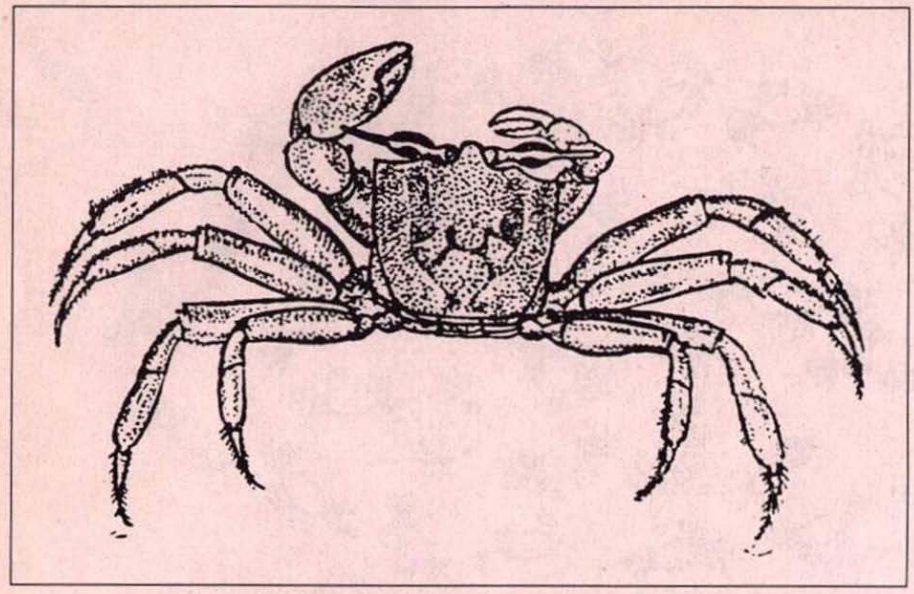
The sand-bubbler crabs (*Scopimera, Dotilla*) burrow in sand in sheltered bays. As the tide falls, they emerge from their vertical chimney-like burrows and start feeding. Unlike most crabs which are carnivorous, they feed on the layer of organic matter left on the sand. On emerging, each crab proceeds in a straight line away from the burrow, picking up sand grains, sifting them and scraping off the food, then moulding the sand grains into a round pellet with the help of the mouth appendages and leaving it on the beach. Several such trenches are made radially, with the burrow as the centre from which these radii stretch out in straight lines. The pellets, strung like beads along each radius, make a striking pattern — shaped like a sunburst — on the beach, and are the hallmark of these crabs.

The flat third joint of each walking leg has a curious, oval, window-like membrane called the tympanum.

Near estuaries with an admixture of mud and sand, we see soldier crabs (*Mictyris*). As the tide ebbs, the smooth wet sand shows tiny heaps, as if something buried underneath is pushing it up. Keep absolutely still, and in no time you will see hundreds, even thousands, of tiny, pea-sized, deep-bodied crabs crawling all over the sand. They are soldier crabs, so called because they move together like an army on parade. They have been described as "marching in formation", now in line, now in mass formation, wheeling and turning like an army at exercises. An army, did I say? Move just a little or stamp your feet, and you will find them beating a hasty retreat, scattering in all directions, each one scrambling for himself and the devil take the hindmost! They behave more like a disorderly rabble rather than well disciplined solders. Finally they get so panic stricken that they disappear like magic in an instant, having burrowed spirally in the sand like corkscrews.

But if undisturbed, they will start feeding, moving slowly and stopping here and there on the way. They pick up sand grains with their tiny claws, scrape off organic food-matter from them with the help of their many mouth appendages, which then mould the sand grains into a round pellet that is dropped on the ground. These characteristic pellets show where the soldier crabs have been feeding, as, in the meanwhile, the crabs may have moved off a hundred metres away. Sometimes, instead of coming up to the surface, the crabs (usually the females and young ones) tunnel just under the surface, feeding in these horizontal passages.

Fiddler crabs (*Uca*, formerly *Gelasimus*) dwell in large numbers on mudflats with a mixture of sand. They are so named from the huge claw of the males. As in the crabs described above, fiddler crabs use the small claw like a spoon to pick up sand grains



The sandy colour of the ghost crab camouflages it effectively

and convey them to the mouth. The male has only one such small claw, and is therefore at a handicap while feeding. Its other claw is huge and is used in courtship to beckon females, and to ward off and fight rival males.

The movement of the large, brightly coloured cherry red or yellow claw — the "hand" of the claw alone is larger than the crab's body — reminds one of a fiddler drawing his bow across the strings of a violin, and hence the name. In India, the crab is also called the *dhobi crab*, the arching movement of the large claw being likened to a *dhobi* (washerman) bashing clothes on a rock while washing them.

If the large claw is lost by accident, the smaller claw grows into a larger one after a moult or two, and a new small claw develops to replace the lost large claw.

Fiddler crabs sometimes carry out "mass drill". All together, they raise their bodies by standing on the tips of their legs, with claws raised upward, then squat down on the sand and repeat this again and again.

Fiddler crabs make burrows descending almost vertically till they reach water at the bottom. They stand guard at the mouth of the burrow, brandishing their large claw, but they are shy and will go inside if any one approaches.

All crabs have stalked eyes, but those of fiddler crabs are extremely long and slender, looking very much like match-sticks. Normally they are protected by being lodged in long grooves, but they can pop out like a submarine's periscope.

The Portuguese relish fiddler crab meat, but they are good conservationists. Instead of killing them, they catch a male, break off the large claw and release the crab. In due course, at the next moult, the crab will grow another claw. This way the crab population is not depleted, and there is a never-ending supply of claws.

Fiddler crabs can run quite fast and escape into their burrows. The trick in catching them lies in running around on the beach in a large circle and gradually narrowing the circles. The crabs collect in a heap in the centre of the circle and can be easily gathered.

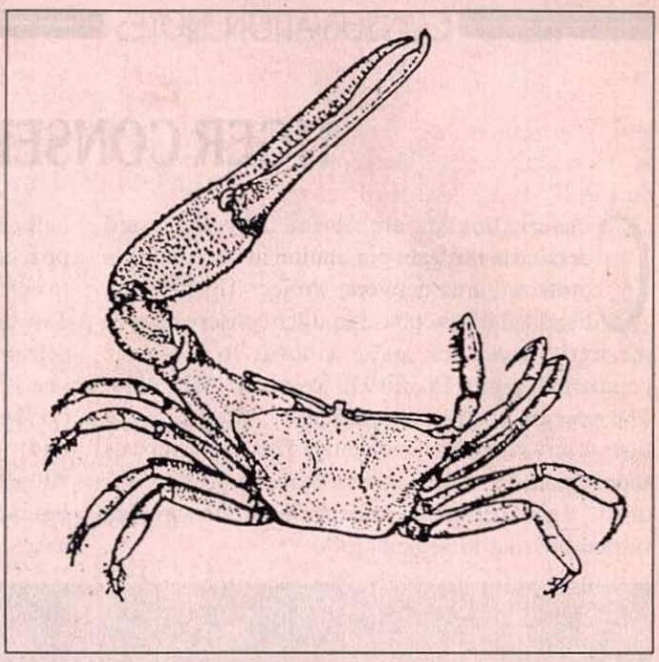
Finally, we come to the ghost crabs (*Ocypoda*), which live high up on the sandy beach. They too live in burrows, and the square body is coloured like sand. They run extremely fast on the tips of their legs, casting a shadow of their body on the sand.

