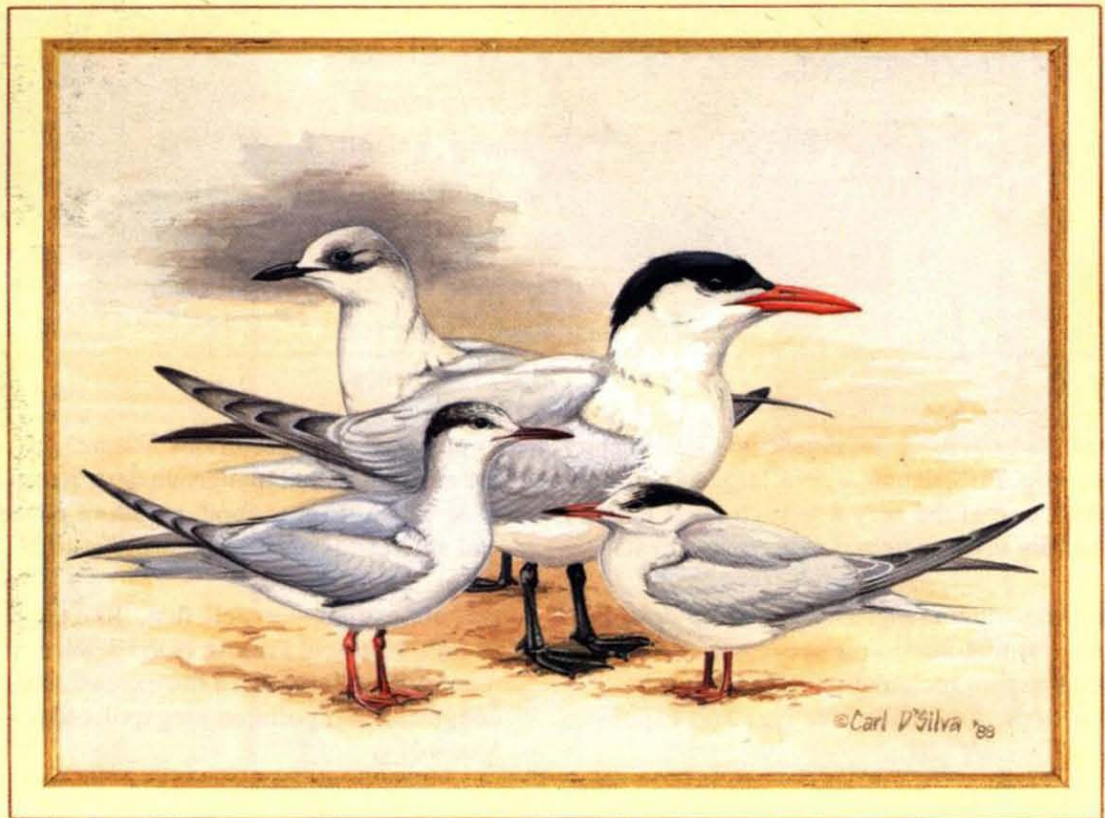


# Hornbill



October-December, 1999

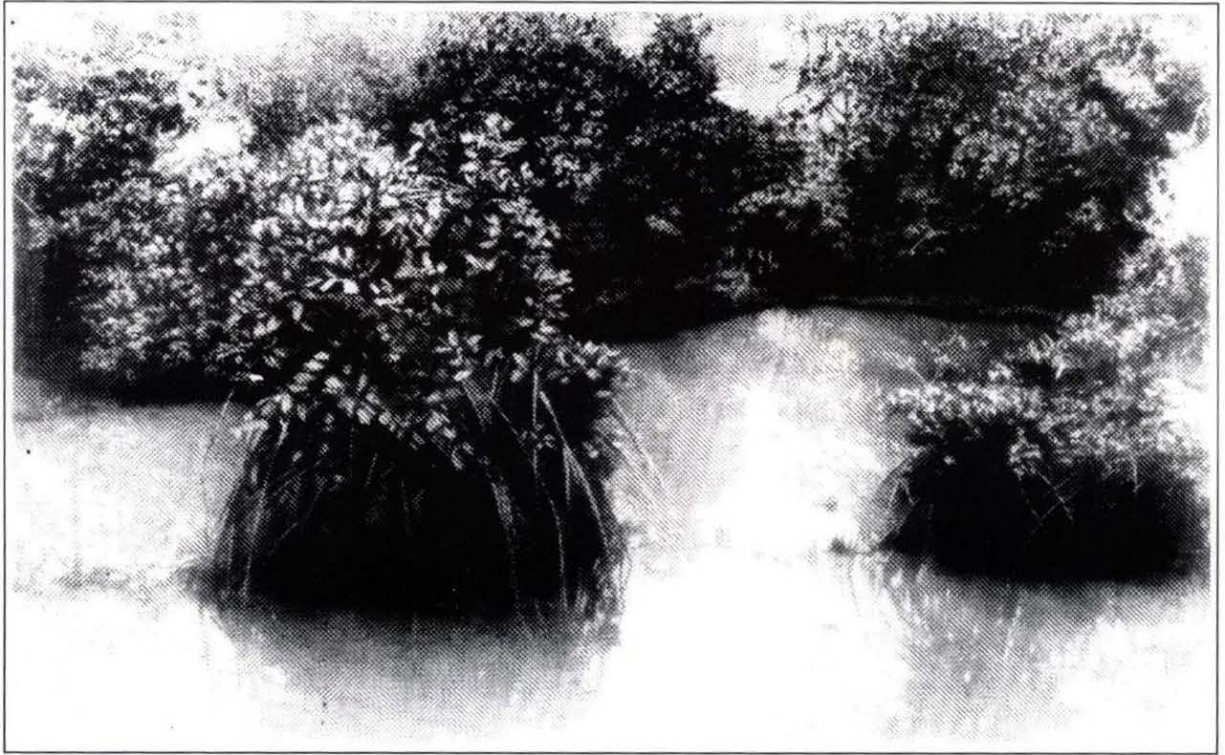
*about nature and us*



**BOMBAY NATURAL HISTORY SOCIETY**



# CONCERN FOR THE ENVIRONMENT



A unique feature of the Industrial Garden Township, Pirojshanagar, is a large expanse of swamp, one of the very few such areas existing in the city under original mangrove forests.

At a time when mangroves are being destroyed at an alarming rate in the process of excessive and damaging reclamation..., Godrej has taken steps, at considerable care and expense.

to preserve and protect this Nature's gift in the awareness that mangrove destruction leads generally to loss of food, breeding grounds and shelter for numerous forms of life.

It is almost unbelievable that, like the Sanjay Gandhi National Park in Borivli, such a mangrove still exists in the excessively congested and polluted megapolis that Mumbai is

**HELP BRING OUR INDIA UP - QUICKLY!**

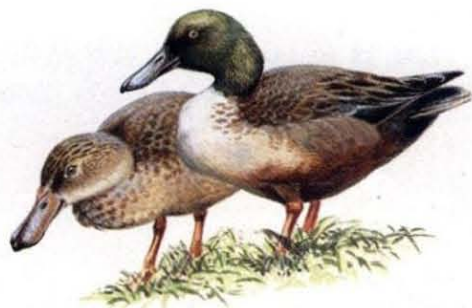
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**WELFARE : ENVIRONMENT / POPULATION NEXUS...**





## In this Issue...



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*Terns*

Carl D'Silva

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### 4. No Passport to India

They have no passport to India, yet they are not illegal immigrants. In fact, they are the most awaited winter visitors who unravel the whys and wherefores of bird migration.

### 14. Indian Wildflowers

India has about 15,000 species of flowering plants. Many are rapidly losing ground against the onslaught of man's exploitation and encroachment. So far, 19 species have been reported to be extinct. Another 41 might soon be added to this list.



## Other Features...

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12. .... Miscellanea  
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30. .... News Notes  
32. .... News Briefs

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Views expressed by the contributors in the Hornbill are not necessarily those of the BNHS. Unsolicited articles and photographs, and materials lost or damaged are not our responsibility and no claims will be entertained.







