

# Hornbill

1991 (1)

Rs. 10



BOMBAY NATURAL HISTORY SOCIETY

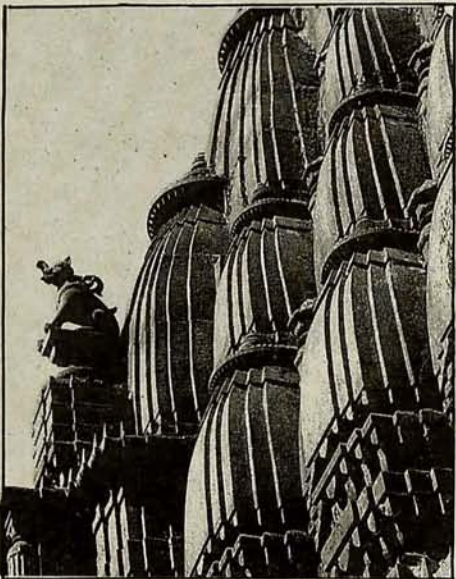




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The Society was founded in 1883 for the purpose of exchanging notes and observations on zoology and exhibiting interesting specimens of animal life. Its funds are devoted to the study of natural history in the Oriental region, and to measures for nature conservation. Individual membership can be in either 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 88th volume) at concessional rates. Life members receive both publications free.

#### *Membership fees and annual subscriptions*

Ordinary, individual Rs 100. Life Rs 3000

Institutional Rs 500. Corporate (one-time) Rs. 10,000

*For more information on the Society and its activities, write to The Honorary Secretary, Bombay Natural History Society, Shaheed Bhagat Singh Road, Bombay 400 023. Tel.: 243869, 244085*





## EDITORIAL

### Transitions

In 1968, a mimeographed newsletter made its hesitant entry into the Society's list of publications. It was *Hornbill*, newly fledged but determined to take natural history to the lay person. The first printed issue appeared in December 1975, financed by Dr Salim Ali from the interest earned through the Getty Prize. For several years the magazine stuck to austere black and white, with occasional splashes of colour when funds permitted. Now we take another step forward—a larger format, more articles, and more colour. This issue is a watershed for another reason too.

After 36 years with the Society, 31 of them as Curator, Mr J.C. Daniel, founding editor and the guiding force behind *Hornbill*, retires at the end of March. For many years he brought out this magazine almost single-handed. It was a labour of love, and if *Hornbill* has now come to symbolise the BNHS, we have him to thank for it. His will be a hard act to follow.

Just as the BNHS is a members' society, so also is *Hornbill* a members' magazine. We would like to know what you think of the new look. And if you have worked on conservation of species or habitats, or have experiences you wish to share, write to us. There are any number of conservation issues that need a wider audience, and we think *Hornbill*, with a readership ranging from occasional birdwatchers to wildlife professionals, is the right forum. We may not yet carry the world with us, but we need to start somewhere.

Published and printed quarterly by Ulhas Rane for the Bombay Natural History Society. Printed at Conway Printers, Bombay. We welcome contributions on any aspect of natural history or conservation. Articles can be up to 3,000 words in length, and must be accompanied by clear, sharp photographs (prints or transparencies, either black and white or colour). Copyright for photographs used will remain with the photographer. Suitable payment will be made for any material accepted.

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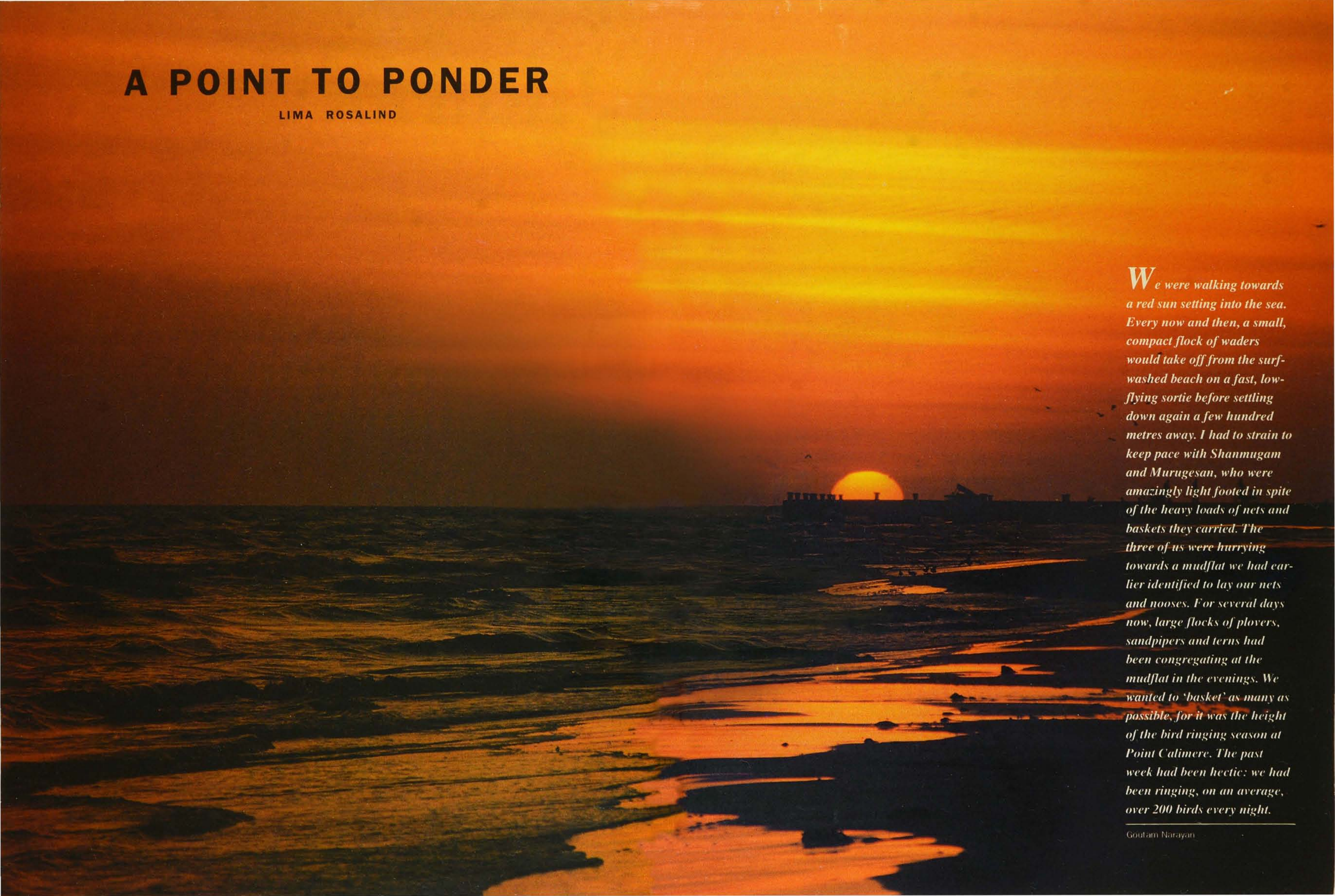
#### COVER

Common peafowl (*Pavo cristatus*),  
photograph by Kaushalendra Singh



# A POINT TO PONDER

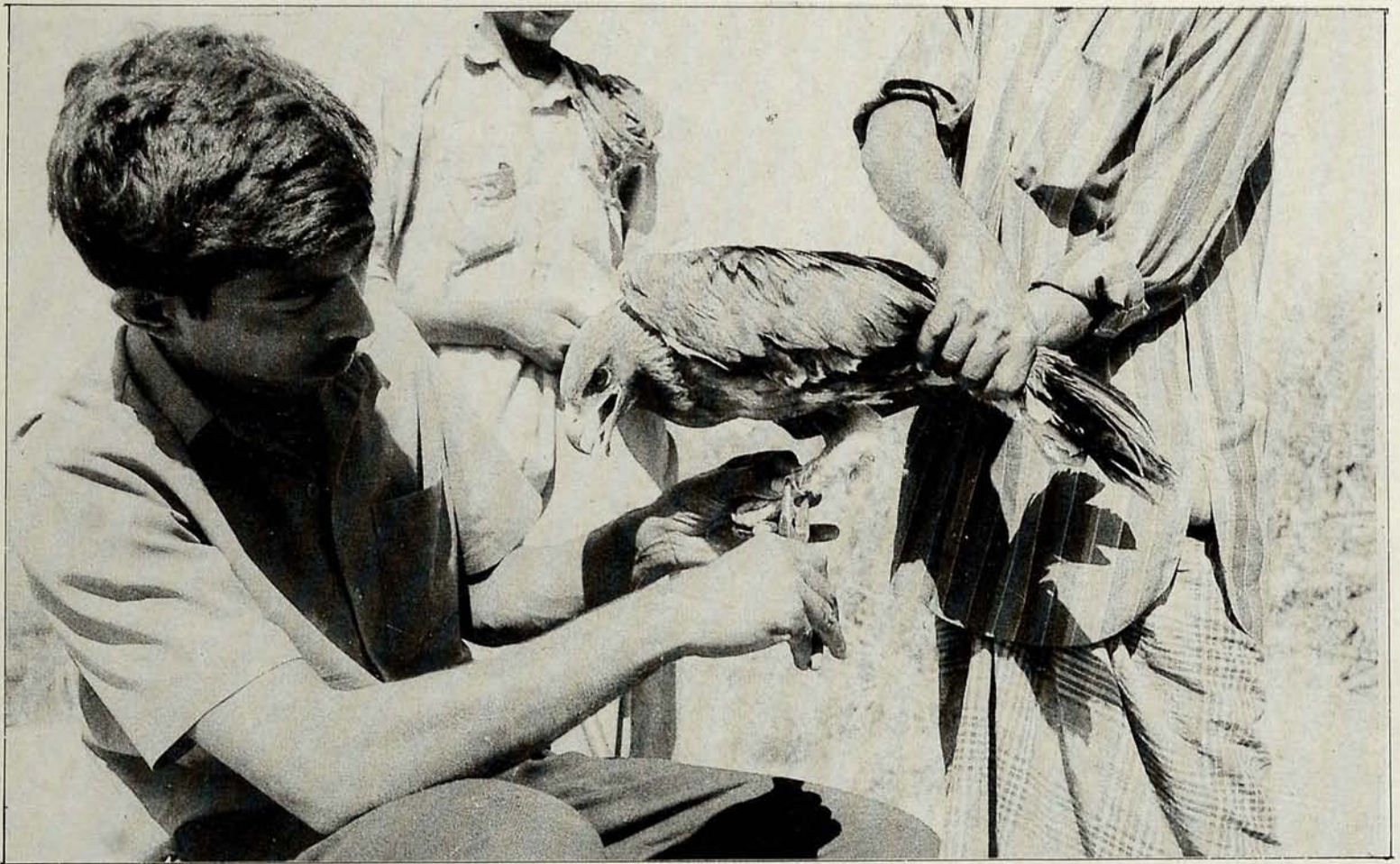
LIMA ROSALIND



*We were walking towards a red sun setting into the sea. Every now and then, a small, compact flock of waders would take off from the surf-washed beach on a fast, low-flying sortie before settling down again a few hundred metres away. I had to strain to keep pace with Shanmugam and Murugesan, who were amazingly light footed in spite of the heavy loads of nets and baskets they carried. The three of us were hurrying towards a mudflat we had earlier identified to lay our nets and nooses. For several days now, large flocks of plovers, sandpipers and terns had been congregating at the mudflat in the evenings. We wanted to 'basket' as many as possible, for it was the height of the bird ringing season at Point Calimere. The past week had been hectic: we had been ringing, on an average, over 200 birds every night.*

Goutam Narayan





**A bird in hand—numbered aluminium rings, labelled INFORM BOMBAY NAT. HIST. SOC., are fixed on the tarsus. The smallest rings weigh only one-fortieth of a gram, the larger ones about 4 g.**

S.A. Hussain

I JOINED THE BNHS Bird Migration Project at Pt. Calimere in 1990, after a four year stint with the Society's endangered species project. Bird ringing, I discovered, was an entirely new experience. So far, I had watched birds only through binoculars or spotting scopes, often from a *machan* or a covered vehicle. The job at Pt. Calimere, however, dropped these bundles of feathers right into my hands.

Holding the creatures is truly fascinating. Initially it gives you a feeling of euphoria. Before you get over it, however, along with the bulbuls and warblers comes an innocent-looking shrike. You caress its chin, and the cuteness turns into devilry when the shrike casually sinks its razor-sharp beak into the flesh of your thumb. Shrieks and curses follow, and you find the shrike preening on a nearby bush, leaving you clutching the ring and sucking the bleeding digit in a vain attempt to staunch the flow. Even if they don't bite, some birds leave their minute ticks on you, so that after the ringing session is over you may embark upon tick hunting on yourself! Soon you settle down, and after a few weeks come to grips with the nuances of ringing—for instance, differentiating between two confusingly similar species of sandpipers.

PT. CALIMERE LIES at the tip of a promontory that juts out into the Palk Bay on the east coast of India, about 90 km south-east of Thanjavur (Tanjore). The northern tip of Sri Lanka's Jaffna peninsula lies barely 50 km south across the Palk Strait. Its location makes Pt. Calimere an important wintering ground for over forty species of migrating waterbirds, and a stopover point for many others flying further south. Incidentally, it is also one of the few places on the east coast where you can see sunsets in the sea.

In the early sixties, Dr Salim Ali was in search of a major refuge used by wintering waterbirds. In Pt. Calimere, he found one. In 1967 the authorities were persuaded to declare a part of the area as a wildlife sanctuary. Since then, the BNHS has been ringing birds here. The last decade has been extremely productive: the BNHS team at Pt. Calimere has ringed over 100,000 birds. In addition, an ecology project begun in 1985 has collected very substantial data on various aspects of the sanctuary and the swamp.

The sanctuary and its surroundings encompass two completely diverse ecosystems—a narrow belt of coastal forest and the sprawling Vedaranyam



swamp, the two, at places, separated by mangroves. The wildlife sanctuary consists mainly of tropical dry evergreen scrub forest, interspersed with open patches of grass. The vegetation remains evergreen essentially because the monsoon visits Pt. Calimere twice: there are sparse rains during the south-west monsoon around July and the major monsoon between November and January. The protected area, now 24 sq km in size, will soon be increased to 385 sq km with the inclusion of the Vedaranyam swamp.

Pt. Calimere has an interesting history, some of it spiced with myth and religion. Just outside the sanctuary is a memorial built to commemorate the 'salt march' undertaken by Gandhiji's followers during the Independence movement. And inside, on a small hillock, lies Ramarpadam (Rama's feet)—a stone with 'footprints' that narrate the story of Lord Rama's visit to the place in search of Sita. Similar tales are associated with most other temples in the area.

From the Chola period to the recent past, Pt. Calimere has been an important port, through which passed much of the country's trade with Sri Lanka. Till 1985, it was connected to Thiruthurai-pundi by rail. The line terminated at Kodikkarai (Tamil for land's end), a small fishing village which is now the nerve centre and administrative headquarters for the sanctuary. Its twin, Kodiakkadu (the forest at the edge), a couple of kilometres to the north, is a bigger and more populated village.

**T**HE BNHS BIRD ringing camp from 1968 to 1972 specifically looked into the role of migratory birds and their parasites as vectors for certain human diseases. This study, sponsored by the World Health Organisation, involved the collection of blood samples and external parasites in addition to data normally collected during ringing. It concluded that the migrants were not responsible for epidemics.

The Society has been ringing birds for over three decades in India. Yet, there seems to be considerable ignorance among laymen and students about this aspect of field ornithology. Often, our ringing site attracts the more adventurous among the visiting students and wildlife tourists. After the initial expressions of awe and joy, comes puzzlement. Of what use is it putting numbered rings on birds' legs? And why examine each specimen, since all of them look alike anyway?