All of a sudden they stop, and lower their body so that the shadow disappears. The colour of the body matches the dry sand, and it looks as if the crab has just disappeared and melted away in the sand; hence the name ghost crab.

Both sexes have large claws, but one of the claws is larger than the other. On the inner surface of the "hand" of the larger claw there is a row of fine teeth. Rubbing these against a file-like ridge on the "arm" of the claw produces a creaking noise in the grey ghost crab (*Ocypoda ceratophthalma*) of our west coast on the shores of the Arabian Sea. The red ghost crab (*Ocypoda macrocera*) of the east coast i.e, shores of the Bay of Bengal, makes a louder chirping sound like a startled squirrel. This rasping sound is often made by the occupant of a burrow when another ghost crab intrudes into its burrow. One species, *Ocypoda cordimana*, lacks this stridulating organ.

In all ghost crabs but one (*O. cordimana* again), the eyestalks protrude beyond the eyes like long slender horns, the eyes being on the middle of the eyestalks.

Living high up on the foreshore, ghost crabs can live for a long time outside water. The seven pairs of gills are well developed, but the walls of the gill-chambers are lined with skin richly supplied with blood vessels, so that the gill-chambers (as long as they are moist) breathe air which enters them from a slit between the second and third walking legs. The slit can be easily made out as it is fringed with hair. While on a study tour to Tamil Nadu, I once caught a ghost crab and popped it into a jar, intending to add alcohol (to preserve it) when I reached the laboratory. Somehow I forgot to do this, and came back home after a week. On opening the jar, I was surprised to see the crab run away; it had been out of water for a week, but was not affected.



The enlarged claw of the fiddler crab is used in courtship and to ward off rival males

Crabs that live above the shore-line can smell water even a hundred metres away and will head towards the sea even if they cannot see the water. In the rainy season, however, they lose their sense of direction and get confused, as the air is saturated with moisture.

The ghost crab digs a burrow which may go down a metre or more where the sand is moist. If the burrow gets covered with water at high tide, it has to be excavated again at low tide. The crab grabs some sand between two of its legs, carries it to the entrance and throws it away with a jerk, repeating this until it is satisfied. It then presses on the wall of the burrow, using its back and larger claw, to make the sand compact and to prevent it from caving in. Unlike the other beach crabs, the ghost crab is carnivorous and feeds on small crustaceans like isopods or sand-hoppers and insects. It is also a carrion feeder and helps to clean the beach of waste food left behind by picnickers, or dead fish left by fishermen. Newly hatched baby turtles are a delicacy, and so are turtle eggs. In their turn, ghost crabs are relished by brahminy kites and jackals.

Nowadays, whenever I take a stroll on the beach, I am reminded of cold sherbet. There is an interesting experience behind this. A Rotarian realised that people visiting our beaches have no idea of the rich variety of life on them. He wanted to organise beach trails where visitors would be taken on a conducted tour so as to gain an insight into nature's fascinating secrets. He gathered a bunch of interested collegians who would act as docents on the trail, and I was asked to train them.

At the inauguration of the beach trail, I was busy from morning till noon, taking around batch after batch of guests and journalists on the beach. Around noon, food was served, but it was quickly snatched up by the guests, so that the docents and I remained hungry and thirsty.

As there was no drinking water in the bungalow, my colleague and I went out into the garden in search of it. Just then my colleague spotted two bottles of water hidden behind a bush. We opened a bottle and washed our hands with it. I noticed some waiters in the garden but paid no heed. It was really refreshing to feel the water cooling our arms and hands. More luck was to come, for I saw a bottle with a little lime juice cordial in it. I got hold of two empty glasses, poured a shot of cordial into one, topped it up with water and offered it to my colleague. He took a sip and told me it was bitter. I tried it too and my first sip made me splutter; the "water" in the bottle was gin! No wonder the waiters were scowling at us. They had hidden the bottles, to enjoy the gin after the guests had left, and we had used it to wash our hands! And this is how beach buddies always remind me of lemon sherbet. ❑

TIGER CONSERVATION

Conservationists are alarmed by the rapid decline in the tiger population in the country's protected area network. Project Tiger, which heralded a new phase in tiger conservation in the early seventies, gave a boost to the tiger population from 1800 in 1972 to over 4300 in 1989. The species finally appeared to be safe in the 23 tiger reserves across the country. This euphoria was soon replaced by a feeling of despondency, as reports of the tiger's disappearance from its strongholds started pouring in around 1990.

A.J.T. JOHNSINGH

Since 1990, the tiger is reportedly disappearing from its strongholds

While conservationists were smug in their feeling of having saved the tiger from extinction, poachers were having a field day. A spate of seizures of tiger skins and bones jolted them out of their complacency. In 1994, 46 tigers were officially recorded as dead, at least 50% of which had fallen prey to poachers. The lucrative trade in tiger skin, bones and other body parts including blood, fat, nails, eyes and whiskers has encouraged the ruthless poachers. These parts are considered an aphrodisiac in certain southeast Asian countries, such as China, Taiwan and Korea. In spite of several raids and seizures, the trade seems to continue unabated. In one such seizure, a consignment of 400 kg of tiger bones, 8 tiger skins, besides the skins of leopards and other wild species, were recovered. Since August 1993, the bones, skins and claws of 109 tigers have been seized and 56 poachers and traders arrested. This has come as a shock to conservationists and all lovers of the species. The worldwide tiger population is estimated to be between 5,000 to 7,000, almost half of them in India. Destruction and fragmentation of habitat has split them into isolated sub-populations, making them more vulnerable to disease, floods, fires and other catastrophic events. They will also be exposed to the dangers of inbreeding. Human commitment to

the survival of the tiger is the need of the hour, without which the species is doomed. Experts feel that with the current demand for tiger parts, the species may not survive beyond the year 2000 AD. Its numbers have fallen from 4,334 in 1989 to a doubtful 3,750 in 1993. Recent investigations reveal that most of the poaching is occurring in non-protected forests where almost two thirds of India's tigers are found.

Unfortunately, the concern for the species is not the same in every country, which is perhaps why it is losing out, in spite of the best of efforts being put in by law enforcers, especially forest officials. While Taiwan burnt 4,405 kg of confiscated products including tiger bones between 1990-1993, China exported 27 million items of tiger derivatives between 1990-1992. South Korea is another country which has shown a steady increase in its demand for tiger bones.

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Besides trade in tiger parts which has sustained poachers, the sorry plight of the species has been brought about by several factors which came to light after a survey initiated by the Ministry of Environment and Forests and published in a recent issue of *India Today*. The survey revealed that eighty percent of the reserves do not have an armed strike force, which was mooted a year and a half ago to combat the well armed poachers. Lack of vehicles has also hampered the work of this strike force, wherever it has become operational. Basic anti-poaching equipment like vehicles, guns and wireless sets are inadequate or inequitably distributed.