# THE POISONED EARTH

THE Supreme Court in a landmark judgement on writ petition No. 214 of 1991, filed by the Vellore Citizens Welfare Forum stated that “the right of a person to pollution free environment is a part of the basic jurisprudence of the land.” The case concerned the extensive poisoning of land by the 900 tanneries that operated in the State of Tamil Nadu. The discharge of their untreated effluents, into agricultural fields, roadsides, waterways and open lands, made 35,000 ha of agricultural land in the tanneries belt partially or totally unfit for cultivation. And in two Panchayats, made 350 wells, out of a total of 467 wells in 13 villages, unfit for drinking and irrigation purposes. The effluents let out into rivulets and rivers spread out, during the rains and floods, and the pollutants covered other lands. Drawing attention to the provisions of the Environment Act, the judgement states: “It is high time that the Central Government realises its responsibility and statutory duty to protect the degrading environment in the country. If the conditions in the five districts of Tamil Nadu, where tanneries are operating, are permitted to continue then in the near future all rivers/canals shall be polluted, underground waters contaminated, agricultural lands turned barren, and the residents of the area exposed to serious diseases. It is, therefore, necessary for this Court to direct the Central Government to take immediate action under the provisions of the Environment Act.”

This is one instance out of the thousands which happen all over the country when land is allowed to be poisoned for the profit of a few people. As the judgement states, “The Polluter Pays principle has been held to be a sound principle by this court.” This is a basic conservation issue, and the failure of Central and State Governments to act cannot be condoned. In the final analysis, all of us are made to pay for the acts of a few.



J.C. DANIEL



# NO PASSPORT TO INDIA



## The story of bird migration



SIBERIAN CRANE

*The autumn months have finally arrived and so have the winter visitors to our Subcontinent. Why do they migrate each year? How do they find their way? These and many related questions have been answered today by scientists studying bird migration.*

J.C. DANIEL

The methods of studying bird migration are simple. What is required is a knowledge of the species or kind of bird to be ringed, and when or at what time of the year, and the locality where the birds are to be ringed. For marking of individual birds a ring, or more accurately, a band of aluminium alloy is used. The bands are manufactured with an internal diameter varying from 2 to 19 mm and in the case of very large birds, special rings are manufactured. The bands are not a closed circle but are split to permit slipping on to the leg of the bird. Each ring bears the legend INFORM BOMBAY NATURAL HISTORY SOCIETY, an English alphabet identifying each size series ranging from the smallest to the largest, and the serial number of the ring.

This information, along with the identity of the bird, the place where the bird was ringed, including the geographical co-ordinates (latitude and longitude) and the date of ringing are recorded and the information stored for reference. Special nets, known as mist nets, are used for trapping birds for banding. These nets, manufactured out of thin black nylon threads, are practically invisible to flying birds when set up against a dark

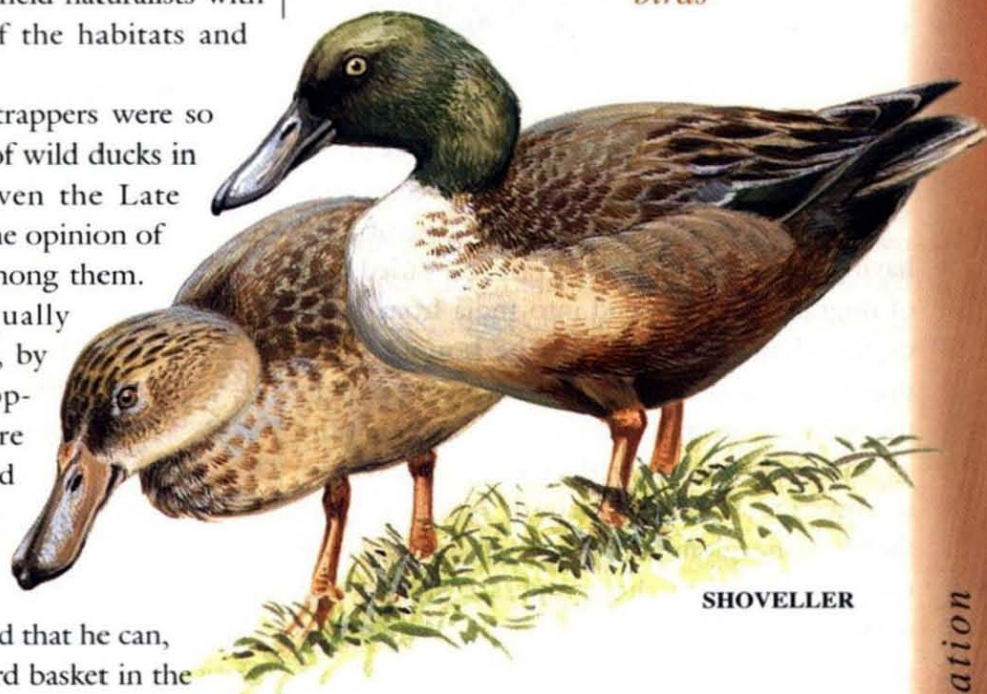


background of vegetation. Mist netting is the only method of capture and is used internationally. However, the majority of the over four lakhs of birds banded over two decades by the Bombay Natural History Society were trapped by employing professional bird trappers. The hindu Sahnis are specialists in the trapping of wild ducks and other large water birds by using a long net of cotton thread strung out over shallow water. The muslim Mirshikars specialise in the use of a throw net for trapping the smaller wading birds which feed along the edge of the water. Both operate at night. Hailing from Bihar, these professionals are first class field naturalists with an amazing knowledge of the habitats and behaviour of birds.

The Sahnis or duck trappers were so good in the identification of wild ducks in varying plumages that even the Late Dr. Sálim Ali deferred to the opinion of Ramji Sahni, the senior among them. The Mirshikars were equally good field naturalists who, by looking at the bird droppings on the ground where birds had roosted, could select the best areas to operate for maximum results. One of the Mirshikars, Ali Hussain, is so good that he can, by putting his hand in a bird basket in the dark, tell you exactly what species he has in his hand and bring it up; triumphantly for identification. After working with the BNHS for some months, he could tell the scientific name of the bird also. He has become something of a BNHS showpiece for our scientists to visitors from India and other countries.

The best area for bird migration studies in India is the Keoladeo Ghana National Park at Bharatpur, Rajasthan. One of the finest bird sanctuaries in the world, the Ghana holds during

*Keoladeo Ghana National Park is one of the finest bird sanctuaries in the world and holds during winter an immense concentration of a fantastic variety of migrant, resident water and land birds*

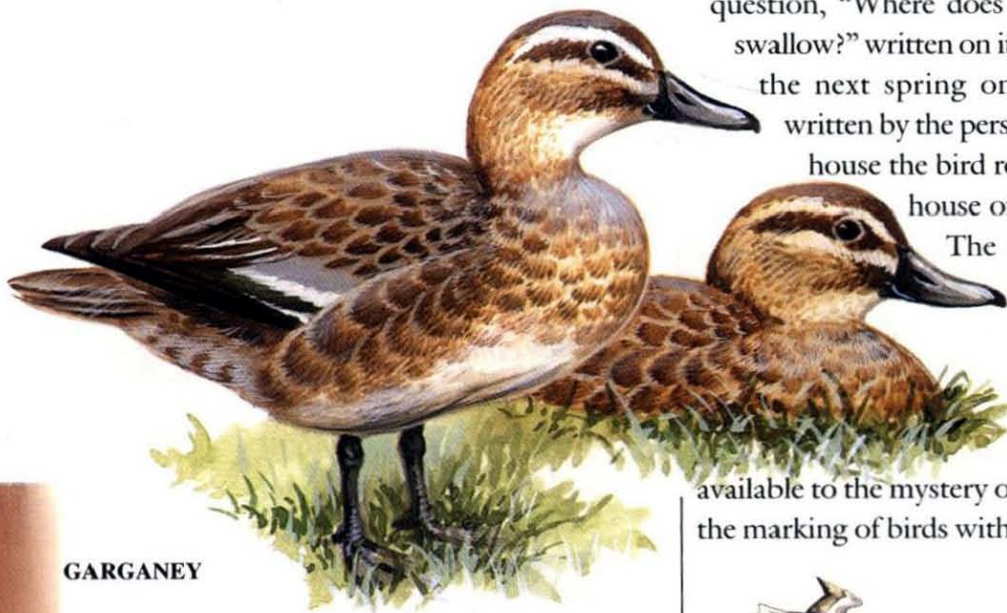


SHOVELLER

the winter months an immense concentration of a fantastic variety of migrant and resident water and land birds. The Bombay Natural History Society migration studies at the Ghana showed that it acts as a midway resthouse for migrants arriving into the country. The Ghana is in effect comparable to a railway junction from where the birds disperse widely over the country.