#### WINGED VISITORS

BNHS researchers have recorded 252 species of birds in the Pt. Calimere sanctuary. 164 of them are migrants, probably the most common of these being the little stint (*Calidris minuta*), with flocks several thousand strong. A recent addition is the barheaded goose (*Anser indicus*), small numbers of which now winter regularly at Pt. Calimere. Around October several migrant species arrive in great waves, using the sanctuary as a springboard for their onward journey to Sri Lanka. These include Blyth's reed warbler (*Acrocephalus dumetorum*) and three species of flycatchers—the paradise (*Terpsiphone paradisi*), brown (*Muscicapa latirostris*) and brownbreasted (*P. muttui*) flycatcher. Surprisingly, they are not seen during the spring migration, presumably returning north by a different route.

Breeding birds include the little tern (*Sterna albifrons*) and the Kentish plover (*Charadrius alexandrinus*). The extensive mudflats attract very large numbers of waders, and ducks flock to the rain-water pools in the monsoon. Spoonbill sandpipers (*Eurynorhynchus pygmaeus*) are ringed here every year; but there are practically no confirmed records of this species from anywhere else in the country, except from Chilka Lake in Orissa (where they have been ringed by a BNHS team), and possibly the north-east.

The importance of ringing sinks in only when they see our collection of old and used rings. These have been recovered from migratory birds ringed in the U.S.S.R., parts of Europe and even Australia, and captured again by us (we remove the older ring, put on a new one, and inform the original ringer). Similarly, we too get reports of recaptures of birds ringed at Pt. Calimere from various countries, mainly those that lie on their route between wintering grounds and summer breeding areas.

Most visitors seem to know that birds do migrate long distances, but not why they do so. For many, all migrants come from Siberia! They are a little disappointed to find that many birds arrive from areas just north of the Himalaya, such as, Ladakh and Tibet. However, most are amazed to learn that all migrants travel the distance twice every year. In autumn, when temperatures in the temperate, palaeartic and arctic regions begin to drop, they fly south to their wintering grounds. And in spring they return to the northern latitudes, where the thawing ice, sprouting vegetation and abundance of insects provide an ideal breeding environment.

We employ local professional trappers who were involved in the bird trade before the Wildlife Protection Act was implemented in 1972. They usually use nooses in daylight and nets or traps (both adapted from fishing nets) in the dark. Waders are caught and ringed at any time of the day or night depending

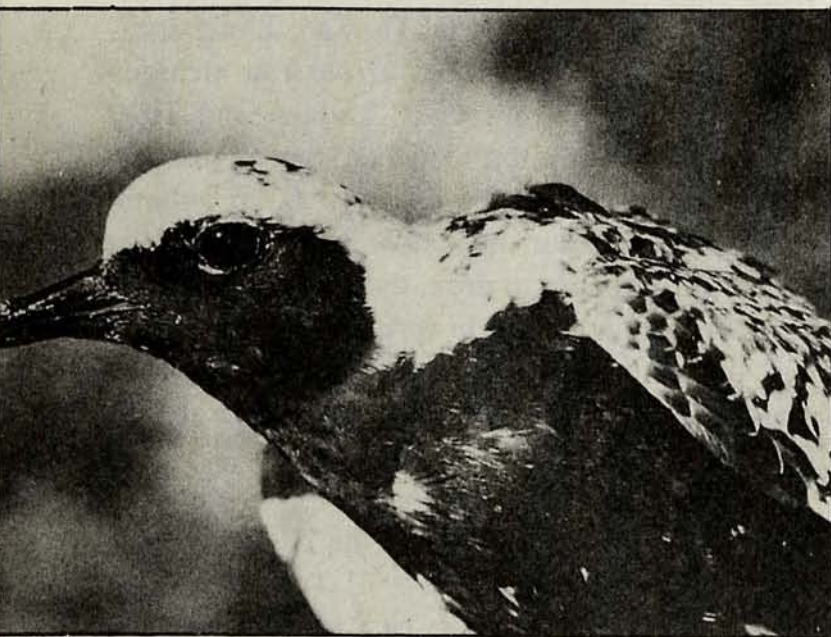


upon the method of capture.

To trap forest birds, 20 to 30 mist nets are deployed at a pre-selected site, which is changed every fortnight or so. The nets, imported from Japan, are made of very fine black nylon thread and, when stretched close to a bush, become practically invisible. Usually, the nets are 'opened' twice every day for two to three hours—once around dawn and again late in the afternoon—when bird activity is highest. The 'open' nets are inspected at short intervals and any trapped bird is put into a cloth bag. It is soon examined, ringed and released.

Ringling terns is particularly exhausting, but great fun nonetheless. After a roosting site is identified, the trappers are left there in the evening to deploy their nets. Later, two of us ringers return to the site an hour or two before midnight and settle down. Soon the terns start pouring in and we get busy. When a tern is trapped, its alarm call brings scores of others to its help, and into the net. Frequently, they are brought in for ringling almost faster than we can handle them; they are delicate birds, prone to injury unless released quickly. By the time the marathon ringling session is over our hands and clothes are thoroughly soiled and often it is just two hours to daybreak.

**E**ACH BIRD IS examined, weighed and measured: wing, tail, bill and tarsus, the moult pattern (i.e. which feathers are moulting). During the breeding season, a patch under the belly begins to lose its feathers, in order to help in



**Grey plover in breeding plumage, ringed just before its return migration.** Goutam Narayan

incubation and brooding. The presence, absence or stage of development of this 'brood patch' provides more information on the nesting cycle of a species. All this data, along with ring number and time and place of capture, is tabulated and later analysed in detail.

The body weights of the birds provide interesting information. Long distance migrants spend the period just before migration on a feeding spree, fattening themselves up for the journey ahead. By the time they reach their destination, they often weigh less than half of what they had started with! The weight of the birds recorded in different seasons—particularly on their arrival at Pt. Calimere after a long journey, in mid-winter, and just before they leave—helps us make predictions about their migratory movements. Measurements of the physical features, on the other hand, indicates any taxonomic or morphological differences between members of the same species. Subspecies, or races, are often told apart on the basis of a marginal difference in the length of a bill or claw.

**W**ALKING ON THE beach or on the mudflats may be tiresome, but it is a cakewalk compared to trudging through scrub littered with thorny bushes. The most practical footwear, we discovered to our surprise, was a pair of thick rubber slippers! Hunters and North Stars were useless. (Slippers are more convenient, especially in the rainy season, when you have to wade through the numerous pools.) After reaching our destination we invariably spent several minutes extracting thorns from our footwear with the help of nose pliers before using the same pliers to press the rings on the birds' legs.

At Pt. Calimere, only the early bird gets breakfast. If you plan to wait till you have finish the morning ringling session, you starve till lunchtime. Eating houses here follow a peculiar system where each meal is served only at rigidly fixed timings, and nothing—not even tea—is served in between. That isn't all; they all keep eggs but sorry, not available before sunset! And if you ask for half-boiled eggs you get them fried, sunny side up and sprinkled liberally with ground pepper! And when you ask for fish they look at you as if they find your tastes *most* peculiar. It is surprising that even in the peak fishing season hardly any fish is served.

The idiosyncrasies of eating-houses are tolerable,



but if the 'water-man' becomes whimsical you are in real trouble. Over the years all the wells in Kodikkarai have gone brackish, and the villagers buy drinking water from a family who have a fresh-water well outside the village. The tinkle of the bullocks' bells is music to your ears on a hot day, particularly if the water-man's cart had failed to turn up the previous day.

Tobacco is the major crop in the area around the sanctuary, but the biggest industries are salt making and fishing. A few hundred tribals, who were the original inhabitants of the area, still partly depend upon the forest for their livelihood, collecting firewood and leaf litter (which is used as tobacco manure) to sell to the settlers in Kodiakkadu.

Almost everyone is connected with fishing in one way or another. Fishing in the Palk Strait and the bay is highly seasonal and lasts for six months a year. The main season begins around January and continues till the sea becomes rough before the advent of the south-west monsoon. The second season starts after this brief rainy season and fizzles out by October. During the fishing season, the population of Kodikkarai swells to ten times its original size! Multitudes of palm-leaf shacks spring up in a jiffy, and within a few days the beautiful beach is converted into a filthy stretch of sand and muck. Bigger fishes are quickly picked up by traders, leaving the trash fish behind to be sun-dried on the beach.

Lobsters and prawns are highly prized and refrigerated vans line up in the evenings to collect these for the export market. Before the prawns are taken away, they have to be beheaded. Unfortunately, all the waste from the decapitating operations is never cleared up and soon becomes the breeding ground for millions of house flies, which descend on the village like a curse. By October, with the winding down of the fishing season the fly menace ceases and the migratory birds, which start arriving as early as August, fly in in large numbers.

**T**HE GREAT VEDARANYAM swamp harbours over a hundred varieties of waterbirds, the most spectacular of these being the lesser and greater flamingos. Thousands of these stately birds congregate in the swamp during the monsoon. The fresh water from the Kaveri, mingling with the saline water of the creeks as it drains into the bay, creates an environment in which micro-organisms multiply, presenting an ideal spawning site for


#### BLACKBUCK ON THE BEACH

Blackbuck are normally found in grassland or scrub plains, but the Pt. Calimere sanctuary holds a stable, fairly healthy population, possibly the largest in Tamil Nadu. Adult males are a rich dark brown, unlike their nearly black counterparts in central India. Known locally as *velimaan* (deer of the plains), they are restricted to grazing land and open patches over about one-third of the sanctuary area. Sometimes they venture onto the beach, and some have even been seen drinking sea water during times of drought. Herd sizes are usually up to 30, though highly variable in some seasons. They breed throughout the year, with the peak fawning season from October to December.

Blackbuck are native to the area, and not introduced. Probably their distribution once included disjunct grassland patches in south and south-central India. Blackbuck breed quickly, and in the absence of significant predation (jackals and occasionally stray dogs take some fawns and sick animals, but many more fall to poachers) within the sanctuary, even a small native population could survive and multiply.

Apart from blackbuck, there are 17 other species of mammals, two of which have been introduced: bonnet macaques, now numbering about 250 individuals split into four troops (there are no other primates), and spotted deer. 40-50 feral horses graze the grassland: these have presumably descended from domestic animals that either escaped or were abandoned by local villagers. Schools of the common dolphin (*Delphinus delphinus*) are often seen in the Palk Strait, sometimes right alongside boats moored at the jetty.

prawns and fishes. This phenomenon not only ensures an abundance of food for the birds, but also restocks the bay; without it the fish catch would be negligible.

The sanctuary is beset by a number of problems. The salt works are being expanded every year, and there are plans to diversify into extraction of chemicals as well. Over-exploitation of the fishing zones in the Palk Strait and Bay is not only harmful to marine life, but also puts enormous human pressure on Kodikkarai and the sanctuary during the fishing season. The increasing influx of fishermen and the demands of the growing population of Kodiakkadu and Kodikkarai (partly because of refugees from Sri Lanka) are also major causes for concern. A great deal of work has been done on the ecology of Pt. Calimere by scientists from the BNHS and elsewhere. Unless the results of such research are applied to find socio-economic solutions to these problems, it will not be easy to save either the forest or the swamp from certain degradation. 

*Lima Rosalind is a field biologist at the BNHS. Before joining the Society's bird migration project at Pt. Calimere, she worked on habitat studies of the blacknecked crane in Ladakh and the Bengal florican in Assam.*



# Birds in a Soup

GOUTAM NARAYAN



Carl D'Silva

**C**LEAN A COUPLE OF NESTS and put them in a pan with some rich chicken stock; bring to a boil, stir and let simmer till soup is thick; add seasoning and serve hot.

Does this make you salivate? In all likelihood you may not even have tasted this Chinese delicacy, better known as bird's-nest soup. But if you want to, you had better start saving! I am not sure if it is served in any Chinese restaurant in India but in Hong Kong you will have to shell out a thousand rupees for a bowl!

Most birds' nests, however, are eaten at home. The birds in question are the so-called edible-nest swiftlets of the genus *Collocalia* (synonymous with *Aerodromus*) of the swift family, which use their glutinous saliva to construct nests. Although the dishes of these dried-saliva nests are considered a delicacy by the Chinese, the raw nests are pretty tasteless and rubbery. Traditionally recommended for convalescents, the nests are more often consumed out of sheer extravagance.

Even the average quality raw nests, weighing about 15 grams each, cost several times their weight in silver. A kilogram of top quality 'white' nests may fetch over Rs 36,000 in the Hong Kong market. Until the communist revolution, China was the biggest importer of nests. Today, Hong Kong imports over 60% of all edible nests; in 1989, 26 million

nests were consumed in Hong Kong itself. China takes only about one-tenth that quantity. The Chinese community in North America separately imports another large chunk—over 30 tons—of sanitized nests (they must be washed and disinfected before the U.S. will allow their import).

With demand booming and prices so high, the edible nests are naturally over-exploited. Most of the nests originate from the south-east Asian countries—Burma, Thailand, Malaysia, Indonesia, Vietnam and the Philippines—where generations of nest 'farmers' have been 'harvesting' the edible nests of the white-nest (*Collocalia fuciphaga*) and the black-nest (*C. maxima*) swiftlets.

Most swifts use their saliva as cement to mould cup-shaped nests from a variety of soft fibrous materials. Among the *Collocalia* swiftlets, however, the use of saliva is much more pronounced; in some species, the nest consists almost entirely of agglutinated saliva. During the breeding season, the salivary glands of these swiftlets swell to many times their normal size. The nest is moulded from the inspissated saliva along with grass, moss, feathers etc. on the vertical walls or ceilings of large caves, grottoes or similar sites, anchored to the rock face by almost pure coagulated saliva. The less the extraneous matter, the whiter—and costlier—the nest.



**T**AXONOMICALLY, the genus *Collocalia* is one of the most complicated, and some confusion exists even today due to extreme superficial similarity between species and races. There are 21 recognised species under this genus, of which only three build edible nests. Extensive research in the early sixties has made it possible to differentiate species on the basis of their nests (although the differences are very slight). And telling species apart on the basis of museum skins alone remains a difficult proposition.

Some nest gatherers believe that the first nests of the season are comparatively free of extraneous matter and the second and third nests, after the initial ones are collected, contain increasingly greater amounts of these 'impurities'. However, the confusion is probably caused because two or more species often nest at the same site.

Of the world's eight subspecies of white-nest swiftlets, one is resident in India, in the Andaman and Nicobar islands. Nesting colonies of the Andaman grey-rumped or white-nest swiftlet (*C. fuciphaga inexpectata*) are found commonly in the rock-caves by the shore on South Button, Neill, Chiriya Tapu, South Cinque and other islands in the Andamans, where they nest during March and April. The range of the nominate race of *C. maxima* extends into Arunachal Pradesh and eastern Bhutan from south-east Asian countries.

Nests of the Indian edible-nest swiftlet (*C. unicolor*), though not as valuable as those of *C. fuciphaga*, are white enough to be edible. *C. unicolor* is a resident of the coastal strip from Ratnagiri southward through the Western Ghats into Goa, western Karnataka, western Tamil Nadu and Kerala, including the Nilgiri, Palni, Brahmagiri and associated hill ranges, and the rocky offshore islets with natural caves. They are also abundant throughout Sri Lanka. In south India, the breeding seasons begins in March and ends in June, but continues till September in Sri Lanka.

Nest gathering is big business in many south-east Asian countries. Indonesia alone exports Rs 35 crore worth of nests a year to Hong Kong. In Thailand, a local contractor pays a fee of Rs. 2.7 crores to the government for a five year lease of some 60 coastal islands, and employs a hundred nest collectors. During the nesting season the collectors camp in the caves on these islands for 4 months. Nests are collected thrice in a season, the birds rebuilding each

time, usually at the same site. The first two harvests are in February and March. The third nest is left alone until the swiftlets raise their young; once the fledglings leave, this nest too is removed. For the rest of the year the collectors return to their original profession, usually fishing.