Most of the tiger reserves have not been properly demarcated. A final notification of most of these reserves is still pending. This gives enough leeway to unscrupulous elements for exploiting the legal definition of such protected areas.

The survey also reveals that almost two thirds of the reserves do not receive their operational funds on time, which hampers their long term planning and strategy.

A lack of manpower has crippled most of the tiger reserves as far as fieldwork and research activities are concerned. This shortage of manpower hampers the daily monitoring of the tiger population, as each forest beat is about 22 sq. km., to be patrolled and monitored by an individual forest guard, which is physically impossible on a daily basis. Sufficient staff should be available to monitor each beat.

Almost half of the field directors of the tiger reserves are not in effective control of their buffer areas, which is crucial for an effective protection of the species. The buffer area helps to check undesirable elements and activities from getting too close to the core area of the reserve, but in the absence of a clear jurisdiction, the field director becomes a mute spectator.

Intelligence gathering is handicapped due to a lack of funds, which is essential to ferret out hard information. Most of the reserves lack legal aid. This is essential to come up with a fool proof case against the offenders, who are well organised for such eventualities.

It has also been noticed that several reserves lack a format for inquiring into tiger deaths, which under the currently grim scenario is essential. Most of the tiger reserves were found to be lacking the infrastructure for a scientific procedure, viz. forensic examinations to establish the cause of death. Without such data the defendants can always turn the tables on the prosecution.

It is time we took notice of the glaring lacunae in the management of the reserves and other protected areas of the country. Naturalists and all concerned individuals should also come forward with their views. It is high time that we spoke up for the Forest Department, especially its Wildlife wing, which in spite of severe constraints has been doing its best to save this magnificent animal from extinction. ❑

Compiled by S. Asad Akhtar, Conservation Officer, BNHS.

ORNITHOLOGY OF THE INDIAN SUBCONTINENT 1872-1992

An Annotated Bibliography. Charles G. Burg, Bruce M. Beehler and S. Dillon Ripley.
National Museum of Natural History (Division of Birds), Smithsonian Institution, Washington D.C. 20560, U.S.A. 1994.

330 pages. Price: U.S. $20.

This bibliography is a welcome and long awaited addition to the ornithological literature pertaining to the Indian subcontinent. Covering a geographical area which has no established regional ornithological journal, this monumental compilation will act as a solid bedrock of source materials for any future study of the immensely diverse avifauna of this area.

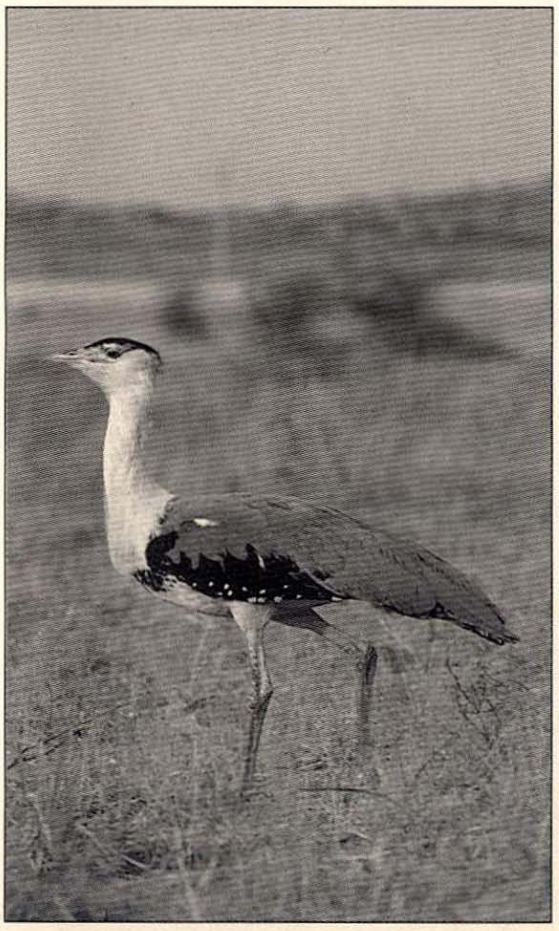
Ornithological information from this part of the world has never been assimilated in any computer data base, making it impossible for a researcher to make computer searches for information. A bibliography which systematically presents this information is, therefore, a boon to researchers.

Using the best library and museum of Indian ornithology, the Smithsonian, the authors list nearly 6000 references pertaining to the years 1872 through 1994. The fact that the citations are crisply annotated makes it easier for the researcher in quest for information. Starting from the works of early stalwarts of Indian ornithology like E.C. Stuart Baker, Hugh Whistler, W.T. Blandford, and William V. Legge, the compilation systematically covers the vast legacy of information gathered by a host of amateur and professional ornithologists for over a century. It essentially gives an idea of the growth of Indian ornithology from its very nascent stages to the rapidly expanding state in which it is today, and thus serves as a historical guide as well. All the citations are arranged alphabetically, by the author's surname, making it very easy for a reader to zoom in on the work of a particular author.

But perhaps the most useful feature of the book will be the excellent indexing and the cross referencing presented in the index. All titles have been classified by topic, focal taxonomic group or geography. Thus it is very easy for the researcher to access information pertaining to a particular geographical area, or a specific species or group of species.

The authors seem to have adopted no definitive policy about coverage of the so-called "grey literature" — the set of non-peer reviewed or popular-cum-scientific periodicals like the *Newsletter for Birdwatchers,* and *Bulletin of the Oriental Bird Club,* wherein many useful articles have appeared over the years. Coverage of these sources seems to have been made based on their availability, and is not comprehensive. The book is priced modestly at $20, and is illustrated with some excellent drawings by John Anderton. This landmark contribution to Indian ornithology will be an indispensible tool to researchers and birdwatchers for a long time to come. ❑