If you are in the Keoladeo Ghana Bird Sanctuary at Bharatpur on a bracing crispy cool winter morning, the quacking and explosive take-





GARGANEY

question, "Where does thou spent the winter, swallow?" written on it. Prompt came the reply the next spring on the same parchment written by the person in the caves of whose house the bird roosted in winter "In the house of Petras in Asia Minor".

The story is probably apocryphal but illustrates the fact that before a method of marking birds was found, no satisfactory answer was available to the mystery of bird migration. Today, the marking of birds with a light aluminium alloy



*The autumn months witness a steady flight to the south and when the winter snows arrive, they cover a silent, sterile, world. Birds manage to have the best of both worlds.*

off of flights of wild ducks welcome you to the world of the winter visitors to the Subcontinent.

Every year, as the monsoons retreat after having revitalised the land, a vast and varied host of migrant birds descend into India from north of the Himalayas to share the bounty of an invigorated land. As the days shorten in length in the northern latitudes and the nip of cold in the air sharpens, flock after flock of birds leave the marshy tundras and the forests of North Asia and the Siberian regions of Russia where they had used the abundance of the temperate spring and summer to nest and raise their young. The autumn months witness a steady flight to the warmth of the southern latitudes and when the winter snows arrive, they cover a silent, sterile, world. Birds manage to have the best of both worlds.

The gathering of birds in large flocks in autumn, their disappearance shortly thereafter, and their reappearance again in spring had been noticed by the people of temperate lands from very ancient times. There is a story told of a citizen of Rome during the days of the Roman Empire, tying to the leg of a swallow that nested in the eaves of his house, a piece of parchment with the

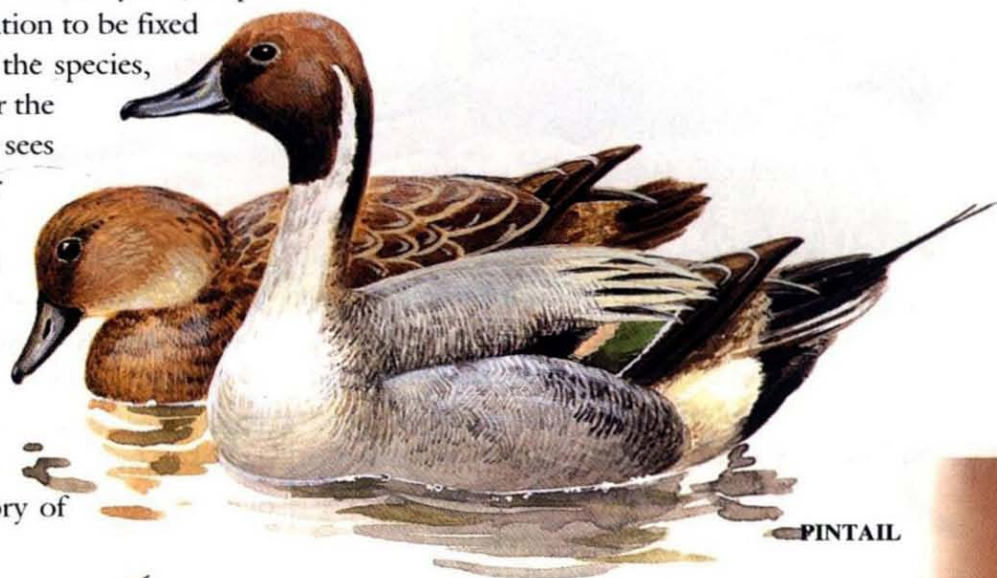
ring on their leg for study of their movement is practiced in all scientifically advanced countries, particularly the United States, the countries of Europe and Russia.

The study of migration raises several questions which require scientific explanation. For instance, why and when did bird migration start? How do they find their way? Migration is a deep seated physiological phenomenon related to the cyclical changes of advantageous and adverse climatic conditions. It evolved during the long history of the species as it faced environmental changes during the life span of the species itself. It is now believed that the life span of a species or



a type of a bird is about two million years, ample time for the paths of migration to be fixed in the genetic memory of the species, considering the fact that for the majority of birds, each year sees a new generation and over two million generations pass in the life span of the evolution and the life and death of any particular kind of bird.

The origin of the migratory routes into India lies in the past history of



*The gathering of birds in large flocks in autumn, their disappearance shortly thereafter, has been noticed by the people of temperate lands from very ancient times*



the world. It is now generally agreed that the pattern and routes of movement of birds can be related to the drift of continental land masses as explained in the Theory of Continental Drift. According to this theory, approximately two hundred to one hundred million years ago, all the land masses of the world were grouped together as a single solid mass named as Pangaea by geologists. This super continent split and began to drift apart on top of the matrix of the earth for a more equal distribution of weight. As a part of this movement of separation, the mass of the peninsula of India separated from the African and Antarctic sections of the Super Continent and

began drifting towards the large Asian land mass. About 65 million years ago, the Indian peninsular mass lay south of the equator and was moving towards the mass of Asia at the rate of one to two inches per annum and was thought to have reached within 200 miles off the coast of southern Asia about 25 million years ago. Clothed in verdant tropical forests, it rose as a new horizon to the birds which had till then wintered along the southern coast and which, as the two land masses of the Indian peninsula and the Asian continental mass met, had to face new stresses. For as these two land masses met approximately 20 million years ago, the area of contact buckled and crumpled, raising the Himalayas and the high Tibetan Plateau where there had been once a placid sea. The routes of migration into the Indian peninsula then laid still persist.

The factors which influence the timing of migration have been studied extensively. The findings indicate that the control of migration impulse to a large extent is by hormones secreted by glands such as the pituitary. These secretions determine the reaction of the bird to external cues as the shortening of day length in autumn and lengthening of day in spring, thus guiding to the





COMMON TEAL

changing seasons. The secretions also determine the amount of fat stored by the bird as a fuel for the migration flight. The bird migration studies of the Bombay Natural History Society found that the difference in weight between the migrant ducks that arrive in India and those that leave in the spring can be as much as 150 gm.



*Factors influencing the timing of migration have been studied extensively. The findings indicate that the control of migration impulse to a large extent is by hormones secreted the pituitary*

Three problems face a migrating bird trying to get to its winter or summer home. These are, the direction in which it should fly, the maintaining of this flight direction without deviation and recognition of the destination. Through capture, marking, and release, it has now been experimentally proved that birds have a true sense of direction, an ability to orient themselves in relation to their location. This is perhaps linked with a natural phenomenon beyond our senses. Some elegant experiments on the astronomical landmarks used by birds to find the direction of migration proved that birds that fly during the day on migration use the sun as a compass to find and maintain the direction of flight. Similarly, it has been experimentally established that night flying birds use the stars as bearings for their migration flight. It has been possible using a Planetarium to move birds in the opposite or spring migration direction by arranging the stars of the Planetarium to show a spring sky.



LESSER BLACKBACKED GULL  
 HERRING GULL  
 BROWNHEADED GULL  
 BLACKHEADED GULL

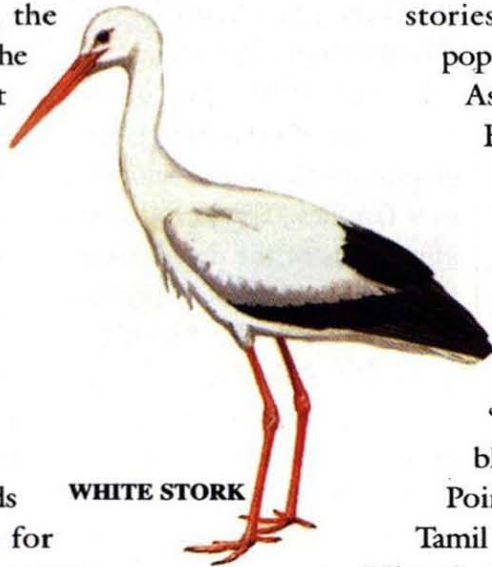
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Bird migration studies in India on a sustained and systematic basis had an unusual start. In 1959, Indian public health authorities were alarmed at the appearance of a viral disease in the Kyasanur forest of Shimoga district in Karnataka. The disease, which was occasionally fatal to man, closely resembled a viral brain disease occurring in some of the Asian republics of the former USSR. The appearance of any new disease is a



global problem and the Kyasanur forest disease became a concern of the World Health Organisation. International efforts to find and root out the causes were organised. One of the problems that was investigated was whether migratory birds could possibly be the carriers of ticks infected with the virus. To find the answer, the origin of the birds that migrate to India had to be determined and the birds examined to check whether they had ticks on them. Blood samples were necessary to assure that the birds themselves were not carrying the disease and thus infecting insects which may feed on their blood in India. The Bombay Natural History Society with the Late Dr. Sálím Ali, the doyen of Indian Ornithology as the Chief Investigator, undertook, at the invitation of the World Health Organisation, the responsibility of setting up a bird ringing programme to determine the origin of the migrants arriving in India.