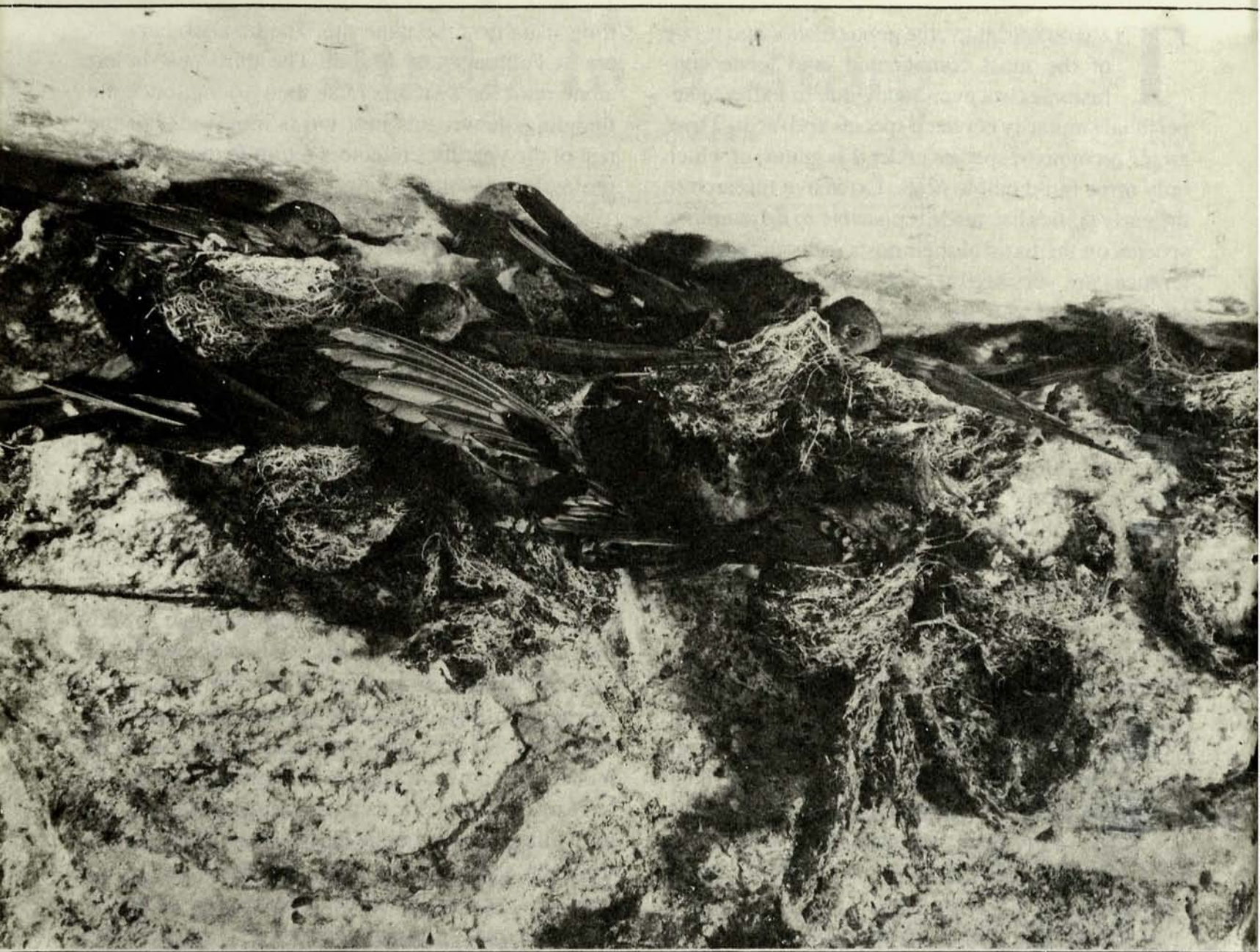
**T**O PROTECT THEIR valuable harvest from poachers, the nest gatherers are known to post warning signs and booby-trap the cave entrances with land mines. The nests are also liable to be hijacked while being shipped to market. With their cargo worth Rs 22,000 a kilogram on the black market, the collectors are often heavily armed, and mid-sea shoot-outs with pirates are not uncommon.

The greatest perils in the profession, however, are in gaining access to the nests, which are usually built at sites almost impossible for humans to reach. The nest gatherers risk life and limb, climbing a hundred metres or more up the vertical face of rock caves to the roof, with the help of flimsy bamboo scaffolding tied together with lianas. They climb for up to ten hours a day during the season. The nests are wrenched off the cliff wall with a three-pointed metal tool known as a *rada*. The *rada* is thought to have magical powers; using anything else to take the nests, the gatherers believe, would be like stealing from the spirits of the cave. Eric Valli and Diane Summers, writing in *National Geographic*, describe some hair-raising experiences while photographing the nest gatherers in Thailand. Valli, along with his equipment, was 35 kg heavier than most of the Thais, and climbing the bamboo scaffolding built for them was more than a little nerve-wracking. Safety harnesses—the professional climbers wore none—saved his life once, and that of his assistant several times, when bamboos crumbled beneath them.

The nests are built in loose groups—from small colonies of a few nests to large ones of several hundreds. Sometimes, the nests are hundreds or even a couple of thousand metres deep within a labyrinth of tunnels, through which the birds make their way unneringly, at high speeds and in pitch darkness.

**B**ESIDES THE UNRELATED oilbirds of tropical South America, these swiftlets are the only birds with the ability to navigate by echolocation. While bats squeak inaudibly, the swiftlets make a series of loud rattling clicks. Their system of acoustic orientation is not as well developed as in





**Colony of whitebellied swiftlets (*Collacalia esculenta*). Nests of this related Indian species are brownish, and not considered edible.**

Loke Wan Tho

bats: they cannot detect insect prey by this method, but can perceive the contours of large solid structures and walls. When startled, however, they keep bumping into the intruding nest gatherers.

The swiftlets, highly gregarious by nature, roost in a head-up vertical position, clinging like small bats to the rough rock face or to the remnants of old nests. They begin to swarm at the cave entrances at twilight, their numbers swelling as the light fades. Then, as if at a pre-arranged signal, they begin to shoot into the caves. The next morning, a rush of wings, like the waves on a sandy beach, announces their departure from the caves while it is still dark, well before dawn. They wander considerable distances in the course of a day's foraging and do not return to the caves till well after dusk, except during the breeding season, when the bustle at the nesting sites

continues throughout the day.

Like other swifts, these swiftlets are exclusively insectivorous. Their diet largely consists of flies, ants, bugs, beetles and other small flying insects which are hawked in the air. Naturally, they are highly farmer-friendly. For example, about 80% of the stomach contents of four *C. unicolor* taken in the roosting cave on Vengurla Rocks just before the mango season comprised two species of harmful jassid 'mango-hopper', obviously captured over the renowned orchards of Ratnagiri district in Maharashtra.

Apart from their appeal to gourmets, the nests may have other uses too. They are used in traditional Chinese medicine to treat lung diseases, to rejuvenate skin, and as tonic for children, convalescents and the elderly. Researchers in Hong Kong are



trying to isolate a water-soluble glycoprotein found in the nests. This active ingredient promotes cell division, and if its target cells can be identified, it could some day be used as an adjunct to the drug AZT against AIDS.

**I**N THE LAST CENTURY, the government of Bombay regularly auctioned the rights to collect nests from islets off the Malabar coast for export to China. The nests came mainly from the Vengurla Rocks (Nevti or Burnt Island) off Kochre fishing village on the Malvan coast, and Netrani (Pigeon Islands) off the coast of North Kanara. The business was not considerable even to begin with, and almost faded out by the turn of the century, largely owing to falling profits, perhaps as a result of over-exploitation of the colonies, organisational difficulties and the disproportionate risks involved in the operation. But perhaps the business still lives—recently, enquiries were being made at the BNHS about the possibilities of large scale nest-gathering operations in the coastal islands!

According to lighthouse officials, the last 2-3 years have seen an increasing number of collectors on the Vengurla Rocks. Small group of nest gatherers, who come from North Kanara and Goa, begin to arrive in April when the nesting starts on the rock. The operation continues till the monsoon, when rough seas make travel to the rock difficult. Presently, the operation is neither as organised nor as intensive as in south-east Asia. But there is no official control over the business, and if the gatherers become more efficient, it could prove disastrous for the swiftlets.

It is important to formulate a harvest management plan for the collection of nests. Researchers from Singapore's National University recommend that the first nest be collected before the birds lay their eggs. The second nest, built during optimum dry conditions, should be left for the rearing of young; after they fledge, it too can be taken. There might even be a third harvest: the swiftlets may nest again because of early fledging of their first clutch. Any harvest management plan would require the cooperation of the nest collectors who would have to accept a short-term reduction in profits in return

for a future increase of nest yield. However, only a long term lessee of the caves would be able to think along these lines, while others, interested in quick profits, would certainly over-harvest.

**I**NTRIGUINGLY, swifts and swallows are the only birds which, perhaps due to an oversight, do not figure in any schedule of the Wildlife Protection (1972) Act (last revised on 26 November 1986). They are thus totally unprotected in India; there is no law under which the harvest of edible nests can be controlled on the Andaman Islands or the western coast of the country. It is possible that unscrupulous nest collectors may be collecting nests in the middle of the breeding season, destroying eggs and nestlings in the process. The effects on swiftlet populations, particularly in the Andamans, may be far more serious than is apparent today.

*Swifts and swallows are the only birds that do not figure in the Indian Wildlife Protection Act.*

*There is no law under which the harvest of edible nests can be controlled.*

Recently, there have been disturbing reports of unchecked 'harvesting' of edible nests in the Andamans. Thai fishing boats, which have always been suspected of taking away poached turtle meat from the islands, are showing increasing interest in the nests. Considering the value of nests in Hong Kong, this is hardly surprising.

It is essential that the collection and trade of edible nests be regulated strictly—and immediately.

The birds should be included in a proper schedule of the Wildlife Protection (1972) Act immediately. A harvest management plan for all areas of operation in India should be developed taking into account the needs of the traditional nest collectors and the viability of commercial exploitation.

One of the fancier Chinese recipes, in which the nests are stuffed inside a chicken and double boiled in a porcelain pot to yield a clear consommé, is called 'Phoenix swallowing the swallow'. If we do not move now to control the indiscriminate collection of nests, the gastronomic Phoenix may actually swallow the swiftlets which, unlike the former, may not be able to rise from the soups!

*Goutam Narayan is a field biologist at the BNHS. During the past eleven years he has worked on a variety of research projects, and is currently associated with the Society's project on grasslands.*



# The Feathered Trade

VIVEK MENON



**B**HAGWANA SAT CROSS-LEGGED and alone in Meerut, telling me of the only trade he knew. His face was lined heavily by wrinkles that criss-crossed like the ropes on the 'charpoy' he was sitting on. As he talked to me, his fingers plied through a ball of nylon string, knotting it expertly into a fine mesh for catching birds. "I have been doing this since I was a child," he said wistfully, "and it is only now that I feel that there is no future in the trade."

He peered at me through the net he was weaving. "I can catch doves and parakeets with this net", he explained. "I don't go out any more, of course. It's my second son who catches the birds; the eldest one has become a tailor. The newer generation are all leaving the trade. And now the government has stopped all the trade in birds and as a result we have

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**Above —goshawk, trapped for export. Though not as prized by falconers as the shaheen falcon, goshawks nevertheless command good prices, especially in the Middle East.** Mohit Agarwal

lost out on our market in Delhi."

In the crowded by-lanes of Old Delhi, the dealers are provided with birds caught as far away as Kannaunj and Pilibhit in Uttar Pradesh. Besides these, there are the exotic cage birds which come into the country through the ports of Calcutta and Madras and are then transported to Delhi.

"I don't go there myself," Bhagwana told me. "All of us here sell only to the dealers. We get three to four rupees for a parakeet and the dealers get a bit more." I asked him if he knew that if the little more has resulted in parakeets costing fifteen to twenty rupees in Delhi. He fell silent; whether digesting the fact or suppressing his feelings about the dealers, I do not know.

"Are you from the government?" he asked suddenly. No, I explained, but I was in a position to help him by letting people know of the many facets of the whole that forms the trade in birds.

"Then tell them that we are starving. We don't want to catch birds if we are given an alternative."



A blossom headed parakeet cackled maliciously in a cage nearby." This new policy of the government to arrest us and ban the trade will succeed only in depriving my children of their food." He pointed to two of his grandchildren playing nearby, and I felt that I had heard all the trappers of Pilibhit and Palia who had come to protest against the newly instituted ban on the trade in birds.

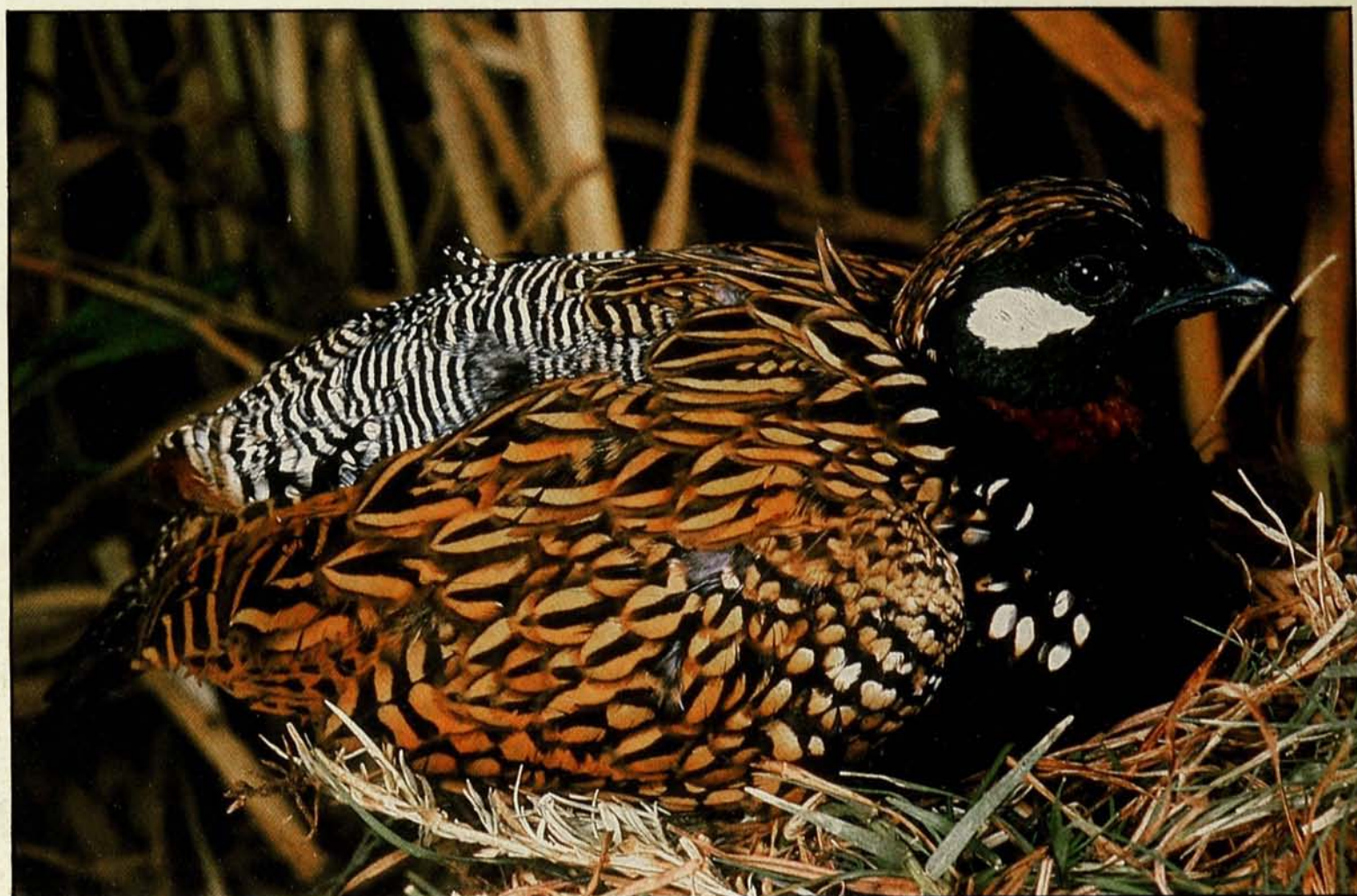
**T**HE BUSINESS of trapping and selling of birds is an old one. It is only the recent spurt in awareness of our fast depleting wildlife and of the ethical and moral issues involved that has caused the public to raise its voice against the trade. Certain birds such as the parakeet have, despite such trapping, increased in number and are in fact helping the country earn foreign exchange, according to an enterprising trapper from Palia in Uttar Pradesh, with a refreshingly new outlook on the problem.