R. KANNAN



ASAD R. RAHMANI

Environ

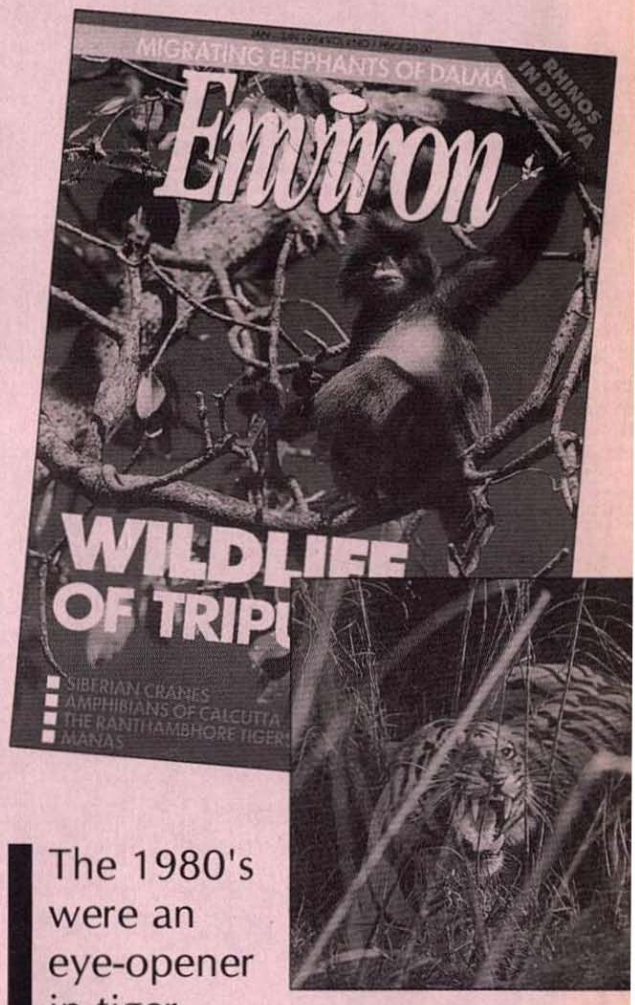
Understanding the Animal World

Edited, printed and published by Biswajit Roy Chowdhury on behalf of the Nature Environment and Wildlife Society (NEWS), this magazine is a visual treat for amateur wildlifers and professional naturalists alike. Excellent production values, full colour pages and art paper match the quality of the writing, with articles and photographs by well known names such as Arati and Vivek Sinha, Vinod Rishi, Ashok Kumar and Lt. Col. S.R. Banerji. The advisory board for the magazine includes several outstanding names such as Dr. Amalesh Chaudhuri, Dr Ashis Ghosh, Dr. P.K Hazra and Gen. Baljit Singh.

This particular number covers the burning issue of conservation of the tiger, the role of the Bishnoi community as protectors of the blackbuck, and the Nicobar macaque among others. The photograph of the blackbuck on page 13 by Lt. Col. S.R. Banerji has the haunting quality of a mughal miniature painting, but unfortunately it is marred by the centrefold of the magazine. This is an avoidable error. The photograph of a Bishnoi couple on page 16 is of equal class.The magazine is now in its third issue, which is numbered Volume III No.1. This, however, gives the erroneous impression that it has been in publication for three years.

However, the quality of the magazine and the efforts of the editorial staff are commendable. At Rs. 20/- it is well worth the cover price. Contributions in the form of articles and photographs are invited, and should be addressed to the Chief Editor, Environ, 10 Chowringhee Terrace, Calcutta-700 020.

Other activities undertaken by the NEWS include a three year survey of wetlands in Bengal funded by the Ministry of Environment and Forests, Govt. of India and another survey on the flora and fauna of the Mahananda Wildlife Sanctuary funded by the Forest Department, Govt. of West Bengal. The Society conducts an annual exhibition of nature photography. The Environmental Awareness Cell regularly publishes posters, booklets and other material against wildlife trade and environmental pollution, for free distribution among the public. ❑

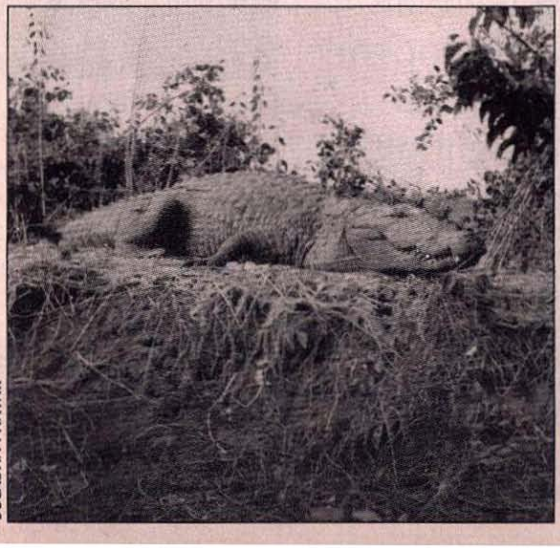


The 1980's were an eye-opener in tiger sighting. The tiger seemed to explode into life all over Ranthambhore National park

Crocodiles in Territorial defence in pre-Portuguese Goa

MANOJ R. BORKAR
and MEENAKSHI MALLYA

"The island of Tiswadi starts from the East pass called Banastari, a village along the Cumbarjua canal, where it crosses the firm land until the sea enters through two wooden shacks which are opposite to the west. It is interesting to note that even today, Banastari is the closest human settlement that interacts with the habitat of Cumbarjua crocodiles. The entire island of Tiswadi was infested by the lizards of water."



SULABHA PHATAK

GOA is one of the few states that has a wild population of mugger crocodiles. In this State, its home is in the Cumbarjua canal of the Mandovi-Cumbarjua-Zuari complex, which communicates with the Arabian sea along the west coast of India.

The occurrence of this reptile in the wilderness assumes significance because of its threatened status in general. Any attempt to conserve this species demands a systematic collection of data on various facets of its life. A status report on the Cumbarjua crocodiles has been prepared recently (Borkar et al. 1993). Prior to this study, much was obscure about the crocodiles of this State.

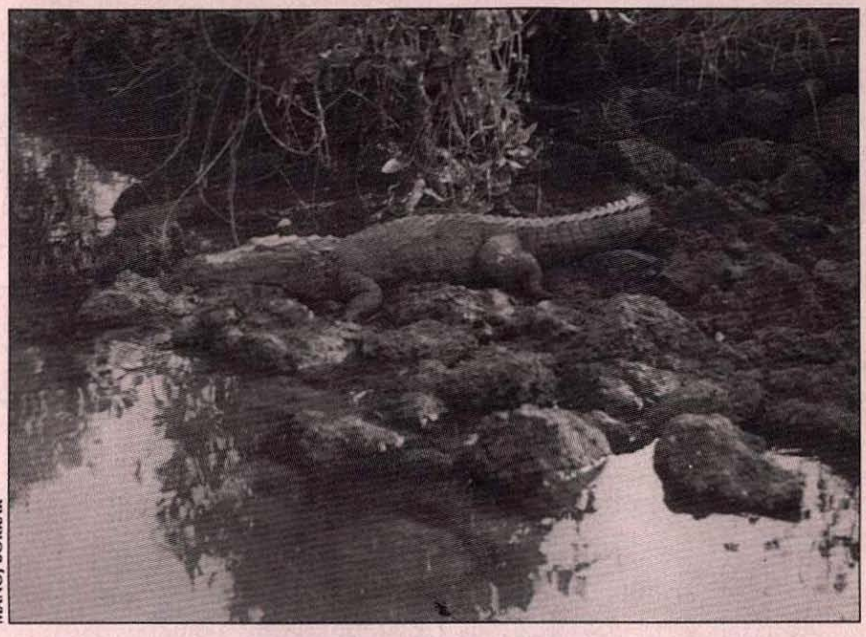
Perusal of historical literature in the course of this study brought to light an interesting aspect of their possible origin in the State. Their long-standing existence in the Cumbarjua canal is substantiated by a Portuguese document entitled 'Decada Segunda Livro V' dating back to the time when this land was ruled by Muslims, forty years before the Portuguese conquest of Goa.This report has a reference to 'The island of Tiswadi, starting from the East pass called Banastari (a village along the Cumbarjua canal) where it crosses the firm land until the sea enters through two wooden shacks which are opposite to the west'. It is interesting to note that even today, Banastari is the closest human settlement that interacts with the habitat of Cumbarjua crocodiles.