Migration studies depend on international co-operation for success, especially from countries where the birds that winter in India, return for breeding in the spring and summer. Such co-operation was readily available from the Bird Banding Bureau at Moscow, which handled all migration information in the former U.S.S.R. From decades of migration studies, it is evident that the birds that winter in India come from North Asia, particularly from the Kazakhstan and East Siberian areas of Russia. The straight line distance between their ringing and recovery areas varies from 2000 to 5000 km. Each year, therefore, a migrant bird travels from 4000 to 10,000 km on their journey between their winter and summer homes, probably more, as they certainly do not fly in a straight line. In the process, they have to



WHITE STORK

face all manner of natural hazards, including the crossing of deserts, and some of the highest mountains in the world. An astonishing journey, considering the size of the birds that undertake them, a journey that is full of peril even for man's flying machines. The farthest journeys are often made by small birds such as the ruff which has been ringed at Bharatpur and recovered within the Arctic circle in Siberia. Greylag geese wintering in India return to outer Mongolia to nest and rear their young just as the barheaded geese return to the shores of the sacred Mansarover Lake in Tibet to rear their young. Ring recoveries of some of

the wild ducks reveal more astonishing stories. Normally, the migratory populations of Europe and north Asia are entirely separate, the European population migrating to Africa in winter and the north Asian population to India and other countries in south Asia. Occasionally, birds breeding on the fringes of these populations are 'mised'. A garganey or bluewinged teal ringed by us at Point Calimere in the south of Tamil Nadu was recovered in Kano, Nigeria in Africa. What probably

happened was that the duck got mixed up with a migrating group of the European population and was led to migrate with them. Even resident species, which live their entire life in the country, occasionally undertake such unusual migrations in the company of migrant species. Spotbill, a resident species ringed at the Ghana, Bharatpur, was recovered in Russia. That such stray migrations occur, was not known in Indian ornithological literature before. 🐦

J.C. Daniel was, for many years, Curator of BNHS. He is currently the Honorary Secretary of the Society.

Paintings: Carl D'Silva. © BNHS





## Book Reviews



**FIELD GUIDE — SOME SOUTH INDIAN BUTTERFLIES** by K. Gunathila Garaj, T.N.A. Perumal and M. Ganesh Kumar. Published by Nilgiri Wildlife Association. pp. 290, Rs. 395/-

Butterflies were a popular subject of natural history during British times and most of the work on Indian butterflies was done by the Britishers from Moore (1880-1905) to Wynter-Blyth (1957). Many workers have studied the butterflies of the Indian region. The works of Evans (1932), Bingham (1905-1907) and Talbot (1939) are still important. Once again, in the last two decades, butterfly studies have gained attention due to amateur lepidopterists who have taken a keen interest in this group. To stimulate and continue this interest, several books have been published in

English and the regional languages. The latest addition to this is the **FIELD GUIDE — SOME SOUTH INDIAN BUTTERFLIES**.

The 290 pages of this book have 151 colour photographs of 113 species, belonging to 9 families. The introduction informs us of the details of the format in which each species is described for the benefit of users. The old and revised names of each species are given. However, at many places the subspecies is also mentioned which is difficult to identify unless one is well versed with the taxonomy of the group.

At the end of the description of each species, space is given for field notes. The photographs are of excellent quality. There is also a list of host plants of each species.

The book is excellent for all those who are interested in conserving the "flying jewels" of the Indian region.

*Naresh Chaturvedi*

**WILDLIFE PHOTOGRAPHER OF THE YEAR : PORTFOLIO EIGHT** presented in association with BBC Wildlife Magazine and the Natural History Museum with British Gas plc. Fountain press Ltd., 1998. UK price £ 24.95. pp. 160

A woodpecker pecks wood, what does an oxpecker peck? Look for yourself — there is a photograph of an oxpecker on a zebra's tail, beautifully composed by Jamie Thom (South Africa) on page 13. Creativity unlimited! Master photographers have put in their best efforts and created brilliant pictures in the wild. Spot lighting effect, high key, low key, techniques with natural light — they are all here.

Besides being a photographer's delight, this is a book on natural history. The BBC/BG photo competition has various categories, twelve in all and each





section has brought out magnificent entries depicting natural history. The total number of photographs is 150.

In the foreword, Simon King, wildlife film maker says "Good photography is, in many ways, like fine cooking...." I showed

the book to a person with exceptional culinary skills, who also dabbles occasionally in the dark room, and the opinion I got from that person — the book contains delightful preparations indeed !

S.R. Nayak



**THE SECRET LIFE OF TIGERS**, by Valmik Thapar.  
Oxford University Press,  
New Delhi, 1999.  
pp. 99, Rs 295/-

I started reading this lovely book after watching the destruction of a patch of tiger habitat in Khamman district of Andhra Pradesh where I had gone to see the environmental impact of open-cast mining at the Singareni Coal Mines. Nearly 5 hectares of good tiger habitat was bulldozed that evening, in anticipation of clearance from the Ministry of Environment and Forests. In front of the guest house, where I stayed for three nights, the forested hillock was burning and no one was present to stop the fire. As I read the passionate, almost personalised account of



the tiger's life, I realized the importance of people like Valmik Thapar and Fateh Singh Rathore who have devoted their lives to save this magnificent animal. Can't we have more Valmiks in different parts of India?

I am an admirer of Valmik and have read all his books, and THE SECRET LIFE OF TIGERS is a

delightful little book which I would recommend to every naturalist and animal lover. In 99 pages, Valmik has put in the life history of three tigresses and their cubs in the world-famous Ranthambore National Park. For the first time, Valmik and Rathore, through their meticulous research, have shown that a male tiger sometimes associates with tigresses with cubs, and in one instance, two adult male tigers were seen with a tigress and her young cubs. We are told that male cubs eat first (p. 63) and purring starts at the age of 8 months (p. 61).

Valmik is thorough in his observations. I did not find any non-scientific statement. This book is intended for lay readers and admirers of tiger. It was first published as TIGERS: THE SECRET LIFE by Elm Tree Books in UK and has been reprinted with a fresh selection of 16 colour photographs. Valmik's preface is not untrue that "this book reveals nearly everything you wanted to know about the secrets of the tiger." Get hold of a copy before the book shops run out of stock.

Asad R. Rahmani



We are grateful to  
**SETH PURSHOTAMDAS THAKURDAS & DIVALIBA CHARITABLE TRUST**  
and

**MEHTA SCIENTIFIC EDUCATION & RESEARCH TRUST**

for financial support for the publication of *Hornbill*.

Their consistent support is greatly appreciated.



# Miscellanea

FROM J B N H S

## ALLEGED SHOWERS OF WORMS

OF LATE various specimens of worms have often been sent for identification to our Society from different parts of the country, the senders in most cases stating the natives believe they have fallen in showers from the skies.

*Gordius* — twining around a water plant and laying eggs

These worms belong to two classes and are generally of two genera — *Mermis* and *Gordius*.

*Mermis* belongs to the *Mermithidae*, a family of the Nematode class.

The adult sexual form is frequently found in great numbers in damp earth or climbing up the stems of plants after a heavy rain storm, especially in the early morning. Being a Nematode worm, it has a pair of lateral lines, the oral papillae are six in number: the males possess two copulatory spicules, and numerous aboral papillae arranged in three rows. The eggs are laid in moist earth, the larvae, on being hatched make their way into the body of a grasshopper or locust and feed on the fat-body of their host. On the death of the insect, or perhaps before it, they make their way into the gut and escape by the anus.

It is amazing what a number of these large worms can be accommodated by a locust. In Assam, I have seen the great majority of a flight of locusts inhabited by these worms, the weight of those that escaped exceeding that of their host whose body was reduced to a mere shell.

A flight of locusts perishing during the night, giving posthumous birth to a host of worms, will very naturally be looked on as a supernatural "shower of worms" by uneducated observers. Especially will this be so, when the death of the insects is due to inclement weather.

A district in which these worms have not before been observed may be suddenly invaded by a flight of infected locusts. The worms will escape without attracting notice and hide in the soil. Should a heavy shower fall during the night the worms come to the surface and may be seen in huge numbers climbing and writhing around the stems of plants.