"The orchard owners pay us Rs. 20-25 to catch a parakeet from their orchards. If we don't catch them, the export in fruit will be affected—we are doing good to the country by catching parakeets." The trappers also argue that they are creating a bond be-

tween man and animal, and that the pet owners only love animals because they have kept them!

What then is wrong with the trade? What will the repercussions be if we tighten the ban on something that provides a livelihood for so many people who so greatly require it? For one, people today have become acutely aware of the vanishing species, the disappearing habitats and the large chunks of ecosystem we are losing, or more rightly modifying. Parakeets and mynas are one thing, but it is the more occasional and the far more damaging catches that wildlife lovers dread and trappers wait for.

For every fifty pet shop birds is caught a falcon or eagle. The majestic owls find a ready market amongst wandering mendicants and the more superstitious who use the bird in their practice of black magic. The less seen hill myna, so famed for its vocal capabilities, and the fast disappearing black partridge also cause concern if caught. The latter, along with the grey partridge, is in great demand for partridge fighting. This ancient sport, though fast dying out, nevertheless consumes several pairs of birds from the wild on regular basis. It is this part of the trade that provides the trapper with his cream and



**Black partridge *Francolinus francolinus* —when the population of a species is low, even limited trapping can do serious damage.**

Thakur Dalip Singh





**Tools of the trapper's trade —the coir loops, concealed under twigs and leaves, slip around the victim's feet.**

Isaac Kehimkar

is the part which is surreptitiously carried out. "You can get a shikra for Rs 60," a dealer told me confidently, "Or a short-eared owl for Rs 150." The falcons on the other hand sell for thousands and are frequently bought by foreign nationals who practice falconry.

**B**UT HOW EXACTLY is the trade carried out? A decoy order can be placed to find out. The result would be more often than not the procurement of the bird in a matter of days.

Let us take it that the bird you wish to procure is the steel blue peregrine or the red capped merlin. In this case the trapper would need a week or two's notice. Once you place the order and a little money changes hands, he starts the grapevine buzzing. From dealer to trader to trapper the news travels fast and sure... "A peregrine for the Delhi sahib." Nets are checked and the hollow bamboo sticks coated with 'lhasa', a home-made resinous glue, are polished and assembled.

A bird is put as bait in a strategic place, the bird of prey swoops down on it. The men are waiting and ready. Depending on the size of the bird and its accessibility, the nets are flung onto it or the sticks expertly thrust forward. In case the latter method is

employed, the bird struck by the end of the stick is held immobile by the sticky 'lhasa'. Occasionally the bird heaves itself off the stick, leaving behind a patch of feathers, but more often than not the men are successful, and one more creature is snatched from the wild.

Then there is the question of handling the bird humanely, once caught. The trappers themselves tell of the terribly overcrowded conditions during transportation and stocking. "Some three birds die for one brought here", a dealer testifies in Jama Masjid, justifying his high prices while simultaneously unwittingly incriminating himself.

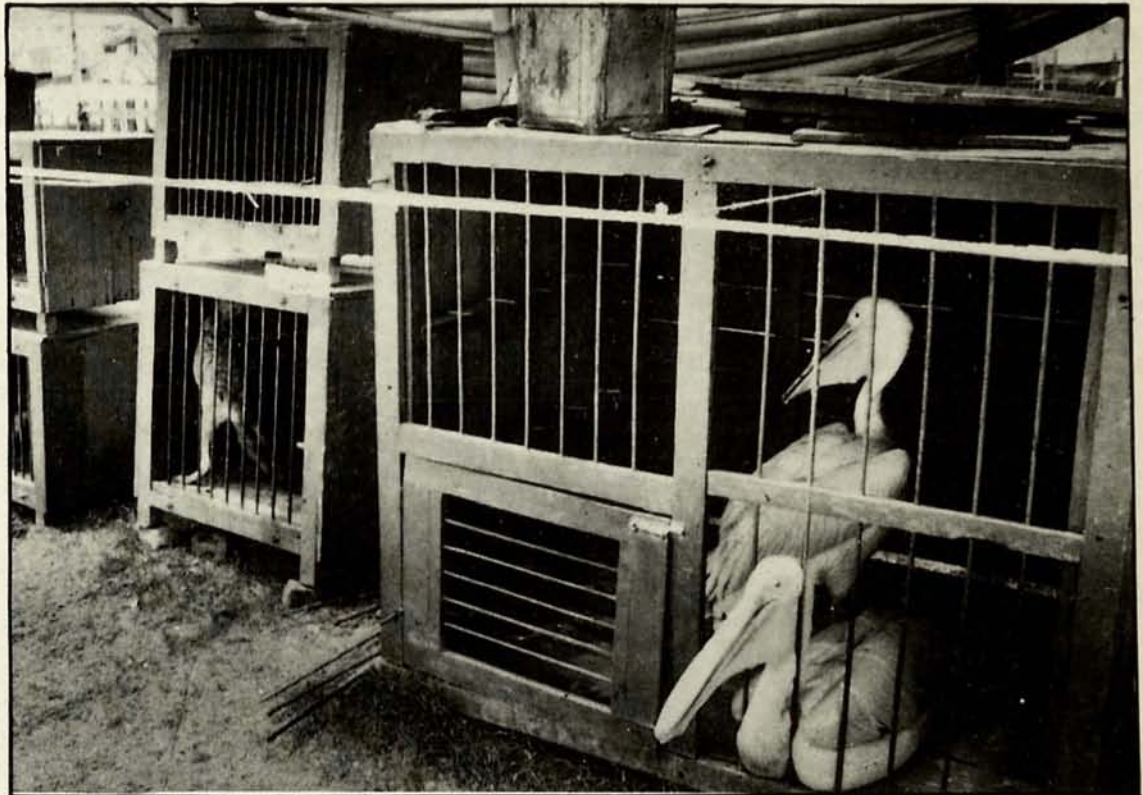
Apart from all these problems, there is the question of diet. Birds, the seller assures any buyer, eat bread or milk or 'roti', items most ill suited for their well-being. As a result many birds die, and even those which survive usually do not breed. Then there is always the moralist who asks, "Why birds in cages?"

**T**HERE IS, UNDOUBTEDLY, an overwhelming need to stop the bird trade, but the human element is equally important. The idealist would of course have the answers at hand. Rehabilitate the trappers, he would say, give the



dealers something else to deal in and change the attitude of the masses who cause the demand for the bird in the first place.

Unfortunately, easier said than done—implementing such a programme would be a monumental task. Convincing the people involved, negotiating alternatives and implementing all this at the grassroots level calls for the help and support of the people *en masse*. It is the people who must help the government by putting the many problems across to the authorities and by helping



**A makeshift market at Palia. The cages, though cramped, are substantially larger than the industry average.** Asad Rahmani

#### TRAPPING, AFGHAN STYLE

*(From the 1955 volume of the BNHS Journal)*

At some places on the Hindukush there are detached oval ponds specially constructed for catching wild geese and ducks. The pond is surrounded by a stone wall, behind which a man can crouch unobserved. Over and across one half of the pond a rough trellis-work of thin willow branches is put up. The birds, on alighting, are gradually driven under this canopy, and then captured in a sudden rush. Hundreds of birds are thus caught daily during the season.

In the valleys of Kohdaman and Kohistan another method is adopted for catching ducks. A small hut covered with reeds etc. is built over a water channel leading off from the main river or lake where the birds gather. At night, when the birds are floating about in sleep, the fowler enters the hut, and opens a sluice gate that divides off the water of the river or lake, strikes a light and waits. The ducks drift in on the current one by one through the narrow opening and are at once seized by the neck and killed. Two men can easily secure 150-200 ducks in a single night.

Coots are caught by means of nets stretched across the channels in the reed beds. These nets are hung on sticks fixed in the mud, with their upper edge above the surface. The flocks are driven into the nets with the aid of rafts. Rosy pastors are knocked over by pellet-bows. The bows are of bamboo, the pellets of clay baked in the sun.

Sparrows are caught by throwing nets over standing corn, or brought down with small pills of moist clay fired from a blow-pipe—a wooden stick about a yard long, its hole not being more than a centimetre in diameter. The haul of these birds is said to be so large that even a widow having nobody to take care of her can feast on them at least once a season.

to find solutions to them, solutions which do not have a didactic air about them.

"Don't catch animals, they preach," says Baba, an old animal dealer of Jama Masjid. "But they do not tell you what else to do." Uneducated as they are, finding jobs become an impossibility. They may be ideally suited for handling and caring for animals such as in zoos, parks and in the forest service as guards and local help.

What if officials are corrupt and enlist the help of trained trappers-turned-guards to make easy money? How much can we trust their transformation? Questions are invented and parried, but an effective solution remains to be found. An ideal balance between animal and human watchers is yet to be struck.

Were this stalemate broken, the trappers would find themselves assured of a more reliable income and better living conditions. The birds can, on the other hand, soar unhindered in the skies, doing their bit to keep hundreds of bird watchers happy, while at the same time keeping the diverse ecological mesh intact and unbroken.



*Vivek Menon is interested in captive animal behaviour, which he has been observing in the Delhi zoo. He is doing his M.Sc. on birds of the Delhi ridge, supported by a BNHS grant. If you have more information on the bird trade, write to him c/o Srishti, A-17, Mayfair Gardens, New Delhi 110 017.*



The Hornbill Poster



PHOTO: R. DEV



# FUTURE PERFECT

## New plans for the BNHS

*The BNHS is justifiably proud of its past, and of the reputation it has earned as India's premier conservation organisation. But what of the future? If we wish to change with the times, we must identify areas where we are strong (or weak) and focus on objectives that we can realistically achieve. To this end, a 2 day seminar—BNHS: Past, Present and Future—was organised on 9th and 10th February 1991. Members of the Executive and Advisory Committees, senior staff and special invitees participated in the seminar. A brief summary of the discussion follows.*

### ORGANISATION

With the growth in size, financing and staff, the administrative set up needs to be restructured, with particular reference to the division of responsibilities between the Hon. Secretary and the Director. The advisability of the Executive Committee being involved in operational (as opposed to policy making) decisions needs to be carefully examined. Perhaps the BNHS could be made more professional if it were reorganised along the lines of membership organisations such as the RSPB, retaining its characteristic combination of professional science and amateur support. The formation of chapters outside Bombay would help widen our sphere of activity.

### FINANCE

The BNHS should diversify its sources of funding, so that it would not be overly dependent on a single source. Sales of publications and products, and new grants and donations, are potential money earners. The cash convertibility of BNHS expertise, for example in Environmental Impact Assessment projects, could be explored. Hitherto subsidized membership activities should become financially self-sufficient, perhaps even income-generating.

### PUBLICATIONS

Publications contribute 27% of BNHS revenue, in spite of an extreme shortage of staff. A full-fledged publications department should be set up. The board of referees for the *Journal*, the Society's premier publication, needs to be suitably expanded. New projects could include books and field guides for children, Indian language editions of existing publications and video films on wildlife.

### RESEARCH

The scope of BNHS research programmes needs to be enhanced, with interdisciplinary interaction on impact assessment, conservation biology, pollution studies etc. Training programmes, perhaps with the help of 'visiting professors', would help improve the quality of scientific work and train new researchers. Herpetology, biostatistics and marine biology are areas where our research involvement should increase. Collaboration with institutions such as the Kerala Forest Research Institute and Wildlife Institute of India should be considered. Social scientists (economists, sociologists) should be inducted into research projects where required. Field work could also be selectively used as a catalyst for conservation action on issues of importance.

### EDUCATION/CONSERVATION

The conservation, education and membership activities of the BNHS need to be combined. The target audience for nature education programmes should be expanded after identifying priority areas where we can concentrate our limited resources. Voluntary help from members has contributed largely to the programme's success. The staff should now be strengthened to handle educational programmes, and activities outside Bombay taken up in conjunction with other NGOs.

Whether or not BNHS should involve itself in environmental 'activism', such as the expression of opinions without conclusive scientific evidence, was discussed at length. The possibility of involving field staff at research stations in education work, particularly in their area, should be explored.

***What do YOU feel? Write to us.***



# LETTERS

Sir,

On Sunday the 17th December 1990, I accompanied Dr Hewson of the Aberdeen University to the Borivili National Park. Through the courtesy of Mr Walke, the park Conservator, we walked to the *Bhoot bungla* (haunted house), where we spent quite some time birding profitably, in spite of the day being cloudy.

Mr Walke has a pet panther, and Dr Hewson is a mammalogist himself; the conversation soon turned to mammals. Talking of the panthers in the park, Mr Walke maintained that the current population stands at 47. When I pointed out that the figure was six or so in 1979-80, he gave us statistics on food availability for the panther today, as compared to when we had worked out population estimates a decade ago. While I am unable to accept the numbers, the statistics he supplied were gripping and meaningful. More so when one considers that, with most of its habitat lost, the panther would continue to multiply and thrive because of its stealthy behaviour.

As if by way of proof of the increasing numbers, he narrated the experience of two climbers who had camped in the *Bhoot bungla* the previous night. They were making their way through the park at sundown with a dog on a leash, when they were set upon by an adult panther (possibly the mother) and four cubs. The five shadowed them so persistently, ignoring the climbers' efforts to shoo them away, that the latter had to return to leave the dog at home before they could proceed with their trip. The books state that 2 cubs are unusual, 3 and 4 rare.

Macaques, both bonnet and rhesus, entertained us. While we were photographing a group of the former, a juvenile sneaked in and made off with a cake that had been served to Dr Hewson and placed on a culvert while we took photographs.

**J.S. Serrao**  
Bombay

Sir,

A.M.K. Bharos' letter in *Hornbill* 1990(3), outlining the use of steel nuts strung on a wire to hunt chital, brings to mind the use of *bolas* by the guachos of South America. Charles Darwin in his 'Voyage of the Beagle' gives an interesting account of their use.

"The *bolas* or balls are of two kinds; the simplest,



**Leopards are now more visible in (and sometimes outside) the Park.**

E.P. Gee

chiefly used for catching ostriches, consists of two round stones covered with leather and united by a thick plaited thong, about eight feet long. The other differs only in having three balls united to a common centre. The guacho holds the smallest of the three in his hand and whirls the other two round and round his head and then, taking aim, sends them revolving through the air. The balls no sooner strike any object, than, winding around it, they cross each other and become firmly hitched. The size and weight of the balls vary according to the purpose for which they are made; when of stone, although not larger than an apple, they are sent with such force as sometimes to break the leg even of a horse. I have seen balls made of wood and as large as a turnip, for the sake of catching these animals without injuring them. The balls are sometimes made of iron and these can be hurled to the greatest distance."

Darwin also mentions that *bolas* are not only used for hunting various animals but also to catch runaway or stray cattle. They could be thrown from horseback, thereby greatly increasing the range. However, to throw a *bola* accurately from horseback and at full gallop required great skill; only the most experienced of guachos could manage it with any degree of success.

**S. Sirish Kumar**  
New Delhi

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*Correction:* In the article on corals in *Hornbill* 1990 (4), the temperature range given for corals is incorrect. Reef corals live in warm water (above 22°C). We regret the error.







# BHIMASHANKAR

## Forests of the Gods

RENEE BORGES



**I** WALK TO HANUMAN TALE, a temple tank in a thickly forested horseshoe-shaped valley in the Bhimashankar sanctuary, and an important water source for wild animals during the hot summer. When I reach there, I find the water rank and anoxic, covered over with a slimy film. I see broken glass bottles, paper plates and dozens of brightly coloured plastic bags both in and out of the water—all remnants of many carefree picnics. My stomach turns, and I feel the anger rising.