It is further highlighted that the entire island of Tiswadi was infested by the 'lizards of water', which were wild animals of human size. The description of these animals in the report stated that their mouths were wide enough to swallow cattle with horns.

Inhabitants of this island have reported seeing horns in the mouths of these lizards. Presumably these were left in the mouth after the rest of the prey was swallowed.

Reason dictates that the lizards described above could be none other than crocodiles. The original report also touches upon the controversy of their

> The mugger or estuarine crocodile was petted by the Portuguese soldiery at Malwara, Colombo, Kalutara and other river forts. Kayman's gate in Colombo perpetuates the memory of their former abundance.



MANOJ BORKAR

Basking open mouthed in the midday sun

MANOJ BORKAR

Amidst the pneumatophores of a typical mangrove on the banks of Cumbarjua canal

origin in this place, either that nature had produced them there or that they might have been brought in for the purpose of defending the island. This suggestion opens a new vista regarding the possible use of crocodiles in territorial defence of this land in the pre-Portuguese period.

Similar opinions have been expressed by many authors in their writings on crocodiles. Deraniyagala is of the opinion that it was this reptile which was abundant at a number of river forts, some of which are still surrounded by the remains of moats of considerable depth filled with crocodiles (Whitaker & Whitaker 1980). It is interesting that the use of this reptile for defence and allied aspects is known since antiquity. It has been reported that during a religious fight in Uganda, King Mutsa marooned African Muslim prisoners on small islands of Murchison Bay and gave them a rather impossible option to freedom. If they did not want to die of thirst and hunger, they had to swim for their lives through crocodile infested water (Sherpener 1984).

In conclusion, this information confirms the existence of wild muggers in Goa since the pre-Portuguese period and their probable use in territorial defence. This contradicts the underestimated retrospective status of wild muggers in the state.

ACKNOWLEDGEMENT

We gratefully acknowledge the translation of the original Portuguese document by Mrs. Nora Govil.

■ ■ ■ ■ ■

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Manoj Borkar and Meenakshi Mallya are working on Project Crocodile, W.W.F. Goa, at the Department of Biology, Carmel College, Nuvem, Goa.

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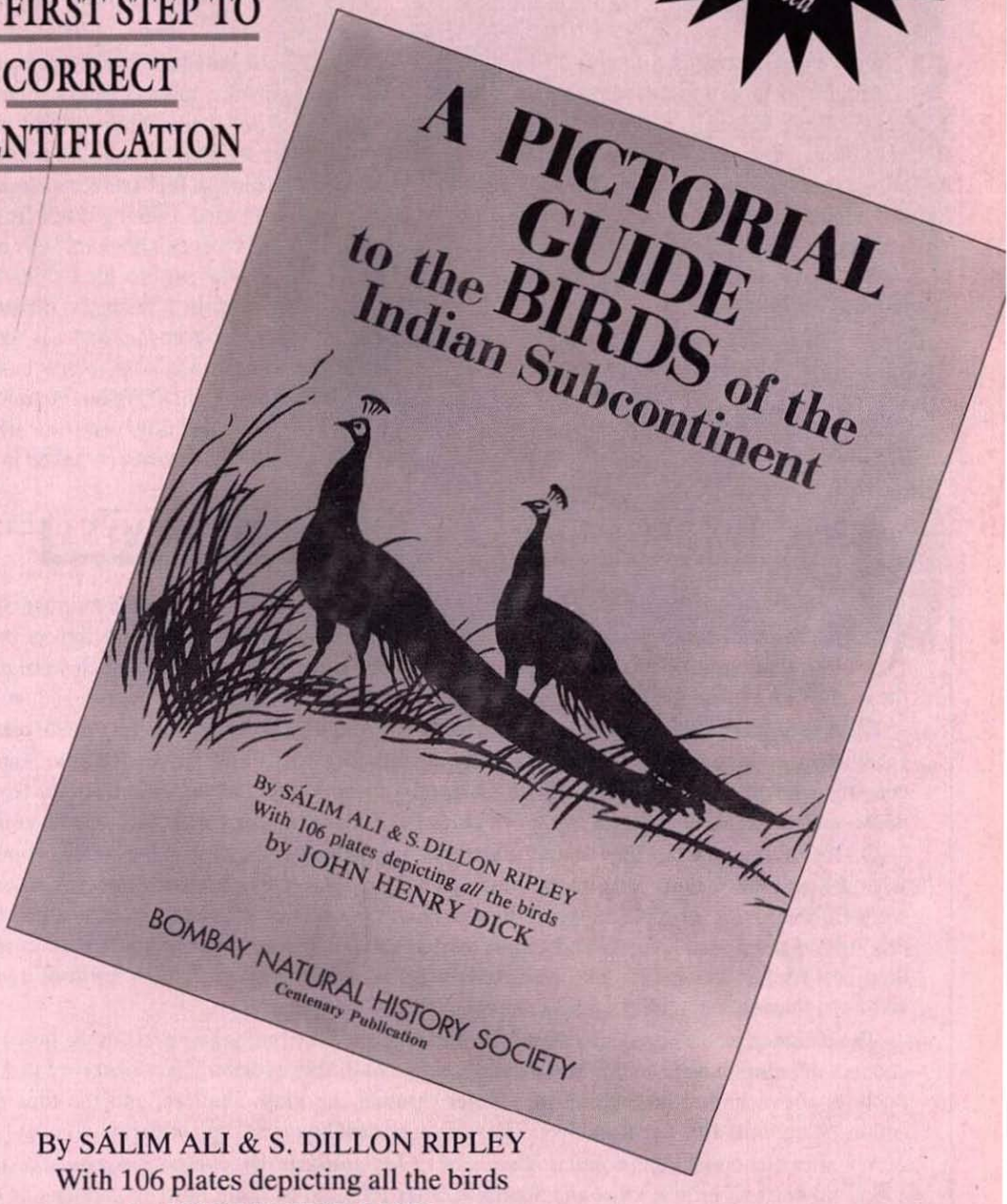
THE FIRST STEP TO CORRECT IDENTIFICATION



A Pictorial Guide to the Birds of the Indian Subcontinent

By SÁLIM ALI & S. DILLON RIPLEY
With 106 plates depicting all the birds
by JOHN HENRY DICK

LANGUR & PARIAH DOG INTERACTION

Mr. Raza Tehsin, a life member of BNHS, sent us this interesting story on the interaction between a langur and a pariah dog:

Salumber is a township situated 70 km. from Udaipur and about 15 km. from Salumber there is a village called Baroda. While going to Baroda village from Udaipur on 13th April, 1990, we halted near a hamlet called Khera between Salumber and Baroda for our lunch. Near this village there is a small pool and at the edge of the pool there are some mango trees. We chose this shady place for our lunch.