The worm is of course unsegmental, but differs from other Nematodes, in that it has no anus.

Another of these worms that has been said to fall in showers is *Gordius*. It is often suddenly seen in puddles where formerly it passed unnoticed. The obvious inference of the untutored savage is that they have fallen with the rain that made the puddles. Several of the worms are often found wound together in a tangled knot — whence the name *Gordius*.

The male may be readily distinguished by the "tail" end being split. The female genital opening is also at the aboral end. Specimens can often be seen in copulation.

The Gordians constitute a family and with a single other genus have the honour of forming a complete class by themselves.

Order Nematomorpha has no lateral lines and no oral papillae. *Mermis* we have seen has no anus, *Gordius* has, but is in worse plight as in the younger stages it has no mouth, the gullet being a solid rod — not the least used for eating or even drinking. The gut is straight, as already said both testis and ovaries discharge their products through a terminal opening and are placed dorsally to the gut.

After the eggs are laid the little embryo makes its way by the aid of spines on the oral end through the body wall of the larva of a mayfly, midge, or alderfly larva. This is the only one stage in this strange eventful history. The midge, mayfly has to be eaten by a beetle, or perhaps a frog or fish. It is said that even man himself has had the honour of acting as host.

NB: Taxonomic details have not been changed



The larva then devours the whole of the fat-body, and sometimes even the digestive and reproductive organs of his host, who is most often a beetle. If the beetle gets drowned or dies near water, the worm escapes in the adult condition in which its main duty is to increase and multiply. The number of eggs laid is enormous, and necessarily so, considering how precarious is the life history of the creature. In its struggle for existence, the larva must find the midge, next a suitable beetle must swallow the midge at the proper stage, finally the beetle who is naturally a land dweller, must get drowned or die near some fresh water.

It is a matter for supreme thankfulness that we poor humans lead a less precarious existence. Imagine the number of babies we would have to produce, if only those who succeeded in boring their way into a crocodile grew to childhood, and only those whose crocodile was swallowed by a tiger that died of drowning had a chance of arriving at man's estate! ☛

A. POWELL

Bombay, March 1908



## SCORPION STING AND GARDEN RUE

SOMETIME back Mr. P.S. Patuck, of Narsingpur, C.P., sent a few leaves of a plant to our Society, with the following note:- "The plant is called in vernacular Sitab. These leaves pounded with salt are locally applied for scorpion sting, and I have today seen a case in which this remedy seems to have removed the pain in a few minutes."

The plant in question is the garden rue (*Ruta graveolens*, L. Sp. Pl. (1753) 383, var. *angustifolia* Hook. f. in Fl. Brit. Ind., I, 485). I at once started hunting for some information regarding the medical properties of rue. I found many curious things, in old and new books: but it was only after a long search that I discovered a reference to its healing properties in cases of scorpion sting, and that in a book which was written in 25 AD. It is

impossible to describe the physiological action of the leaves without experiments; but I trust that a short sketch of its medical history, will be welcome to our members.

This plant was well known to the ancients. Aristotle tells us in his *Historiae Animalum* that the weasel before fighting with serpents eats of the rue, because the snakes hate the smell of it. The famous Greek physician and medical writer Hippocrates (460-377 BC) says the plant is resolvent and diuretic and mentions it in the chapter of female diseases. De Gubernatis tells us that the plant was hung round the neck as a charm against vertigo and epilepsy, that it was considered as an emblem of good luck and a protection against sorcery. For a long time the plant enjoyed the reputation of being protective against infectious diseases. It formed one of the chief ingredients of the so called "Robber-vinegar" which was used as a preventive against plague. Even at the present day this preparation is used for fumigating sick rooms. In the East too people place it in beds in order to keep off insects. Even cats and rats cannot stand the smell of the plant. ☛

E. BLATTER

St. Xavier's College, Bombay, July, 1916



## VITALITY OF A BUTTERFLY

WHILE watching a cluster of about thirty *Papilio philoxenus* which were feeding on the flowers of a creeper, I noticed one of these butterflies had a large heavy pin driven through the thorax. It must some time have been caught and pinned down, afterwards escaping. It was in very good condition and the pin did not seem to interfere in any way with its powers either of feeding or of flight, for when I tried to capture it by taking hold of the pin, it darted away and showed itself as strong on the wing as any other of its kind. ☛

G.A. HASSELS-YATES, CAPT., R.C.A.  
Khyra Gali, Murree Hills, 11<sup>th</sup> July, 1912





# INDIAN WILDFLOWERS

Text and Photographs: Isaac Kehimkar

*India has about 15,000 species of flowering plants. Many are rapidly losing ground against the onslaught of man's exploitation and encroachment. So far, 19 species have been reported to be extinct. Another 41 might soon be added to this list. While 152 species have been listed as endangered, 102 are vulnerable and 251 are listed as rare in the IUCN's Red Data Book.*

## 65. SERPENT ROOT

*Rauvolfia serpentina*

This 1.5 m tall, erect, evergreen, shade loving plant grows in moist deciduous and evergreen forests. Its roots are used medicinally, leading to over-collection, which has endangered this plant in the wild. It is now cultivated to meet the commercial demand. Flowering occurs from March to May. The flower is 5 mm across. The plant occurs in the well-wooded parts of India and is absent in the arid regions. It has already become extinct in Sri Lanka.

## 66. PEACOCK FLYTRAP

*Ceropegia oculata*

A rare twiner that springs forth every monsoon from the underground tuber, usually sheltered among thorny shrubs on the hill slopes of the Western Ghats in Maharashtra. The 6.5 cm long flowers are seen from July-September. Caterpillars of the Striped Tiger and Glassy Tiger butterflies feed on the plant. Extensive collection of the tubers for food by tribals, and clearing of forests, has endangered this plant.

## 67. FANTASTIC FLYTRAP

*Ceropegia fantastica*

An extremely rare, endemic twiner of the Western Ghats in Karnataka and Goa. The 2.5 cm long flowers have an extra long calyx, these are its unmistakable characteristics. It flowers from August to September. It is one of the most endangered among the Indian plants. Caterpillars of Striped Tiger and Glassy Tiger butterflies feed on the plant. Insects trapped in the corolla are compelled to move downwards, due to the downwardly pointing hair. Once trapped, they pollinate the flower and carry the pollen to the next.

## 68. DALZELS ROCK STAR

*Frerea indica*

This 10-15 cm tall, succulent, perennial herb grows in gravelly soil on rocks, slopes and cliffs at about 1000 m on the Deccan hills of Maharashtra. Star-like flowers, 2 cm across are seen from June to October. Caterpillars of the Plain Tiger butterfly feed on the plant. The plant being extremely rare and endemic is listed by the IUCN as one of the world's twelve most endangered plants. It is listed in the Appendix I of the CITES which prohibits its collection and export.

## 69. RED VANDA

*Renanthera imschootiana*

This endangered epiphyte grows in the northeastern forests of Manipur, Nagaland and Mizoram at an altitude of 1000-2000 m. Though not a true Vanda, this orchid is popularly called so. Drooping stalks with 15-30 flowers are seen from May to June. It is highly threatened in the wild due to indiscriminate collection and loss of habitat. It is very popular with orchid breeders and several hybrids have been produced.

## 70. FAIRRIE'S SLIPPER ORCHID

*Paphiopedilum fairrieanum*

This highly threatened, 20 cm tall ground orchid grows on hill slopes from 1500-1800 m in eastern Himalaya from Sikkim to Arunachal Pradesh and Bhutan. It is named after Mr. Fairrie who brought this orchid to England. It was discovered in the mid 1800s, but became so rare that in 1904, a reward of £ 1000 was announced for finding it. In 1905, the orchid was found again in Bhutan. Being highly valued by orchid fanciers, it is indiscriminately collected from the wild. It flowers from October to March.