Individuals concerned about the protection of natural ecosystems and the preservation of biological diversity have a difficult task ahead. You and I are being variously labelled as anti-development, anti-establishment, needlessly alarmist or sentimental raisers of banners of morality. Should these labels silence our genuine concerns? In the hope and belief that they should not, I raise here before you an issue that needs serious consideration.

The issue is Bhimashankar—a Jyotirlingam Shiva temple in Pune district, a temple venerated for centuries and even recorded in the ancient shastras. For perhaps thousands of years, pilgrims have walked or have been transported to the temple, formerly in bullock-carts, now in buses, cars and

**Facing page—Catchment area of the Ghod river—a mosaic of rocky outcrops, perennial ponds and lush moist deciduous forest. Above—juvenile giant squirrel. Individuals acquire territories when they are about a year old.**

Renee Borges

vans. People came and still come now in thousands every month, the biggest gathering of them all being on Mahashivratri, when the count of devotees is in lakhs. These also include the fun-loving tourists who come mainly from Bombay, Nasik and Pune for a change of air. They walk up Ganpati Ghat from Khandas or Nandgaon villages near Karjat (a climb of about 1100 m), or come by road through the township of Manchar in the eastern plains.

Bhimashankar was declared a wildlife sanctuary in 1985. I lived there for a year in '86. I watched the tourists and the pilgrims. At that time, besides a couple of dharamshalas, two suites at the local M.T.D.C. complex, some accommodation available with the temple priests and a couple of small eating houses, there were no other places where a visitor could stay or eat. About four years ago, an adivasi society had plans to construct houses for its members on a plot of land it owned at Bhimashankar. In 1989, I believe, some of these plots were given out to non-adivasis. Today, there are many cement and brick structures, several new eating and boarding houses probably owned by non-adivasis and rented out by them to outsiders on a monthly basis or to tourists for a single night. The single-storey houses of five years ago are now becoming two-storeyed and the building activity is still going on. There is a commercial boom on—right in the heart of the sanctuary.

Besides housing, there is the question of feeding



the visitors. Each visitor usually has at least one meal, sometimes more—it is such a long way to walk or drive. A few bring their own pre-cooked picnic lunches but most order them from the facilities around the temple area. All these many meals, and all the buckets of hot water that visitors need for their daily ablutions, are made ready using fuelwood collected from the sacred forests around the temple.

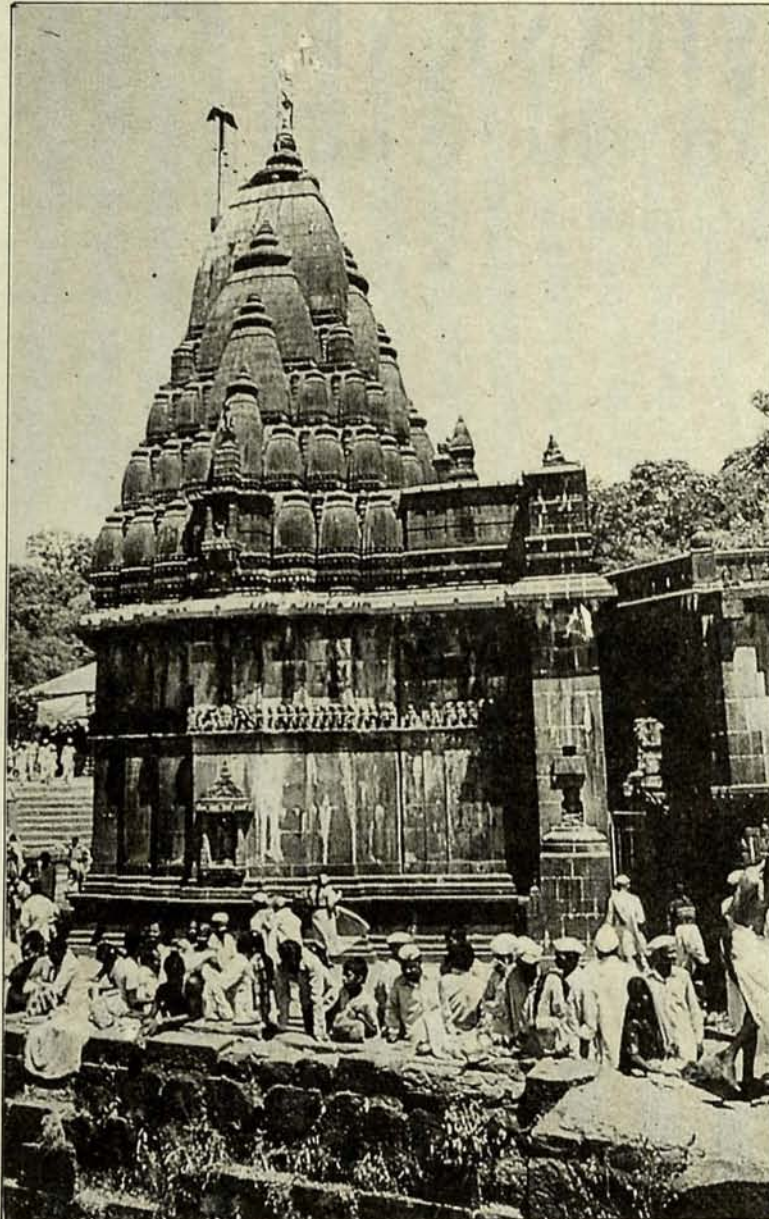
**A**S ONE proceeds by road towards Bhimashankar whether from Pune, Bombay or Nasik, the story is the same. The landscape is barren—sculpted hills of silent stone and grass, with almost no trees and very few shrubs. The forests that once covered these hills are gone, leaving behind mounds that would be a quarry contractor's delight. Only about 12 km before the temple complex do the forests appear, dense and patchy, interspersed with fields. These are the sacred forests of Bhimashankar—the catchment forests of the river Bhima which ultimately merges into the Krishna. The Bhima originates just above the temple, from where it flows to the holy *kund*. The sanctuary includes an area of about 130 sq km, and has its most precious forests in the Bhima valley. The local adivasis

hold these forests in awe, as only here are species of trees not found commonly elsewhere within the sanctuary area—trees yielding cinnamon, nutmeg, 'triphal' and mace, trees related to the famed tendu of central India's forests, and many more.

The westerly forests of Bhimashankar are seasonal cloud forests. But the eastern slopes which form the catchment of the Ghod river (also a tributary of the Krishna) receive less rain, and the forests there are

drier, with a lower diversity of tree species. There are several adivasi villages within the sanctuary, and the adivasis meet their fuelwood requirements solely from the surrounding forests. Every time I ask one of my local adivasi friends to tell me about the Bhimashankar forests, I am told that there are no forests anywhere like those in the Bhima valley.

And yet, it is these very forests that are supporting the commercial boom mentioned earlier—it is these very forests that are feeding and allowing the hundreds of thousands of visitors to bathe and ablute comfortably each year. The adivasis tell me that these forests are theirs, that they have protected them over the years from the rapacious overtures of timber contractors, that they derive much of their sustenance from these sacred groves. Why then should visitors from outside, who come and go in a day, be allowed to use these precious resources in an uncontrolled fashion? Something is seriously wrong.



**The temple once protected the Bhima valley forests. Today, its very popularity is contributing to their destruction.**

Ulhas Rane

**I** MAKE A PLEA, therefore, for sanity. I ask a couple of questions, hoping that answers will come. How much commercial 'development' can be allowed in the core of a wildlife sanctuary? How much of this development truly benefits the local people? Is this another goose-that-laid-the-golden-eggs story? What is the way out? I have nothing against either the temple or the pilgrims, who have a right to offer worship as often as they want,



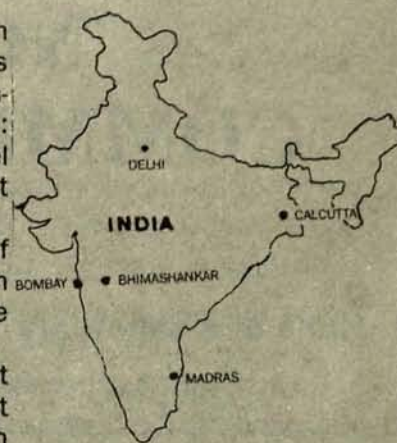
### A GIANT-SIZED PROBLEM

The Bhimashankar wildlife sanctuary was created in 1985, largely for the protection of a subspecies of the Malabar giant squirrel, *Ratufa indica elphinstonei*, which occurs mainly in this area. The genus *Ratufa*, which is restricted to the Indo-Malayan region, includes the world's largest tree squirrels. Three of the four *Ratufa* species occur in India: the pied giant squirrel (*R. bicolor*) in the north-east, the Indian or Malabar giant squirrel (*R. indica*) in the Western and Eastern Ghats and central India, and the grizzled giant squirrel (*R. macroura*) in south India.

They are arboreal herbivores, dependent upon the existence of continuous tracts of forest. As our forests shrink, the giant squirrels are increasingly becoming isolated within small patches. All three species are endangered, and one subspecies restricted to the Surat Dangs has reportedly become extinct within the last few decades.

The Malabar giant squirrel is about 75 cm from nose to tail (the tail alone is about 45 cm long). Average weights are about 1.5 kg, with some individuals weighing about 2.5 kg. The throat and belly are usually creamy white. Over its range along the Western Ghats the colour of the back varies from almost black (southern regions) to rust-red to hazel/beige (northern regions). There is no colour or size difference between sexes.

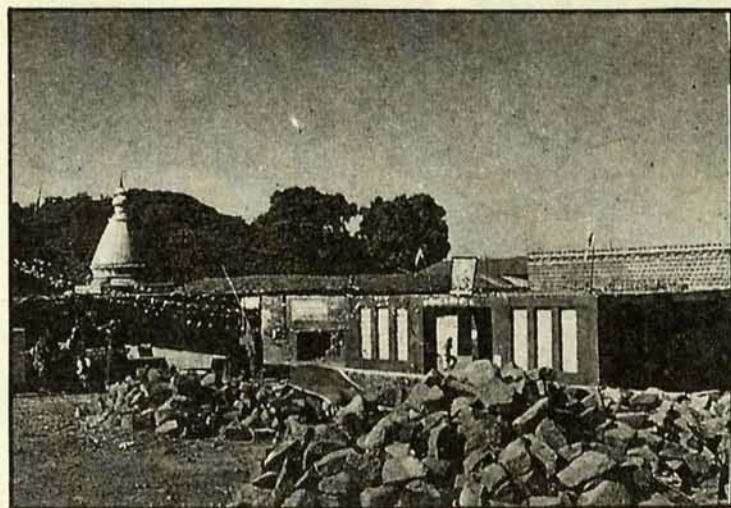
The author spent a year at Bhimashankar as part of a two-year field study on the ecology of giant squirrels. The specific study area was a patch of semi-evergreen, seasonal cloud forest in the Bhima valley, below the Bhimashankar temple. The squirrels, she concludes, are potentially highly vulnerable to habitat and population disturbances. They are territorial, each occupying 1-1.5 ha of forest. Any habitat disturbance such as tree felling would have an immediate effect on the territory of a particular individual, and a ripple effect on adjacent territories. Because they breed slowly—only once a year, producing a single pup, and not all females breed every year—populations would take a long time to rebuild after such disturbances.



or against the tourists who want to enjoy the unhurried calm of Bhimashankar. But what I do object to is the way the energy and water requirements of these visitors are met.

Besides fuel, there is another very serious problem at Bhimashankar—water. There are only two tanks that store rain water. One usually dries up by February-March and the other struggles to yield muddy water until April. There have been times when water has had to be supplied in tankers all the way from Manchar or Dimbhe in the eastern plains, 50 km or more away. A local adivasi woman, who makes a living selling pooja offerings at the temple, said candidly that she wished there were fewer visitors, as all the water tanks would only dry up sooner.

I have known times when the few small eating



**Construction or conservation? Building continues at full swing within the sanctuary.** Ulhas Rane

houses would not serve water to casual visitors unless they were actually eating a meal there. Yet one of these same eating houses is now two storeys high and has several rooms for visitors to stay. Where is all this going to take us? Do we want another Mahableshwar or Lonavala scenario at Bhimashankar, one in which the brakes on 'development' were applied too late? Surely we all, tourists, pilgrims, concerned environmentalists alike, have a collective responsibility towards these last few remaining natural forests, and surely all of us should be willing to pay the price for our entry into these sacred forests.

The concerned authorities must think of supplying alternative energy resources—and insisting on their use, especially in the case of commercial establishments. Use natural gas (don't waste all the Bombay High gas!) or kerosene, so that these forests are truly safe within the sanctuary. Strict control over further expansion must be maintained. The water problem must be solved either by limiting the number of visitors or by developing new sources or enlarging existing ones. Isn't it ironical that an area that receives over 3000 mm of annual rainfall should have to endure a shortage of water? It is imperative that we act quickly to prevent further damage to the forests of Bhimashankar.

*Dr Renee Borges spent two years in the Bhima valley forests, studying the ecology of the giant squirrel for her Ph.D. She is now coordinating a wildlife census and monitoring project at the Bhimashankar sanctuary.*



# NEWS NOTES COMMENTS



## A whale of a sanctuary

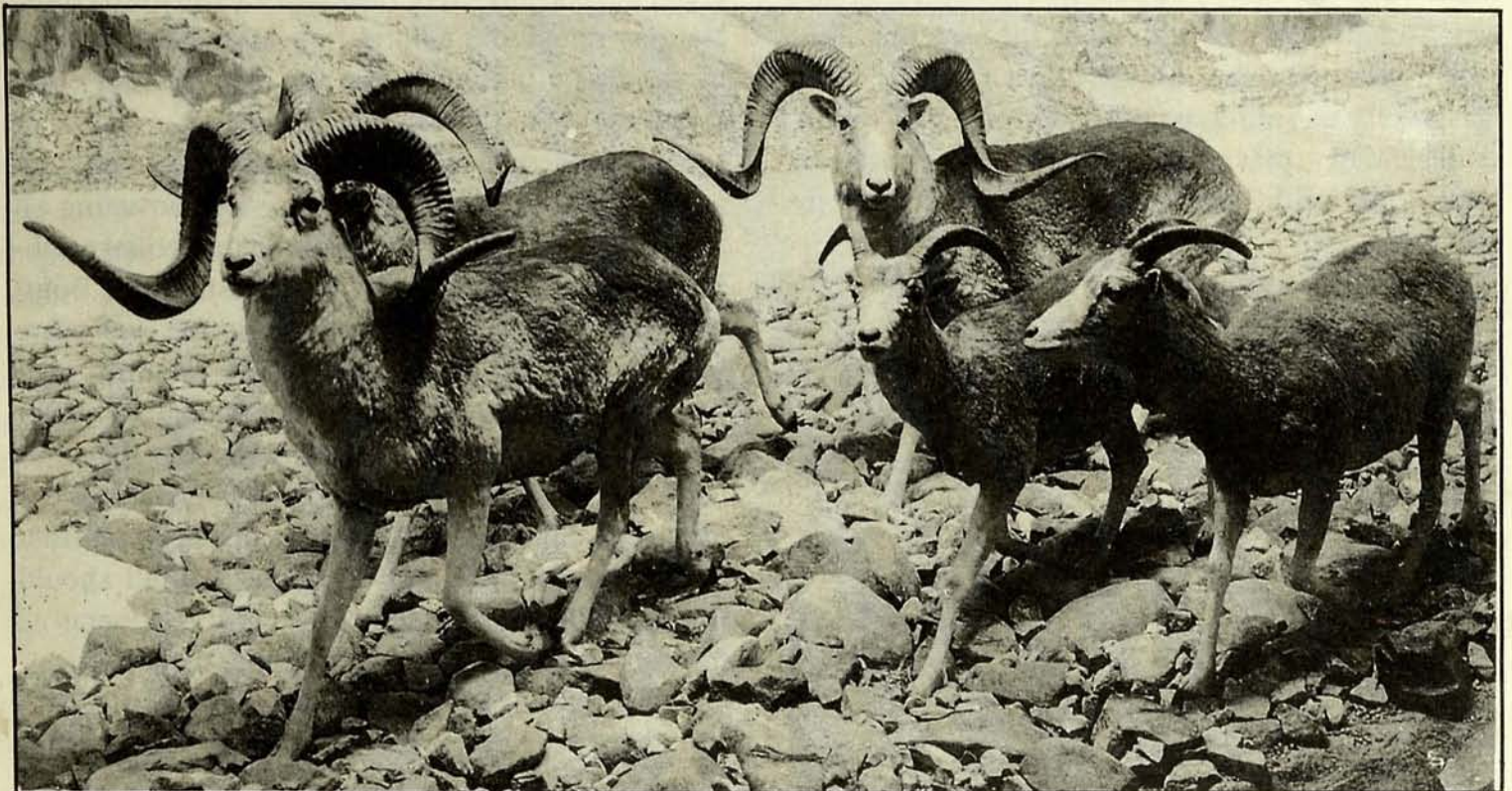
At least 18 species of cetaceans gather to feed and calve around the Galapagos islands off the coast of Ecuador. The Ecuador government has now announced its intention to declare the country's entire 320 km territorial zone a cetacean sanctuary. The area was once a prime target for whaling ships, which all but wiped out its population of sperm whales (*Physetor catodon*). Now, thanks to a strong government commitment to conservation, pressure on the populations of great and sperm whales, dolphins and porpoises, will be reduced.