The pool was filled with murky water and some buffaloes were lying in the water. At the shore, a pariah dog lay fast asleep; its hind quarters were in the water and rest of its body was resting on the wet soil.

It was about half past one. A troop of langurs was resting in the mango trees. A male langur descended from a tree and walked slowly and cautiously but deliberately towards the water where the dog was sleeping. It put its forefeet on top of the dog, knelt and started drinking water from the pool. The dog opened its eyes, shook its body a little, then remained still. Having drunk its fill the langur turned and walked in a leisurely manner towards the tree, but the dog got up and dashed headlong without any pause nor stop to see behind it and disappeared from sight. This interaction between a langur and a pariah dog was one of the most fascinating sights I have ever observed in the jungle.

PIRACY OF NEST OF PIED MYNA BY COMMON MYNA

On the evening of 29th May 94, writes V.K. Paralkar of Bombay, I heard a number of high-pitched pleasant notes, and I peered out of my bedroom towards the direction of the call. I located two pied mynas perched on a cork tree some 8 metres high, which were making these pleasant notes.

I had seen pied mynas (*Sturnus contra*) in the area but this was the first time in 24 years that I saw them in our compound. The pair started bringing twigs and hay and within four days constructed a nest at the extreme end of the bough of a cork tree. I observed it from the terrace, a dome-shaped nest with trailing streamers below, and a lateral entrance at its southeast face.

On the morning of 6th June at about half past nine, I was walking my dogs in our compound when I heard noisy fight calls of the common myna *Acridotheres tristis* on the cork tree. They were fighting with the pied mynas, *Sturnus contra*, near the nest, and actually succeeded in driving out the nest owners. The rightful owners of the nest made several attempts to reclaim their nest for two more days, but the intruders did not allow them to land on the cork tree at all and kept chasing them away.

The common mynas do not build dome-shaped nests, they build their nests in the holes of old coconut or palm trees. In multi-storeyed buildings and blocks of flats, I have observed their nests on lofts above bathrooms which they enter through the glass shutters, and the tops of air-conditioning units fitted in windows. They also use nest boxes set up for them.

Whistler mentions in his popular *Handbook of Indian Birds* that common mynas occasionally adopt old nests of crows, kites and squirrels, after relining, or build nests in creepers or on the boughs of trees. However he does not mention piracy of new nests.

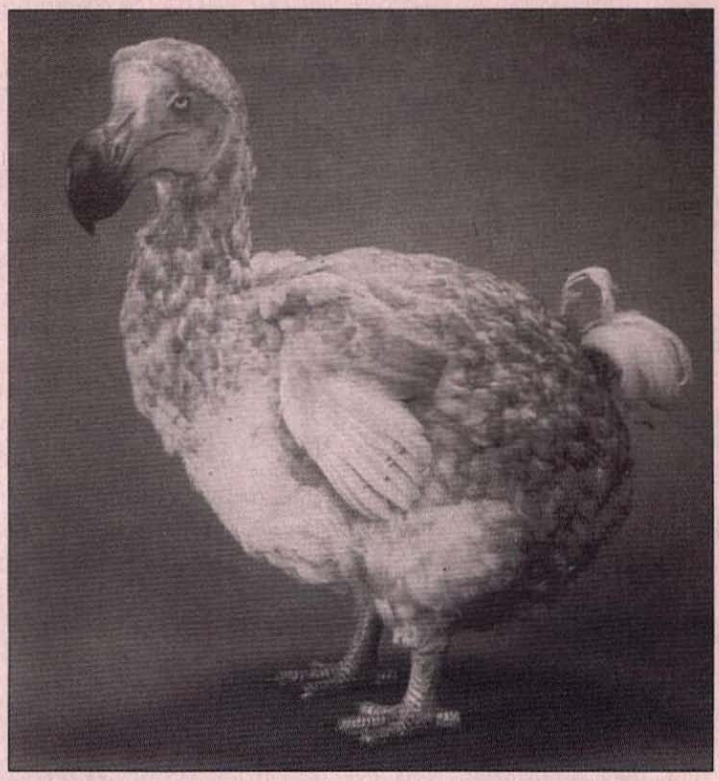
Heavy rain brought down the bough on 12th July. Three chicks were in the nest. I tried to rear them, but unfortunately they did not survive.

COURSES ON GLOBAL BIODIVERSITY — MONITORING AND CONSERVATION

Background

The protection of biological diversity has become a major preoccupation of the international community, evidenced by the fact that over 150 states signed the convention of biological diversity at the United Nations Conference on Environment and Development in Rio de Janeiro, June 1992. This convention, in force since 1994, recognises the need for conservation and sustainable use of biological resources in all states. It imposes obligations on its members of identification and monitoring as well as research, training, public education, and technical and scientific cooperation.

This M.Sc. course has been established to provide the basic training necessary for member states to meet their obligations and is the result of a unique cooperative arrangement between the University of Hull, Ecosurveys Ltd., and the World Conservation Monitoring Centre.



The extinct dodo — an artistic reconstruction

Format

The M.Sc. course can be completed on a full or part-time basis, although the initial 12-week intensive course must be completed by full-time study. It is, therefore, equally suitable for those still in full-time education or for those wishing to continue their education while in employment.

Aims

On completion of the course graduates will have demonstrated

* a tested knowledge on a wide range of global biodiversity monitoring and conservation issues
* practical skills either in the identification of some ecological group or in conservation management
* proven research ability in an aspect of biodiversity.

Those achieving the M.Sc. will, therefore, have a highly marketable qualification in an expanding area of employment opportunities worldwide.

Tutors

Tutors will be staff from the University of Hull in Eastern England (approximately 300 km. north of London), professional ecologists from Ecosurveys Ltd., and staff from the World Conservation Monitoring Centre. Teaching will mostly take place on the University campus, but time will also be spent at a field station in the Lincolnshire Wolds.

Structure

Certificate

This is a 12 week unit which introduces:

Biodiversity and the species concept; monitoring techniques for plants and invertebrates; monitoring techniques for birds, fish, amphibians, reptiles and mammals; forest ecosystems and their biodiversity:

grassland, deserts, tundra and mountain ecosystems; rivers, lakes and wetlands; island ecosystems, coral reefs and mangroves, temperate coastal zones; economics and biodiversity; legal aspects of biodiversity protection and conservation in practice.

The teaching will consist of practical exercises, fieldwork, lectures, directed readings, group work and seminars. It will include basic principles, practical applications and case studies from around the world. The course will be assessed by essays, reports, presentations and written examination.

Diploma

This will entail the equivalent of 8 weeks study and a dissertation on an aspect of taxonomy or the conservation management of particular species or habitats. The dissertation may be completed in the student's home country and the study should demonstrate a practical skill in biodiversity monitoring or conservation.

M.Sc.

This will require production of a thesis based on the equivalent of 5 months original research on a chosen aspect of biodiversity monitoring and/or conservation and will normally be completed in the student's home country.