# Endangered Plants



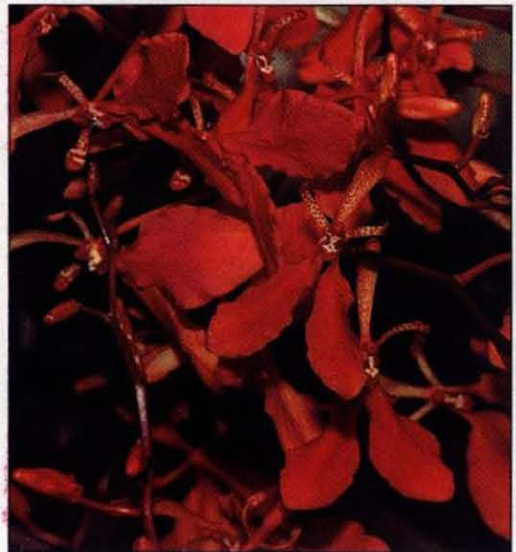
SERPENT ROOT



DALZELL'S ROCK STAR



PEACOCK FLYTRAP



RED VANDA



FANTASTIC FLYTRAP



FAIRRIE'S SLIPPER ORCHID





We are here to stay

HIRA PUNJABI

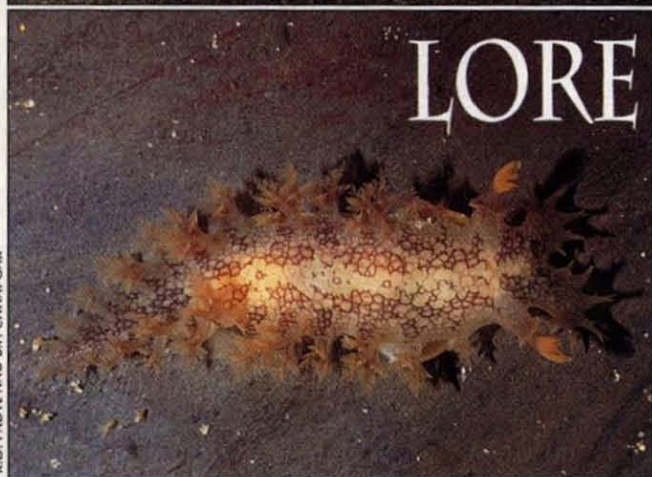


B. F. CHHAPGAR AND R.D. PADTE



SEASHORE

R. D. PADTE AND B. F. CHHAPGAR



LORE

These two sea-slugs demonstrate the versatility of colours and body shapes in aeolid nudibranchs

### 35. Beauty and the beast

Beefsea



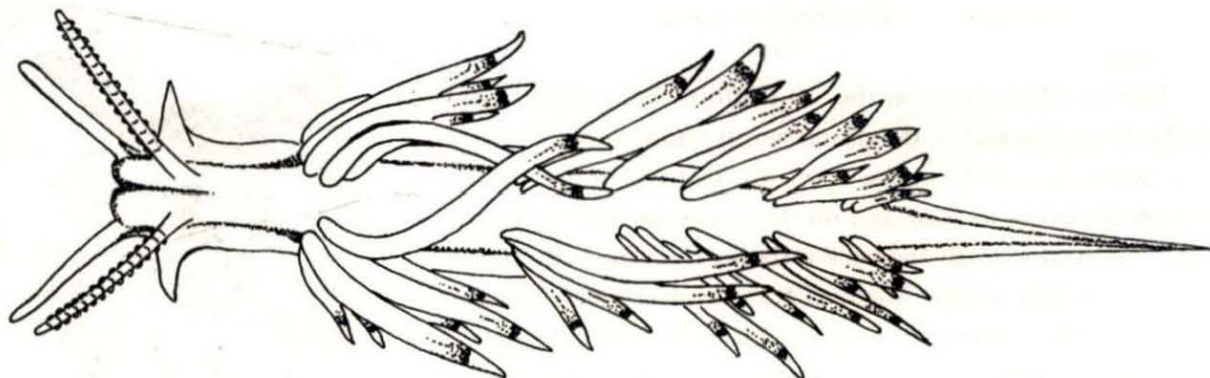
*Their glittering textures, like the filmy dew,  
Dipped in the richest tincture of the skies,  
Where light disports in ever-mingling dyes.*

Unlike the drab, and ugly repulsive land-slugs, sea-slugs or nudibranchs are some of the most colourful marine molluscs without shells. While the Dorid group have a round, disc-like body, the aeolid and allied groups have an elongated, ploughshare-like body. There are two pairs of tentacles at the front end — a pair of simple cephalic tentacles, followed by the (usually) stouter rhinophores, these being the organs of smell. But the most peculiar characteristic of aeolids is the presence of tubular, nipple-shaped or branched structures called cerata, arranged along the back on either side, sometimes in clusters. These are used for breathing, but they also serve for defence.

There is a common saying, “You are what you eat.” This does not imply that if we eat, say bananas, we shall soon have bananas growing all over our body. But something like this does happen in aeolid nudibranchs.

Aeolids feed on coelenterates such as hydroids, alcyonarians (dead men’s fingers), sea anemones or corals. Now all these prey animals have an array of stinging cells called nematocysts. A stinging cell is a capsule filled with a venomous fluid and contains a coiled hollow thread. When triggered by an enemy touching them, the thread is ejected out of the capsule and injects the fluid into the enemy, paralysing and killing it. The stinging cells of some hydroids are so virulent as to cause pain like the sting of a bee or red ant, and those of some jellyfish can even kill a person within minutes.





*Dondice* (above) has its most anterior (front) rows of cerata arranged in a horseshoe

Yet the aeolid feeds on the coelenterates with impunity. It is not only immune to the stinging cells, but it manages to keep them undischarged. The stinging cells make their way uninjured and non-discharged through the stomach to bags called cnidosacs inside the cerata, where they are stored for use. A fish attempting to eat an aeolid will only get a mouthful of painful stinging cells.

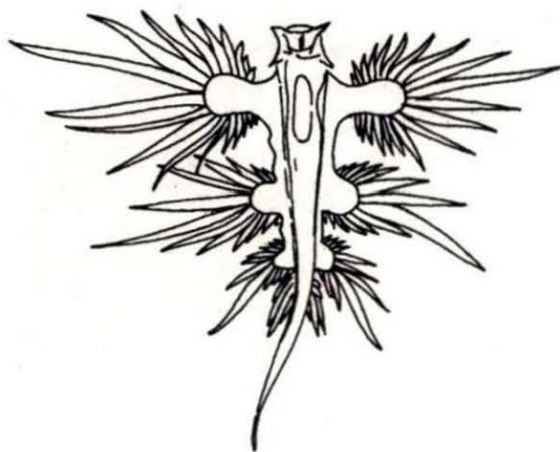
The beautiful colours of nudibranchs may be made by the animal, acquired from food, or be caused physically. Thus the blue colour of the aeolid nudibranch *Fiona* is derived from its prey, the by-the-wind-sailor *Velella*, and fades when it cannot get its prey organism. A tropical ascoglossan nudibranch which feeds on green filamentous algae, separates out chloroplasts — the parts of the plant cell which carry out photosynthesis, and places them under its skin. The chloroplasts continue to carry out photosynthesis, manufacturing food which the nudibranch absorbs. The nudibranch can survive for short periods without eating anything, as long as it exposes itself to the sunlight.

The cerata of the aeolid nudibranch *Trichesia* have orange and blue bands. The orange colour is made by pigment cells in the skin, but the blue has a physical origin. Just as we see the colours of the rainbow in a patch of petrol or oil spilt on a wet road or in a soap bubble — the blue is an interference colour caused by seeing the dark

midgut gland through the orange pigment of the animal.

If you notice a sea-slug crawling on the sea bottom, you will see that it leaves a trail of mucous (slime). If another sea-slug comes across this trail, it will, quite often, follow it. After all, especially in the breeding season, it means another nudibranch to mate with. But, if the first nudibranch has been under some stress, e.g. having met a predator, it leaves behind some sort of a chemical message in its mucous trail so that other nudibranchs coming across the trail, instead of following it, will crawl away from it in the opposite direction.