However, cetaceans are highly mobile, commonly migrating large distances between calving grounds and some feeding areas. Proper protection would therefore require the setting up of similar refuges in many other areas as well. Even more urgently, the global ban on commercial whaling needs to be more strictly enforced—some hunting still continues, under the pretext of research.

## Marco Polo sheep

The Marco Polo sheep (*Ovis ammon polli*) once ranged in large herds through much of the Karakoram range in Pakistan, Afghanistan and China. Now, with very little information on the status of the species, and almost no recent sightings, biologists fear that this mountain ungulate is dwindling in population, perhaps below critical levels.

The plateau at the Khunjerab pass in Pakistan, one of the sheep's prime grazing grounds in winter, epitomizes the problems that the species faces. Though the pass lies within the core area of the Khunjerab National Park, which has been completely protected since 1975, numbers are still disturbingly small. Once the Karakoram highway was opened, the area became more accessible, and illegal hunting increased. Livestock compete with Marco Polo sheep for the scarce and seasonal grazing. One 200 sq km valley near the pass, thought to be an important lambing site, is also a traditional grazing ground



Marco Polo sheep are difficult to see, let alone photograph. This group is on exhibit at the Field Museum, Chicago.

E.P. Gee



for local livestock.

Yaks are another problem. The plateau holds approximately 1,000 animals, which, being aggressive, drive the sheep out of the alpine pastures into less suitable feeding grounds. Any conservation programme for the sheep must involve shifting the yaks elsewhere—a logistical nightmare, given the weather, the terrain and the likely objections from local livestock owners.

Fortunately, there are indications that small numbers of the sheep exist in unexplored valleys in Pakistan and China (the Takskorgan Nature Reserve is just across the border). The Karakoram range is still relatively undisturbed, sufficiently large and thinly populated; establishing a series of protected areas would be easier here than in most other parts of the world. The Chinese government has already set up several sanctuaries in the region. But management programmes tailored to specific species will require greater cooperation between governments in order to bear fruit.

### Wildlife Act amendment

The government is reportedly considering amending the Wildlife Act to allow the hunting of protected animals, provided it is done outside a sanctuary or national park. The proposed amendment was approved by the Union cabinet despite strong opposition from the Ministry of Environment, and is now with the Law Ministry for their comments. Few pieces of legislation would be as short-sighted, as completely irrational, as this one, were it to be enacted into law.

Conflicts between wildlife and man, born out of competition for scarce land, are common, and emotions frequently run high. The trick is to balance these conflicting requirements as best possible, given the political and social constraints under which conservation programmes must work. In many areas, for example, villagers on the periphery of a park or sanctuary are permitted by custom, if not by law, to harvest minor forest produce for their own use. Compensation is made whenever livestock or crops are lost to wild raiders.

Naturally, the system is not perfect. But once license is given to aggrieved parties to kill animals which raid their crops, it would be open house for poachers. Several species have suffered grievously because a market fuelled by superstition continues to demand their skins, claws or horns. There would

be no way of proving whether an animal had been killed legitimately outside a protected area, or poached within it and then removed from the scene of the crime.

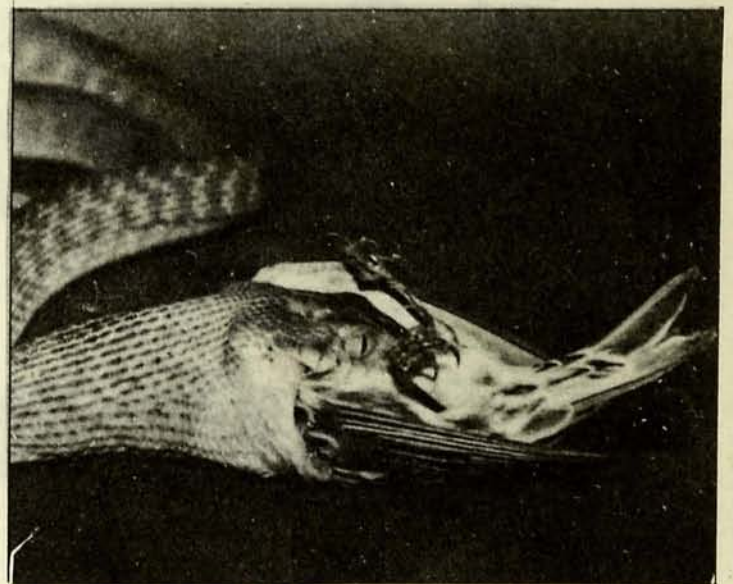
No matter how strictly the law is worded, it would still be grossly misused; not so much because enforcement is notoriously lax, but because such a law itself would be unenforceable. One can only pray that the government sees the light. If not, then much of the excellent work that has been accomplished by conservation programmes like Project Tiger could be undone in a matter of a few years.

### Stowaway snakes

The introduction of a species to an area outside its normal range, whether accidental or deliberate, can have serious effects on the local fauna. The changes that such introductions bring about are often unforeseen, and can grow to crisis proportions before the problem is identified as serious. One such 'problem' species is the brown tree snake (*Boiga irregularis*). Native to the Solomon Islands, Papua New Guinea and the northern coast of Australia, it has now colonized Guam in the south Pacific, and done as much harm as colonizers are wont to do.

The snakes arrived in Guam in the early 1950s, probably as stowaways on ships from Papua New Guinea, 1300 km to the south. By the '60s they were conspicuous throughout central Guam; by 1968 they had probably dispersed all over the island. And today, with population densities of up to 5,000 snakes per square kilometre, they are playing havoc with local species.

The tree snake is an able climber, most at home



**Native bird species are often helpless against this introduced predator.** U.S. Fish & Wildlife Service



in trees and shrubs. It forages at night, using a keen sense of smell and excellent night vision to prey on birds, lizards and small mammals.

Guam, like many other islands in the Pacific region, once had only one species of snake, the small blind snake, which lives in the soil and feeds on the eggs and young of termites and ants. The native forest birds were not adapted to survive predation, and have been virtually wiped out. Nine species, all endemic to Guam, have disappeared, and several others are precariously close to extinction. Some introduced birds, better adapted against snake predation, have healthy surviving populations, but only in urban areas and other developed sites where snake density is limited by human activity and inappropriate habitat conditions.

The 2.5 m long snake has no natural predators except for pigs and monitor lizards, which take too few to act as a control on populations. Guam's ecology has already been seriously damaged. But those of other islands in the area too are under threat: the snakes frequently enter the holds of ships outward bound from Guam (they use dark, cool spots as daytime retreats). Sightings of the snake have been reported from Saipan, Diego Garcia and several other islands, though none are believed to hold es-

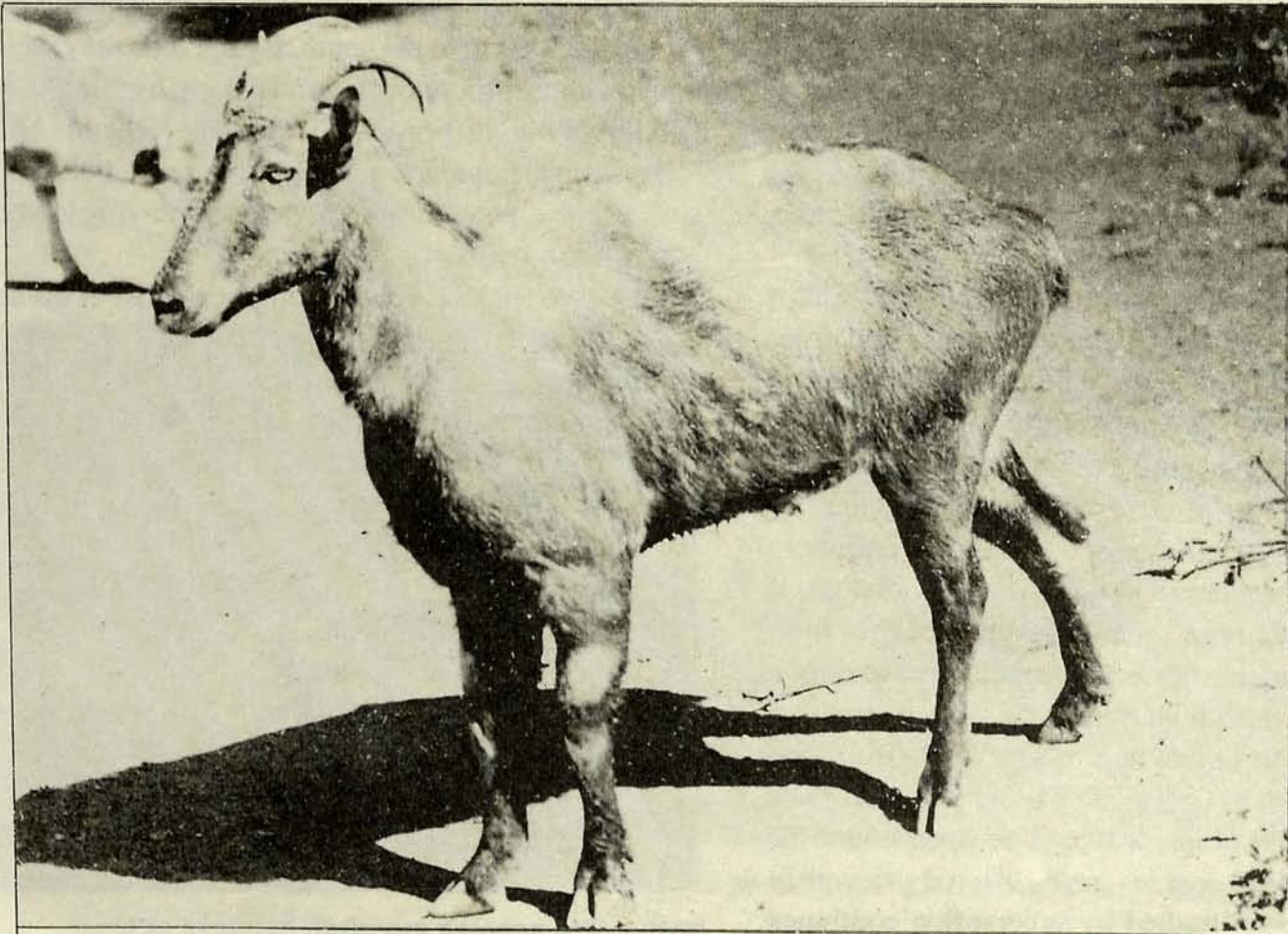
tablished populations. The only remedy is greater vigilance while ships are being loaded, combined with an aggressive campaign to thin down the numbers of the uninvited guests.

### Trouble for the tahr

Many of India's sanctuaries face problems of inadequate resources and staff, encroachment for settlement or cultivation, and excessive tourism. When a park is small, the problems are often exacerbated. One example is the Eravikulam National Park in Kerala, one of the last refuges of the highly endangered Nilgiri tahr (*Hemitragus hylocrius*). The 97 sq km sanctuary, established in 1978, contains some of the best high altitude grassland in south India.

The Tamil Nadu government has proposed to rehabilitate Sri Lankan refugees at Anamalai, on the park boundary. It is not clear how the settlers, most of whom will be short of money to buy firewood, will be prevented from entering and further damaging the park; political decisions rarely pay more than lip service to conservation needs.

The park grassland also contains some 400 *Acacia* trees, probably recently introduced, which need to be uprooted forthwith. Patches of



Nilgiri tahr—populations will dwindle unless Eravikulam's problems are solved quickly.

E.P. Gee



*Eupatorium* are becoming increasingly common on the forest-grassland border, and it is feared that the weed may soon colonize significant parts of the grassland. Another plant introduced by man (in this case by commercial growers) is ganja (*Cannabis sativa*). Demand for Kerala ganja is 'high', and the planters, by using relatively remote areas and generous pay-offs, continue to operate.

The reserve forests in the park are under pressure from forestry operations and human settlements, and may be damaged beyond recovery once the Munnar dam and the Pooyamkutty project are completed.

A committee set up by the Indian Board for Wildlife surveyed the park recently. Among the recommendations made are expansion of the park by adding adjoining forests on the western and eastern sides, more active management of the existing water resources, and easing the tourist pressure by developing an alternative tourist site in the Silent Valley plateau about 30 km south.

### **Pouring oil over troubled waters**

With the Gulf war having subsided, efforts are now under way to repair the damage caused by the conflict. Buildings and bridges can be rebuilt, but can an entire ecosystem? The largest oil spill in history—15 million barrels, perhaps more—threatens to damage for decades to come, the coastal and marine ecosystems of the area. Oil spills during the Iran-Iraq war caused widespread deaths of fish, turtles, sea snakes and birds along the Gulf coast, and the current spill, experts fear, could be more disastrous still.

Coral reefs, sea grass beds (which provide pasture for herbivores such as green turtles (*Chelonia mydas*) and dugong (*Dugong dugon*)) and mangroves function as coastal 'food factories', sustaining not only a fairly healthy list of fauna, but also a thriving fisheries industry.

Each year, an estimated 250,000 shorebirds winter in the Saudi Arabian Gulf, and perhaps eight times that number in the entire Gulf. 21 species, including oystercatchers (*Haematopus ostralegus*) and ringed plovers (*Charadrius hiaticula*), have been recorded in recent surveys by the IUCN.

The inter-tidal mudflats are also an important feeding area for migrants which winter further south and breed in the far north. Offshore islands—some of which were bombed relentlessly during the war—provide major nesting sites for at least three species

of terns: some 25,000 pairs of the lesser crested tern (*Sterna bengalensis*) nest on five Saudi islands, and the region represents the breeding area for a large part of the world population.

Fisheries may be at risk, particularly in the inter-tidal traps. Fish will die *en masse*, or become too tainted to sell. In some instances, fish and shrimp may simply swim away from heavily oiled areas. However, the shallow water nursery and spawning grounds could be damaged. Eggs and young marine invertebrates are particularly sensitive to the effects of pollution. The problem is made worse by geography—the Gulf is shallow, with an average depth of only 35 m, and almost landlocked. Pollutants entering it are therefore likely to remain trapped there for a considerable time.

In addition to oil, other toxic substances such as chlorine, phosgene and benzene from the petrochemical and other industrial plants around the Gulf coast may well damage the marine and terrestrial environment.