Financial Support

A number of studentships will be available from various funding organisations to meet the course fees. Advice is available from the University on potential sources of grant aid and should be requested with the application.

Entrance requirements

Either an Honours degree from a recognised academic organisation or a near-degree qualification plus relevant experience or an appropriate professional qualification accepted as the equivalent of an Honours degree.

In addition, applicants must show competence in written and spoken English.

Applications

Applications should be in English and include the following information:

Full name, nationality, date of birth, sex and marital status, address for correspondence, full details of education or professional qualifications (including class/grade, subject, awarding body and date obtained), name of current employing organisation, position held and brief description of duties, date appointed, previous employment history, and a short analysis of the reasons for applying for this course, including present job and future plans. Please provide as much supporting information (e.g. curriculum vitae) as possible, including the names of two referees.

As starting dates may vary from year to year, enquiries and applications are welcome at any time. These should be addressed to

Dr Neville Jones,
Dean of the School of Life Sciences,
University of Hull,
Hull, HU6 7RX,
United Kingdom,
Tel: 44 1482 465511
Fax: 44 1482 465458

INSA MEDAL FOR YOUNG SCIENTISTS — 1996

Instituted by the Indian National Science Academy in 1974 the Medal is awarded annually in recognition of outstanding work of scientists below the age of 32 (as reckoned on 31st December preceding the year of award). Only those born on or after January 1, 1964 are eligible for consideration in 1996. The work done in India by the nominee will be taken into consideration for the award.

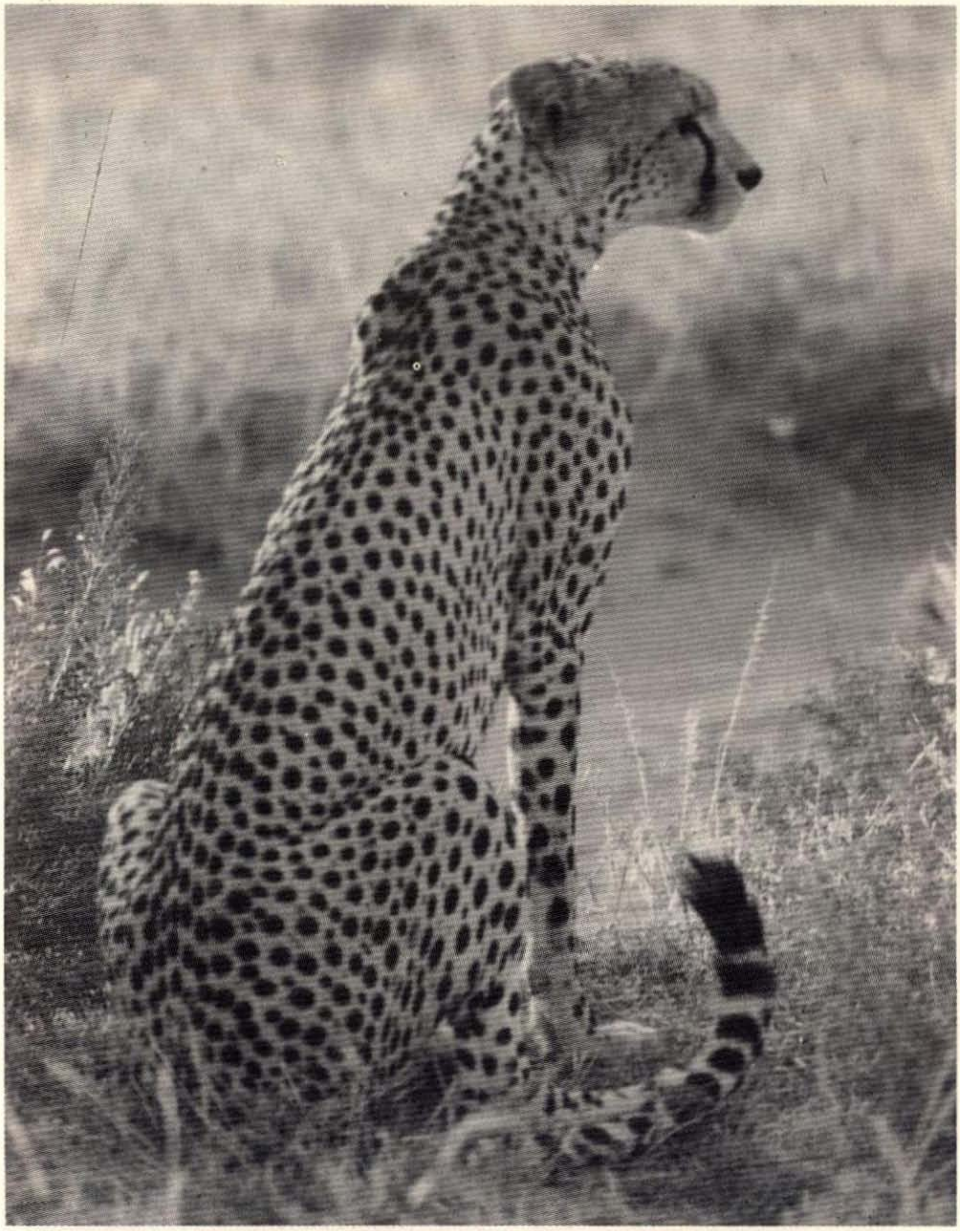
The awardee is presented a medal and cash award of Rs. 10,000/- * In addition, the recipient is considered for a research grant by the Academy not exceeding Rs. 50,000/-* per year.

Nominations for the awards for 1996 may be made by Fellows of the Academy, as also by the established scientific societies of all India character, University, faculties and departments, or research institutions. The last date for the receipt of nominations in the Academy is November 15, 1995.

Nomination Proforma can be obtained from the Indian National Science Academy, Bahadur Shah Zafar Marg, New Delhi-110002 by sending a self addressed envelope of 25 cm x 12 cm size.

* Likely to be revised.

African Cheetah



SUDHIR AGASHE

The last authentic record of the Cheetah **Acinonyx jubatus** *in India is of three males shot together in Korea, Bastar district, Madhya Pradesh in 1948. For centuries it was tamed and trained for hunting. The Cheetah's range extended over the greater part of Africa and through the desert countries of southwest Asia into India, where it is now most certainly extinct.*

POLLINATION BIOLOGY OF THE SOUTH-WEST ASIAN ORCHID

Cottonia peduncularis

S.R. YADAV.

Pendant blossoms of *Cottonia peduncularis*

The Orchidaceae are well known for their unique examples of complicated adaptations to insect pollination and exploitation of the natural instincts of insects, other than food gathering, such as mating (*Ophrys, Cryptostylis* and *Caladenia* attract male Hymenoptera) egg laying by imitation of substrates such as carrion (*Bulbophyllum* sp.); fungal fruit bodies (*Dracula* and *Corybas*); gathering of sexual pheromones (chemical compounds occurring in subtribe Catasetinae and Stanhopeinae, pollinated by male bees of the family Apidae); territory-holding (some *Oncidium* spp. pollinated by male bees); and roosting (*Serapias* pollinated by male bees).