Here is where the nudibranch's rhinophores come into play. They can sense chemical cues from the environment, which enables them to test water



*Glaucus* swims upside down at the sea surface

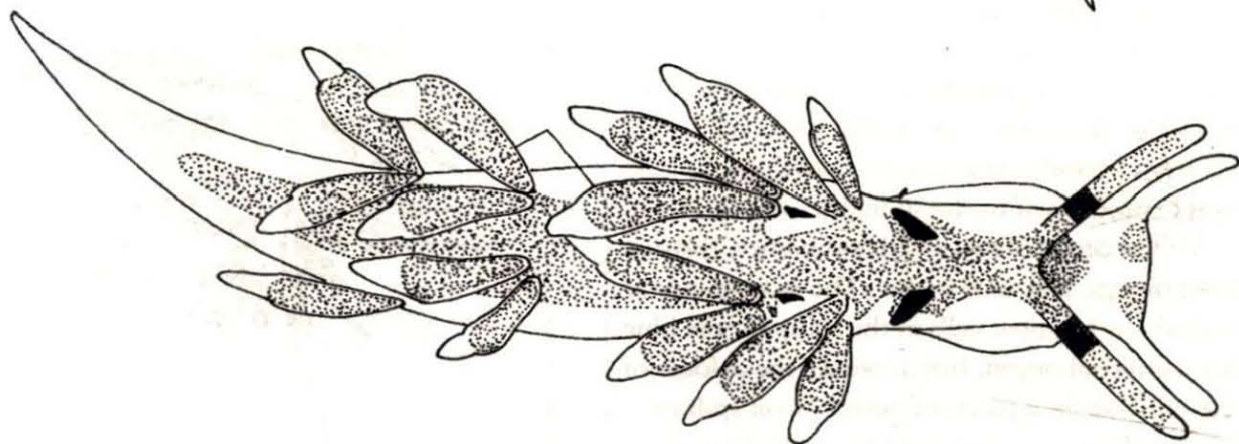
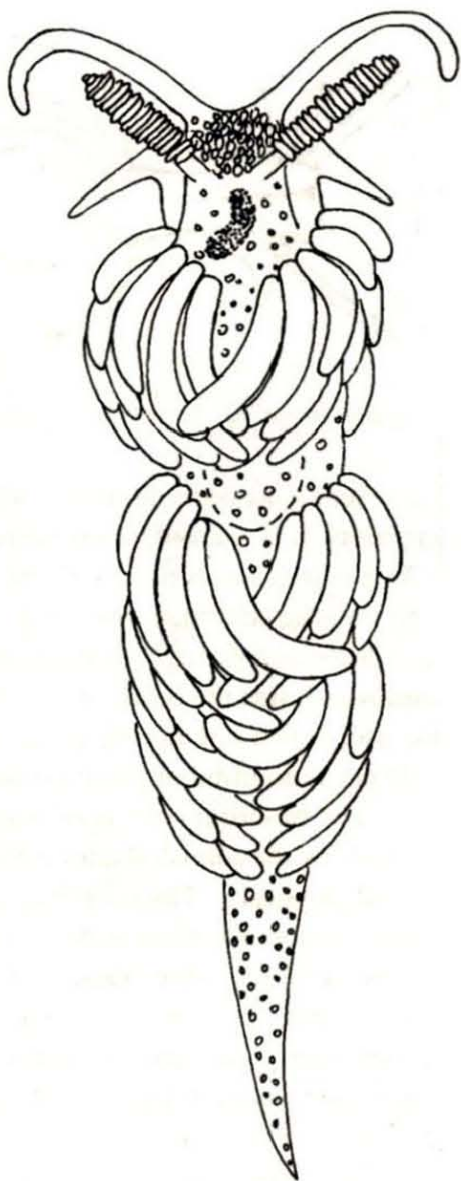


quality, the presence of suitable food or another nudibranch in the vicinity.

Most aeolids creep on the sea bottom, but *Glaucus* (and also the bushy-backed or dendronotacean nudibranchs *Phylliroe* and *Cephalopyge*) swim in the open sea. *Glaucus* swims upside down by means of its foot, but on the lower surface of the sea-surface. In most animals the back is darker than the belly, but as *Glaucus* is usually upside down, its back is silvery with a pearly iridescence, while the belly (which faces the sky) is dark blue.

When *Glaucus*, while drifting on the sea surface, comes across a blue dollar (*Porpita*) or by-the-wind-sailor (*Velella*), it attacks it, feeding on its tissues and passing the prey's non-discharged stinging cells into the three lateral lobes, fringed with long conical processes. To add insult to injury, it lays its eggs on the skeleton of its prey.

The origin of the scientific name of *Glaucus*, given by Forster, is confusing. *Glaucus* means "silvery" in Greek. But it is also the name of a Greek god. In Greek mythology, Glaucos was a fisherman. He once kept his fish catch on a heap of seaweeds. The dead fishes came alive and started leaping back into the sea. The fisherman realised that the seaweed had some magical property that restored the fish's life, so he also ate the seaweed. From that day, he could swim in the sea like a fish and remain underwater for hours. One day, he must have overdone it, for he failed to come out of the sea. The Greeks promptly elevated him to the rank of a god, and he was expected to visit the coasts and islands of Greece once every year, accompanied by sea monsters, coming in invisible and varied forms! 🐞



In *Facelina*, (above) the simple cerata are arranged in a transverse row.  
In *Catriona*, (below) the branches of the midgut are simple, and each bears a transverse row of cerata.



## DENOTIFICATION ALERT

A significant number of protected areas (PAs) in India are proposed to be partially or fully denotified/deleted, as a part of the ongoing settlement of people's rights. This is due to a variety of reasons, including:

1. The mistaken belief that people cannot be allowed to stay inside PAs, though there is a provision under the Wildlife Act to permit the continuation of rights in sanctuaries.
2. For industrial/commercial activities.

There are cases where the governments have denotified areas for commercial purposes, using people's rights as an excuse. In a majority of PAs, denotification/deletion is only going to encourage the entry of powerful commercial

forces, which will benefit neither wildlife nor local communities.

Specific information on which PAs in each state are affected is urgently needed to get a complete national picture. This information can then be used for a national campaign, lobbying and legal action, to halt this dangerous trend. Please send any information you have, or further queries to:

Ashish Kothari/Pankaj Sekhsaria  
Kalpavriksh,

Apt. 5 Shree Dutta Krupa,  
908 Deccan Gymkhana, Pune 411 004

Tel. and Fax: 020 565 4239

Email: ashish@nda.vsnl.net.in

## Editor's Choice

## The Natural Jewel

Deep in the forest,  
On a gray rock,  
Sits so still a creature,  
Like its in shock.

The gleaming morning sun,  
Setting its colours aflame,  
Against the rock red and gold,  
But in moments not the same...

It is a lizard, a young one,  
With colours so merry and gay,  
Blue, yellow, green and gold  
Bright, against the stone of gray.

How bright it shines,  
This elusive soul,  
Until, an intruder walks along,  
And so scared is she that,  
In a moment's time, she hits it,  
And it's gone.

The colours fade,  
From the body laid,  
Were red and gold so gay,

Now, deep in the forest,  
Upon a rock,  
Lies a creature, dead and gray.

*Alisha Shah*  
13 years





# THE YOUNG NATURALIST

Compiled by V. Shubhalaxmi and Vibhuti Dedhia

## Spider

Are spiders insects? No. Spiders have eight legs, whereas insects have six. They belong to Class Arachnida and are cousins of the scorpions.

## Queries

*How many joints does each leg have?* Each leg has 6 joints, that is a total of 48 joints. So that spiders can wave their legs in almost any direction.

*Do all spiders weave webs?* Webs are generally built by sedentary spiders such as the orb-weavers, line web-weavers, nest weavers and water spiders. Hunting and jumping spiders are roving spiders which do not weave webs.

*How do spiders kill their prey?* With their fangs. Most fangs work like pincers, but fangs point downwards, through which the paralysing venom is injected into the prey.

*Which Indian spiders have hairy legs?* The common catleg spiders are one of the hairiest spiders in India. They live in a mud tunnel lined with silk and feed on large insects and lizards.

*Do spiders get caught in their own webs?* Spiders weave sticky webs to catch their prey. However, the spider's feet are coated with oil preventing it from getting trapped.

*Can spiders kill people?* The Brazilian wandering spider's poison can kill a person. A bite of the black widow or a funnel-web spider can also be deadly. Fortunately, in India, there are no spiders that can kill humans.

*How do jumping spiders hunt?* They pounce on their prey like a cat. They often spin a safety rope of silk thread, anchored to the ground before they leap.

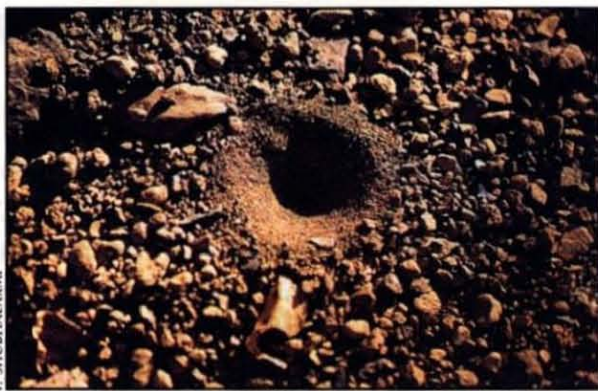
*Are spiders found underwater?* Only the water spider lives in water. It spins a bell-shaped web below the water surface and fills it with bubbles of air which it breathes.