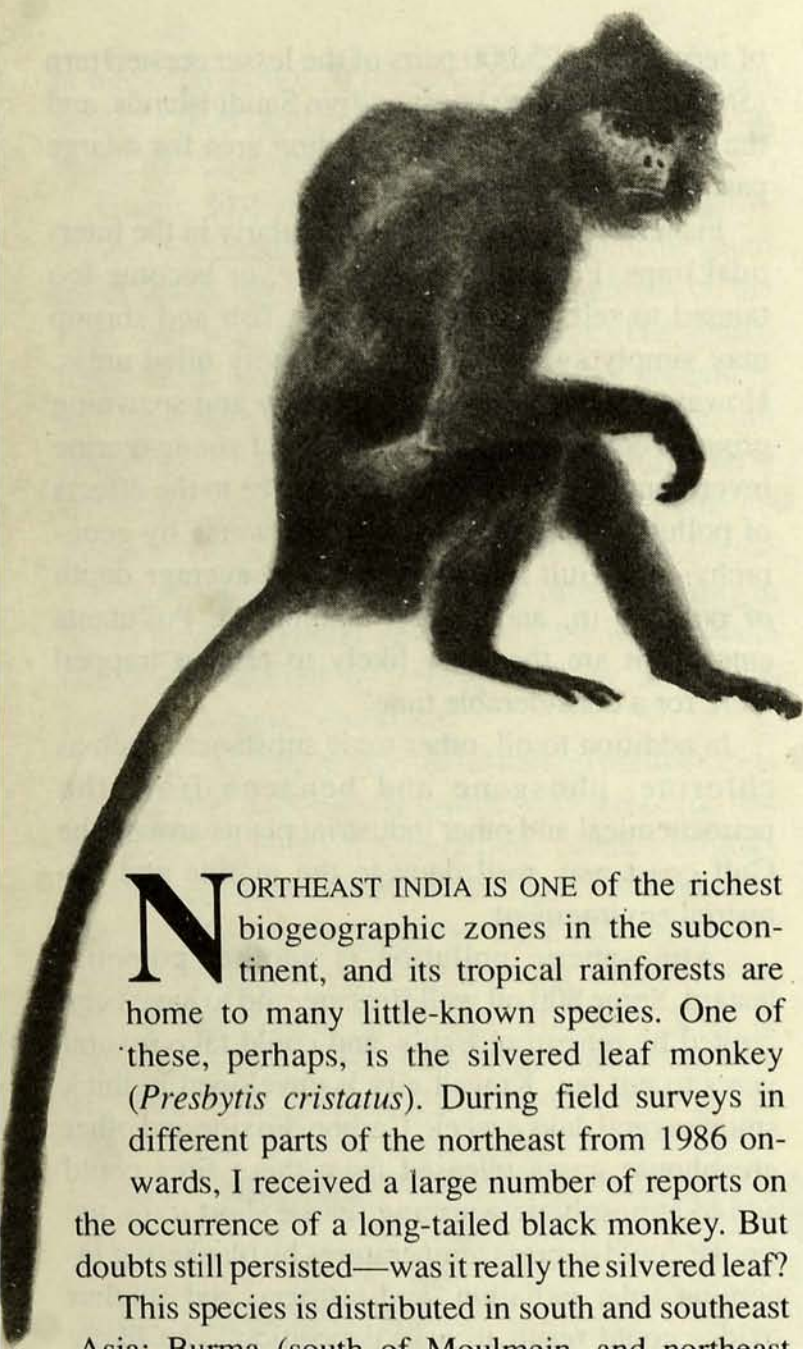
Atmospheric pollution is another potential hazard. Some 800 oil well fires are said to have been ignited by retreating Iraqis, and could take several years to put out. Kuwait city is enveloped in thick smog several days a week. Carbon dioxide and other greenhouse gases released from these fires could add to atmospheric warming; in the short term, the smoke could depress temperatures by blanketing incoming solar radiation; and nitrogen and sulphur oxides could result in acid deposition. The likely magnitude of possible atmospheric effects is controversial, but it is widely agreed that their cumulative effects would be substantial, affecting not only the air, but also marine and terrestrial ecosystems.

The only consolation is that it could have been worse. The oil was high grade crude, which contains a relatively smaller percentage of the more polluting heavier components; these do not evaporate (unlike some of the lighter fractions which may evaporate in days or weeks) and have proved resistant in the past even to drastic measures like igniting them with incendiary bombs

Booms are in place to try and localise damage by enclosing the spill. High-tech dispersants to break down the oil, and genetically engineered bacteria to eat it, are available. All that is lacking is the collective wisdom that will prevent such disasters in future.







## In Search Of The Silvered Leaf

ANWARUDDIN CHOWDHURY

**N**ORTHEAST INDIA IS ONE of the richest biogeographic zones in the subcontinent, and its tropical rainforests are home to many little-known species. One of these, perhaps, is the silvered leaf monkey (*Presbytis cristatus*). During field surveys in different parts of the northeast from 1986 onwards, I received a large number of reports on the occurrence of a long-tailed black monkey. But doubts still persisted—was it really the silvered leaf?

This species is distributed in south and southeast Asia: Burma (south of Moulmein, and northeast probably to the edge of the Dawna range), the west coast of Malaya, and Thailand, Kampuchea, Laos, Vietnam, Sumatra, Java, Borneo, Bali and some other smaller adjacent islands. In Borneo it has been recorded from coastal areas around most of the island, and also along the banks of rivers far inland. Though it normally ranges at low altitude, there is a single record at an elevation of 900 m in Sarawak.

In the Indian subcontinent, however, practically no sightings have been reported. A specimen was collected in '40s in the Tipperah hills (now Tripura), but none have been seen since. In January 1987 I received the first of several plausible reports of sightings. This one was in the Tipang (Tipam) forest in the Lekhapani area in Assam's Dibrugarh district, an area with contiguous forest with Arunachal Pradesh. The langurs were reported to have been accompanied by black coloured young. Seven months later, I received news of a sighting that had taken

place in 1981. Local forest officers in Abhoypur reserve forest in Sibsagar district had spotted long-tailed black monkeys with a bluish tinge.

The animals were also reported from Disoi reserve forest in Jorhat district, bordering Nagaland, and from Tarani, Duar-mara and Burhi-Dihing reserve forests in Dibrugarh district. While the report from Disoi was seven years old, the others were of 1986 and '87. In each case, the report was made by local forest officers. Though all seemed sure that the colour was jet black, there was no positive species identification. There was an older report too, that in the mid-'60s some very black langurs frequented Ashabum village in Dibrugarh.

In February 1987 came the first report from Cachar—a group had been sighted in the Pungarkhal area of Innerline reserve forest, near the Mizoram border. I visited the area with the informant, but a 20 km trek yielded no results. In Cachar, such black primates with black faces are called *kaala katiya* in the local Bengali dialect. There was more news from the Kaala-khal area, also in Innerline reserve forest.

About a week earlier, a *kaala katiya* had been caught in a porcupine trap set up by local Dimasa Kachari tribesmen (known as Bar-mans) in the

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**Silvered leaf monkey** (*Presbytis cristatus*). Bright orange, with black hands and feet, at birth, assuming adult colouration after 3 months. Adults are deep brown-black, with hairs tipped with white, giving a silvery appearance. Found in groups of up to 50.



Joynagar-Kaalarhawor area of Innerline reserve forest. Unfortunately, it was promptly eaten. The monkey was jet black, with a very long tail and reddish cheeks. I made short (one day) survey trips to most of these localities, but the black monkeys remained elusive.

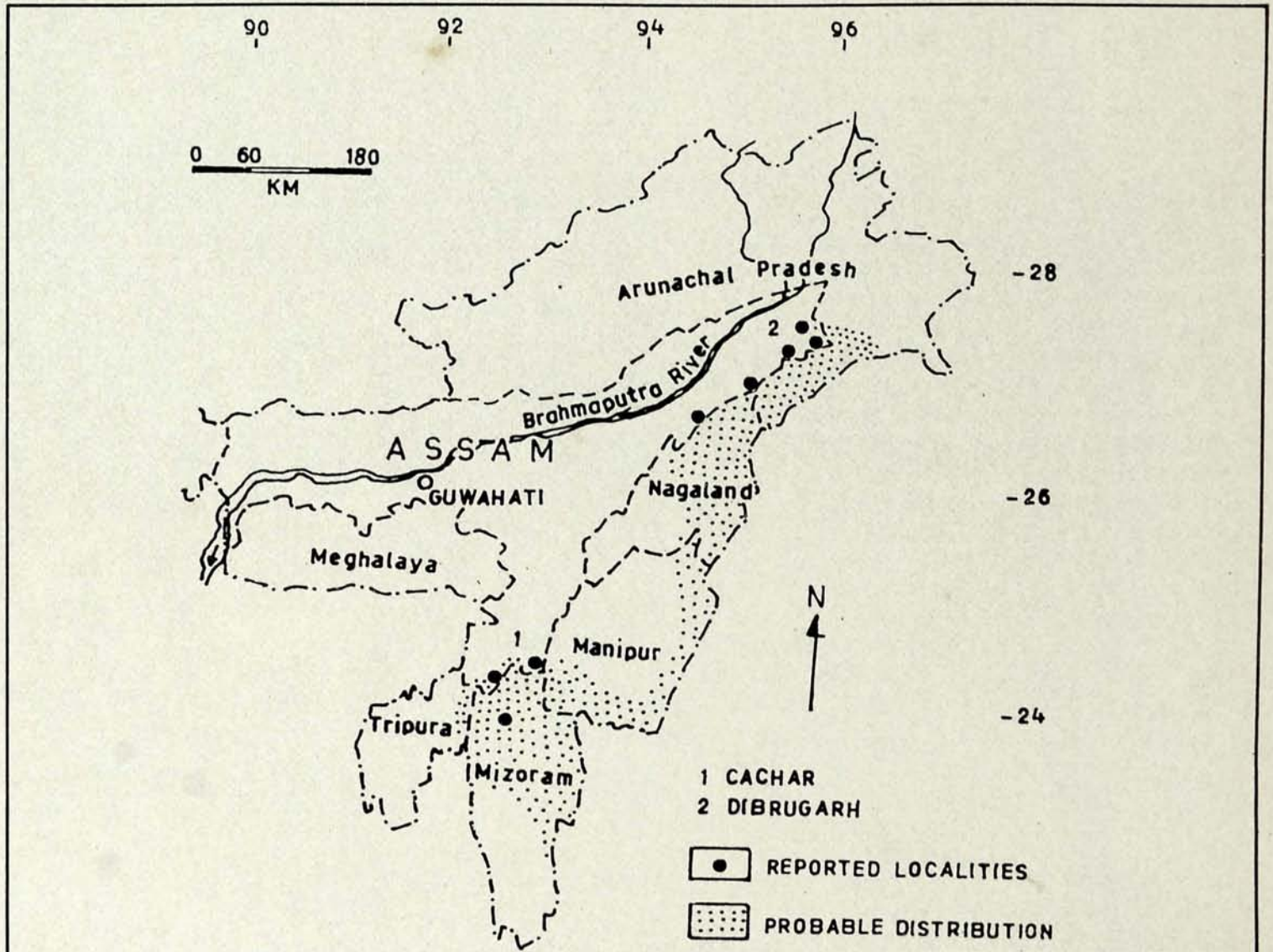
Further reports from southern Cachar (all in Innerline reserve forests) were from Kochur-thal, Dormorkhal, Baidya-tuk and Bairabi-thal localities. In Kochur-thal, near the headstream of Bhai-chara stream, about 6 black langurs were reportedly seen in late 1986, on nageswar (*Mesua ferrea*) trees. On hearing this I made a trip to the area and went up to Bairabi-thal on the Mizoram border. No silvered leaf monkeys were seen, but the sighting of a troop of Phayre's leaf monkeys on the east bank of the Dhaleswari river—the first troop sighted east of the river—almost made up for the disappointment.

**A**PRIL 1988 SAW a fresh report of sightings from Dormorkhal, near Khulichara, and another trip with the reporter as one of the

guides. But when we reached the area, we found fresh *jhum* clearings, and it was unlikely that the animals, which are normally wary and secretive, would remain in the area after such disturbances. We reached the spot where the sightings had been made; and the sudden movement of branches made me go tense with anticipation. False alarm—not *kaala katiya*, but a troop of capped langurs.

During another foray some days later, a sudden midday cloudburst forced me to take shelter in a hut in a small clearing between Nagorhgena and Damchara (also inside Innerline reserve forest). When my host discovered the reason for my visit, he offered some information without any prompting on my part. In the winter of 1986-87, a large deep-black monkey with a very long tail was sighted on a fig tree in the Baidya-tuk area. There was no detailed observation on that occasion—the locals who saw the animal were terrified by its appearance, and fled.

The following day, a local hunter, who is also an ex-serviceman, reported that in late 1986 a long-tailed black monkey was found injured, lying on the

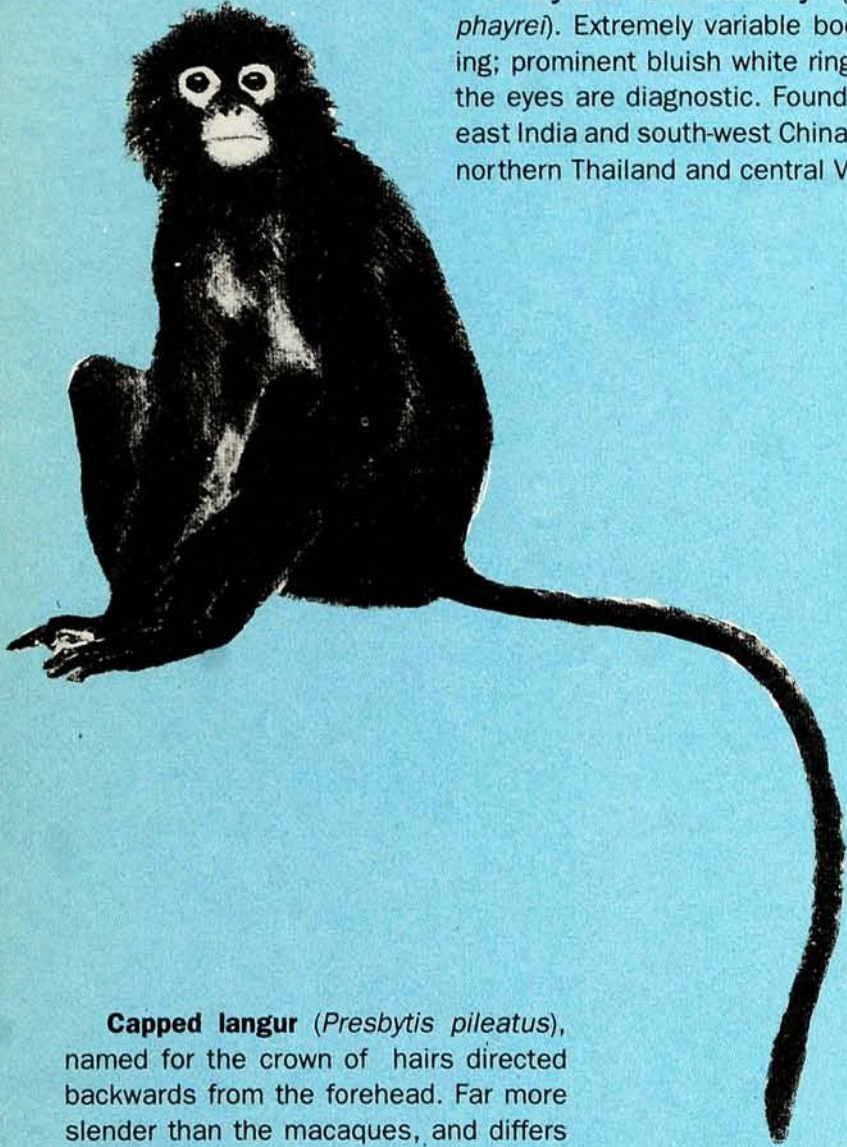




## MONKEY BUSINESS

At least 8 species of primates occur in the forests of northeast India. Thumbnail sketches are provided below; but identification in the field can sometimes be difficult, because of changing light conditions and the dense foliage.

**Phayre's leaf monkey** (*Presbytis phayrei*). Extremely variable body colouring; prominent bluish white rings around the eyes are diagnostic. Found in north-east India and south-west China, south to northern Thailand and central Vietnam.