The Genus *Cottonia* was named in honour of Maj. Gen. Cotton of the Madras Engineers, an avid

S.R. YADAV

The flowers hang in prominent clusters — the labella can be clearly seen.

S.R. YADAV

A closeup of the orchid flower — the head of the insect is uncannily mimicked

Several species of insects are unwittingly lured to pollinate orchids because of the striking adaptations of the labellum. Here the glossy maroon-red labellum mimics the abdomen of a female insect, probably a beetle. Unfortunately the insect could not be trapped or identified.

collector and cultivator of orchids. It consists of a single species *C. peduncularis* (Lindl.) Reichb., native to the southwestern parts of India and Sri Lanka. It is found growing as an epiphyte, usually on mango trees along the Western Ghats and Konkan region. Flowering is initiated in the month of December and January. Small, inconspicuous flowers are borne in racemes on long, branched peduncles. The plants start blooming from March and continue to do so up to June.

A few plants of the species have been maintained in the wire-house of the Botanical Garden, Shivaji University, Kolhapur. One fine morning in the month of March, I entered the wire-house to have a look at the plants. I saw an insect sitting on the labellum of the orchid and making some curious movements. I carefully observed the insect and to my surprise, I found that it was an interesting case of pseudocopulation, similar to another orchid genus, *Ophrys*. Further observation brought to light the cause —the labellum mimics the female of the insect. Unfortunately, I was not able to trap and

The genus *Cottonia* consists of a single species, *Cottonia peduncularis*. This orchid is an epiphyte on several species of trees in the Western Ghats. The vine is laden with the orchid flowers that attract pollinators. Hours spent perched in the trees with a camera yielded a magnificent harvest of photographs.

S.R. YADAV

So realistic is the mimicry that male insects are attracted to copulate with the labellum

identify the visiting insect.

The labellum of *Cottonia peduncularis* mimics the female insect in odour, shape, colour and what not! The sexual urge induces males to start wandering in search of females in the month of March. The peculiar odour and form of the labellum of the orchid flower acts upon the sensory organs of the visiting male insect in such as way as to cause the same instinctive reactions and actions as those leading to copulation. The copulatory act takes place in such a way that the insect touches the rostellum with its head and carries off pollinia. The sexual urge of the insect induces it to repeat the process of copulation with the labella of flower after flower. In this process of pseudocopulation, the insect brings about pollination.

How little we know and understand of the driving force that brings about such a wonderful modification in the labellum of the orchid! ❑

Dr. S.R. Yadav is a reader in the Department of Botany of the Shivaji University, Kolhapur. He has worked extensively in the field.

Rural winter camp at Pirangut — participants on a nature trail

Contd. from page 9

Pirangut is a small village in Pune district situated just 20 km from Pune city. The Pirangut English Medium School is the only school in the vicinity and students have to cycle 10-12 km every day to reach the school.

Mr. Gulab Sapkal, a teacher and a well known environmental activist, initiated a rural camp at Pirangut. The Nature Education Department of BNHS sponsored this camp which was conducted at Pirangut for 7 days.

This place is in a picturesque environment, with two sacred groves, shola forest and beautiful grassland. One hundred and twenty students in small groups of 20 each explored the rich flora and fauna in the area for 7 days. This was the first such camp at Pirangut and the students' response was overwhelming. The camp gave children first hand experiences with the deadly saw scaled viper, the mysterious calls of the Malabar laughing thrush and the elegant whip snakes. ❑

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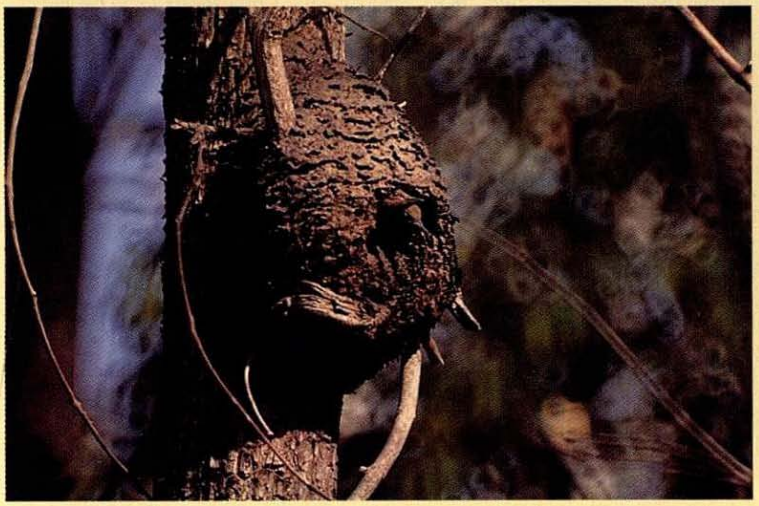
Tansa, a dry deciduous forest, is a paradise for birds in summer. An overnight camp was arranged for students to introduce them to nature and its beauty with changing seasons. Thirtytwo students from 8th standard attended the camp.

The campers were welcomed by the call of a tree pie. The morning nature trails were rewarding. Openbilled storks, spoonbills, paradise flycatcher, little blue kingfisher, grey hornbill and the gold mantled chloropsis were seen. Simple techniques of drawings in the field were taught in sessions from morning trails and discussions.

Members participating in a treasure hunt at Tansa summer camp

The Nature Education Wing would like to expand its activities. Regular activities of nature clubs in schools can sustain the interest over a longer period of time. The Nature Education Wing welcomes a response from schools. For further information, kindly contact Mr. Deepak Apte, Nature Education officer, BNHS, Bombay. ❑

THE RUFOUS WOODPECKER *Micropternus brachyurus*



SANJAY KARKARE

The rufous woodpecker peeps out of the tree ant's carton nest

This quaint bird has the dubious distinction of devouring its hosts, *Cremastogaster* ants, while nesting in their carton nest among the swarm. How this trickster fools the ants is still a mystery. These woodpeckers are common in jungles where the carton nests of tree ants are abundant. They occur from central Nepal eastwards into southern India through Madhya Pradesh.

Among the tree ants, the *Cremastogaster* ants, in whose nest these birds lay eggs, are their favourite food. In a dead woodpecker's stomach, as many as 2600 of these ants have been found !

For nesting, the pair of woodpeckers selects a ' live' oval-shaped carton nest of tree ants, which the ants build out of a blackish-brown *papier mache*-like substance. Both the parents share in excavating the nest and then share the incubation duty too. Surprisingly, the eggs, the birds themselves and chicks, even when newly hatched and naked, remain unmolested by the otherwise ferocious ants. The immunity to ant attack is probably acquired through the acrid 'ant' smell these birds acquire from physical contact and a diet of ants. The head ofthe bird, abdomen and tail-tip are usually besmeared with a strong-smelling resin,often with numerous ants' heads sticking to the tail.The origin of this resin is not yet known. ●

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DEADLINES

Abstract: 1st October, 1995
Acceptance of abstract: 1st November, 1995
Full paper: 15th December, 1995

We invite you to participate and help to make the seminar a success.

For details contact:

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