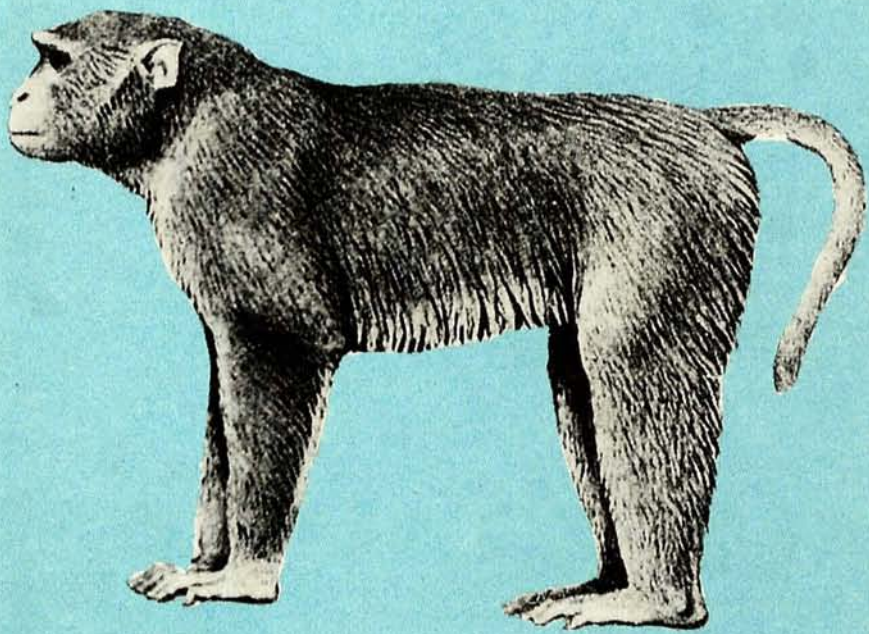


Four macaques are found—the ubiquitous **rhesus** (*Macaca mulatta*), the **Assamese** (*M. assamensis*), the **stumptailed** (*M. speciosa*), and the **pigtailed** (*M. nemestrina*). The latter three, unlike the rhesus, have no reddish patch on the loin and rump. They can be told apart by their tails—about 20 cm long in the Assamese, barely a few cm in the stumptailed and carried erect and arched in the pigtailed.

**Capped langur** (*Presbytis pileatus*), named for the crown of hairs directed backwards from the forehead. Far more slender than the macaques, and differs in colour from the other langurs—dark grey back and limbs, pale fulvous, orange or golden red cheeks and underparts. The breast and belly are sometimes more golden than in the **golden langur** (*P. geei*), frequently confusing identification. Capped langurs are found in northern Assam and parts of Arunachal Pradesh, while golden langurs are restricted to the Manas sanctuary in Bhutan and Assam. Their coat is a uniform deep cream in dull light, and bright golden in sunlight.







The **hoolock gibbon** (*Hylobates hoolock*), India's only ape, is easily identified—no tail, and grotesquely long arms, over double the length of the legs. Males and young females are black, adult females yellowish grey. Found in the rain-forests of Arunachal Pradesh, Assam and parts of Nagaland; not reported north of the Brahmaputra river.

main Gharmura-Bairabi road near Bairabi-thal (not far from Kochur-thal). It was later taken away by a truck driver to Hailakaddi. Neither driver nor passenger could be traced subsequently.

**P**ERHAPS THE most authentic report I have received on the occurrence of the silvered leaf monkey was from Mizoram. In February 1988, a troop was seen at Harinchara (about 23 km downstream of Sairang) on the banks of the Dhaleswari river. There were about 30-35 long-tailed black monkeys and several juveniles. Most were on trees like *Albizzia* sp., but two or three were on the ground.

The observer (whose reports have proved extremely reliable in the past) approached to about 20-25 m without the monkeys showing any signs of alarm. They were slightly larger than capped langurs, which are common in the area, and lacked the white areas around the eyes and mouth which are characteristic of Phayre's leaf monkeys. The area is approachable only through the river, and there is no habitation nearby, except for four Mizo huts. The locals do not hunt these monkeys, and since the area is remote there is very little human interference.

All the localities from where the reports have been received are foothills and low hills. The probable habitat where the long-tailed black monkey occurs extends over about 600 sq km in Innerline reserve forest in Cachar and about 450 sq km in Upper Assam. Satisfactory estimates for Mizoram could not be made, since no survey was done. From the pattern of location of the reported areas, it appears that it might occur in Manipur, Nagaland and the Tirap and Changlang districts of Arunachal Pradesh (see map).

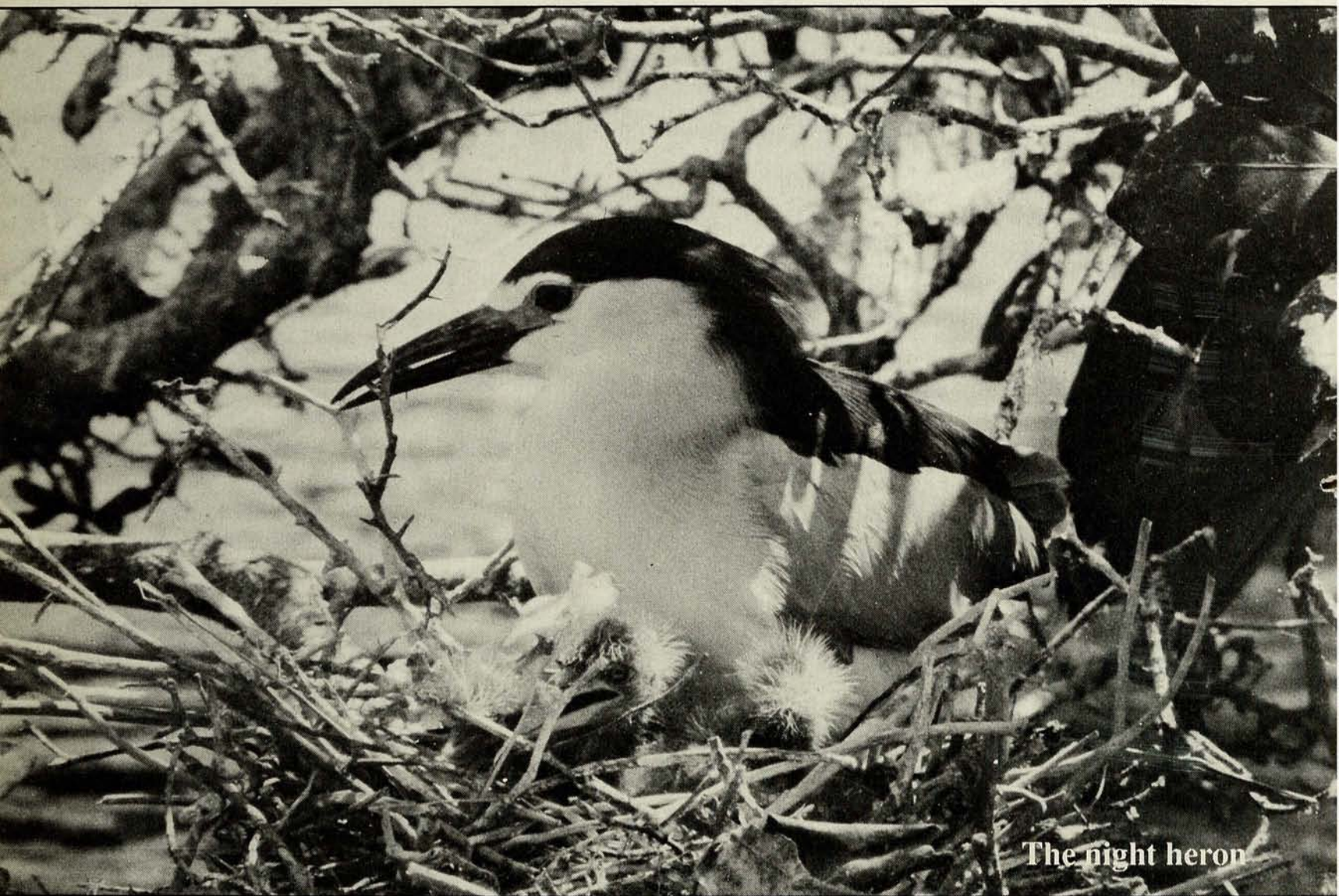
The evidence is circumstantial, but there is plenty of it. A deep-black langur occurs in some of the rain forest pockets of Assam and Mizoram. It is a very rare primate and keeps strictly to the dense forest. It could be the silvered leaf monkey, or another species new to India. It could even be a completely new species, yet to be identified. A detailed survey will unearth the actual facts, but somewhere in those forests is something interesting, awaiting discovery.



Anwaruddin Chowdhury works with the Assam state government. Apart from wildlife (particularly field work on primates), his interests include tribal community welfare.



## Nature Alive



The night heron

**T**HE NIGHT HERON (*Nycticorax nycticorax*) is fairly easy to identify, both from the call (a loud, harsh *kwaark*) and the contrasting pattern of black above and greyish white flanks and underparts. On either side of the rump and breast are 'powder-down' patches, specialised feathers whose tips fray into powder, producing a kind of dry shampoo for degreasing soiled feathers. With the neck pulled in and shortened in flight, the silhouette and the style of flight, especially in the distance, are similar to that of a flying fox.

Immature birds are quite different in appearance from adults. Brown, streaked and speckled with rufous, buff and dark brown, they are easy to confuse with pond herons in non-breeding plumage.

This stocky, 60 cm tall marsh bird is found near jheels, ponds, coastal lagoons and backwaters, distributed patchily throughout the subcontinent, from Sri Lanka and the Nicobar islands up to about 1900 m in the Kashmir and Nepal valleys (where they are

seen only in spring and summer).

Loke Wan Tho

Night herons are gregarious, crepuscular and nocturnal except in the breeding season. Colonies from a dozen to several hundred birds spend the day roosting in silence, hunched up, neck drawn into the body and shoulders and back rounded. They are so quiet that, unless disturbed into flight, even large colonies are difficult to spot. Except while foraging for nest-young, feeding is chiefly done in the morning and evening twilight, and at night. They feed on fish, frogs and aquatic insects, actively seeking prey rather than still-hunting in the manner of other herons.

The nesting season varies locally—April-May in Kashmir, June-July to September in north India, December to February in the south. The nests are untidy and sometimes so flimsy that the eggs can be seen from below. Once the eggs hatch, both parents share in domestic duties. Night herons have lived up to eighteen years in captivity.

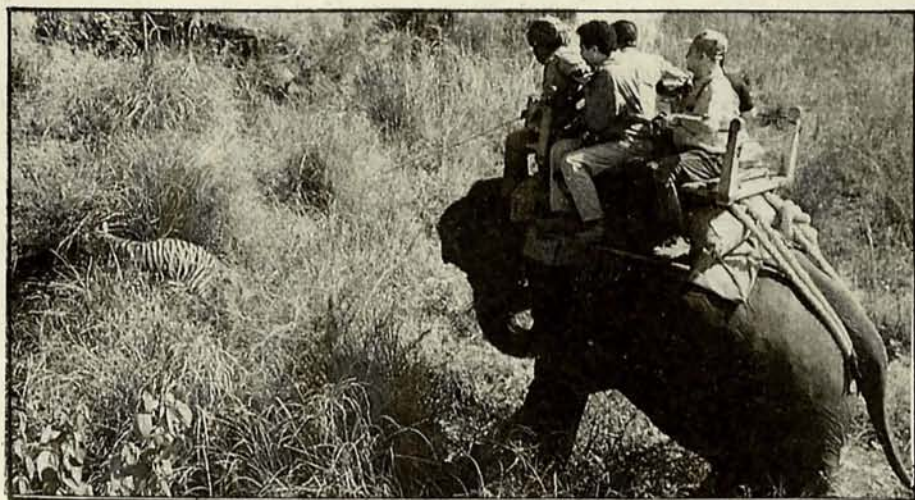


Support Conservation

# JOIN THE BNHS

The Bombay Natural History Society was formed 108 years ago, as a forum for exchanging information on natural history. Over the years, its members and scientists have helped document India's diversity of wildlife, studied little-known and highly endangered species, providing critical data for conservation projects, and produced a series of books on natural history, many of which have become standard works of reference. Today, the BNHS is Asia's premier conservation organisation, with members in over thirty countries and an international reputation as an authority on Indian wildlife.

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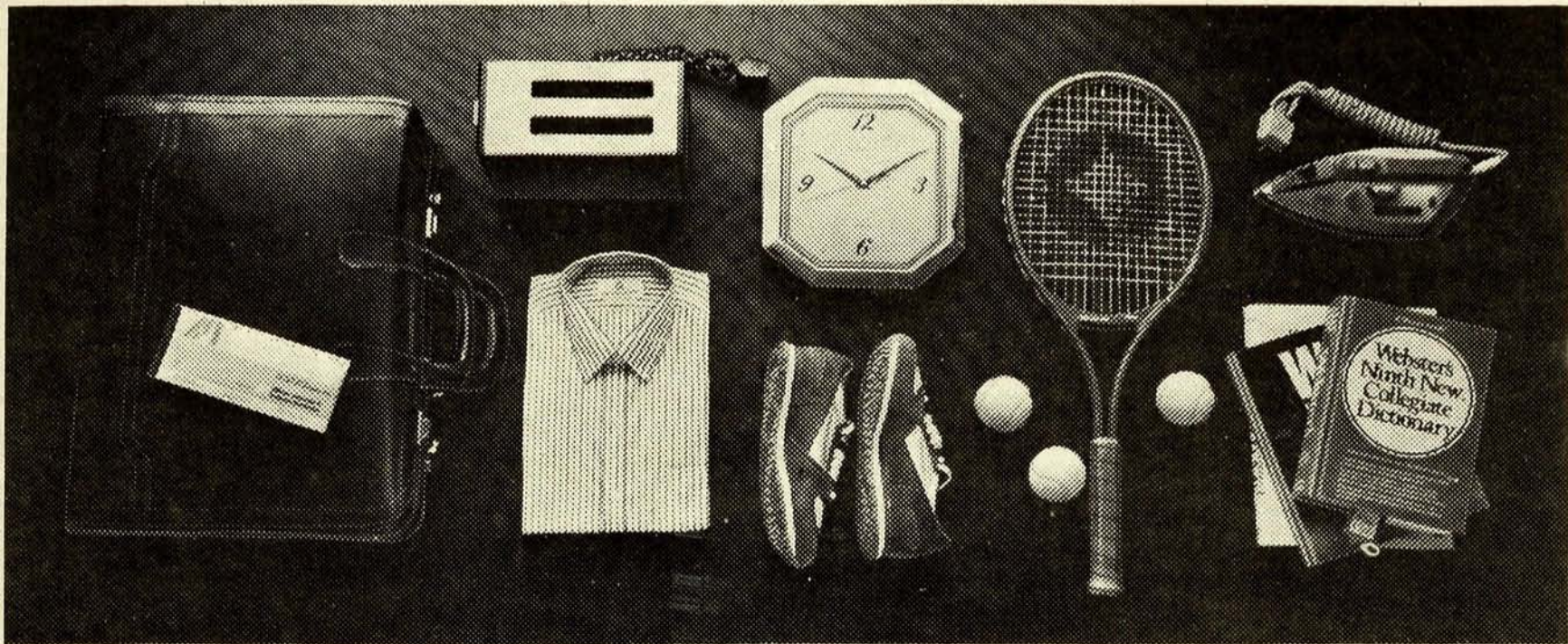
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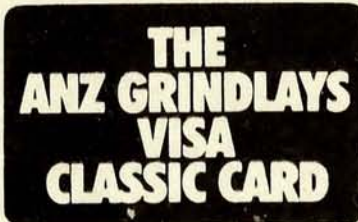
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Help to protect it—join the BNHS today.



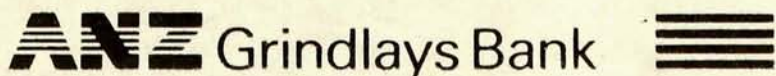


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