*Do spiders secrete silk from their mouth?* No, silk is secreted from the spinnerets organs present in the abdomen with many minute openings for secretion of silk.



## A Hole in the Sand

In winter, if one walks through the dry forest trail, one certainly finds pits of fine soil in the ground. These funnel-shaped holes are traps laid by the voracious larvae of the antlion. The larva makes a trap by going round in circles, moving backwards, its body making a furrow in the soil. With its broad head it throws out soil finally making a round pit, with sloping sides. It buries itself at the bottom, lies motionless, head at the bottom of the pit. Should an unwary insect walk over the edge of the pit and fall into it, the sloping sides impede its exit. It throws more soil at the insect by jerking its broad head. Soon the insect is seized with the curved mandibles, sucked and the dried shell thrown out. Ants form a large part of its diet, as they are incessantly running over the soil, and the pits are apparently adapted to catch them, hence the name. When disturbed, the antlion plays dead and resembles a sand particle. It is further camouflaged by its body colour. The adult looks like a dragonfly, except for its long antennae. It feeds on larger insects. An unpleasant odour diffuses from the body when it is handled. 🐛



A trap (above) made by the larva (below) of an antlion



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4. The first lion Safari in India was started in  
(a) Maharashtra (b) Andhra Pradesh  
(c) Gujarat (d) Karnataka

### 1st Prize

A bumping, swirling Whitewater rafting trip on the Ganges.

### 2nd Prize

Camping at Full Timepass, Igatpuri

### 3rd Prize

India Outdoors Nature Club Life Membership

\* Inclusive of meals and overnight stay; not including arrangements to reach the appointment destination.

Send your answers to:

Editors, Hornbill,

C/o Bombay Natural History Society

Winners of the Adventure Holidays Contest

(Hornbill July-Sept., 1999)

1st Prize : Mr. Anil Kamdar

2nd Prize: Ms Sonal Merchant

3rd Prize : Mr. Ritesh Baria



### Save nature

My name is Akanksha Oberoi. I am studying in the fifth standard in Hiranandani Foundation School, Mumbai. I am 9 yrs old. A few days ago, my G.K. teacher asked me whether I knew about BNHS. I said yes, because my father is a member of the BNHS and I read the *Hornbill* magazine sometimes.

In school, I am learning about the natural wealth of India, and about the conservation of natural resources in Geography and E.V.S. (Science). So I decided to write a poem to you.

Akanksha Oberoi  
Mumbai, Maharashtra

### Nature

Nature is our surrounding,  
Nature gives us life,  
Rivers, mountains, trees and plants,  
Are all a part of this.

We use them unwisely,  
We lose them therefore,  
Taking care of our natural resources,  
Will cause no trouble to us.

Use them wisely,  
Use them safely,  
We are living,  
Because of nature.

So, save nature,  
Save! Save! Save!  
Save! nature,  
Save our surroundings.



### Young naturalists

I was very pleased to receive my first copy of *Hornbill*, having just become a life member of the BNHS. The issue was attractive and informative, and even my teenage children enjoyed reading it through, as they are both fascinated by our world and its creatures.

I was also very happy to see the drawing and message from Rhea Tibrewala, in *The Young Naturalist*, *Hornbill*, 1999(1). She happens to be my student at the J.B. Petit High School. I remember displaying a bulletin board of similar posters done by the children on saving various species, all with wonderful art work and catchy messages from the 'animals'.

Zareen A. Shah  
Mumbai, Maharashtra

### Sword-fish strikes again

The write-up by Captain F.A. Smith about a sword-fish striking a ship (*Hornbill*, 1999(1), *Miscellanea*) reminds me of a similar experience which brings out the propensity of bill-fishes (marlins, spear-fishes) and broadbills (sword-fishes) to attack boats and ships in a fit of rage.

A 43 tonne wooden cargo-boat 'Manik Prasad', sailing from Mangalore to Dahanu in 1972, sprang a leak off Karwar on being attacked by a spear-fish and had to jettison its cargo of 30,000 roof tiles to keep it from sinking. When they claimed insurance for this loss, it was thought to be a cock-and-bull story. I was called as an expert to vouch for the authenticity of their story. The 40 cm long snout of the spear-fish which had stuck in the boat's hull and broken off, is now in our Society's collection, and an account of this appeared in the Society's *Journal*.

In the British Museum, there is such a snout which penetrated 55 cm into a wooden boat, while the College of Surgeons, London has a piece of wood from a hull 34 cm thick in which a spear-fish snout of over 30 cm long has been impaled.

B.F. Chhapgar  
Mumbai, Maharashtra



### 'Water Bath' for little green bee-eaters

On October 15, 1999, I went birdwatching to the 'Sagardighi' fishery centre. This man-made pisciculture centre consists of different types of fish tanks for various species. The centre is under the control of the West Bengal Fishery Department and well protected. The area is about 1.50 sq. km, situated 4 km southwards of Malda town (English Bazar). Although it is a man-made waterbody, it holds 2000-3000 waterbirds, most of which are waterfowl, during winter seasons. There is also a colony of little cormorants (*Phalacrocorax niger*).

At about 6.15 am when I was roaming in the area, I noticed a group of 12 little green bee-eaters (*Merops orientalis*) engaged in "bathing" in the water, instead of catching insects. They were diving from an electric pole, and then flying back to the same perch. They seemed to be enjoying bathing in the water.

It is known that little green bee-eaters prefer to 'dust' bath at dusk before roosting. It is noteworthy that they prefer to waterbath sometimes, especially in the morning.

Arunayan Sharma  
Malda, West Bengal

### Unusual feeding by a frog

Here is an eyewitness report. I don't know whether it is usual or unusual, but for the first time I have seen a frog swallowing a *Pheretima*. This unusual feeding habit in a frog was observed on July 2, 1999, at 7 pm. I saw half of the *Pheretima*, nearly 6 cm exposed and a moderate sized frog (*Bufo melanostictus*) trying its best to eat the rest. The earthworm was about 30-45 cm long and 0.75-1 cm wide. The frog could not move at all because of its heavy meal, and after a few minutes, ate the entire worm.

Bimal Pradhan  
Assam

### The beleaguered tiger

I have received a current issue of your quarterly magazine *Hornbill*. It contained a good article on the Sikkim region and about the sick vultures of Bharatpur. The photographs in both articles were very beautiful.

The viewpoint by your Honorary Secretary was short and appropriately worded. I was sorry to know the state of the tiger. The accompanying photograph by Gertrud and Helmut Denzau has a good composition, and looks very attractive. The strain on the face of the tiger is clearly visible as it looks back, as if to say, how long am I to stay this way?

M.S. Joshi  
Mumbai, Maharashtra

### Small yet important

With so much attention being given to conserving large wetlands and Ramsar sites, the significance of smaller wetlands and village ponds is often ignored. These small waterbodies are crucial for the local hydrological cycle, besides being repositories of biological diversity. In this regard, I enjoyed reading the article on Seelaj village pond (*Hornbill*, June 1999) by Abdul Jamil Urfi and N. Jethwa. Similar ponds, with populations of breeding waterbirds are found in several parts of the country and are a very important conservation resource. The authors have pointed out rightly that getting the local communities involved in the conservation of village ponds is vital.

Amir Ahmad  
Aligarh, Uttar Pradesh



# Bactrian Camels in India?

Lt. Gen. Baljit Singh

YES, they are! I know of one single population of thirty to fifty bactrian camels in India. My wife and I encountered them most unexpectedly in September 1979, in the Nubra Valley, in the Karakoram range of Ladakh.

The surprise of surprises was when we encountered the first solitary male bactrian, as he stood stolidly frozen on a low sand dune in the vast, flat expanse at the mouth of the Nubra Valley. The dark brown, thick and shaggy coat of hair and twin humps were on splendid display. He looked gigantic! My instinctive reaction was to clutch tight my wife's anorak to restrain her as she is given to "talk to", and when possible pet, any animal from an elephant to an eel she comes across. This bactrian had a haughty look of disdainful indifference. Many years later, when we chanced to read an article by Arthur Weigall in "Marvels and Mysteries of our Animal Kingdom", we laughed as the opening paragraph brought back the memories of our first and only encounter with a bactrian:

"All camels are discontented. They hate being camels, but they

would hate to be anything else, because in their opinion, all



other living creatures are beneath contempt, especially human beings. The expression upon their faces when they pass you on the road indicates that they regard you as a bad smell".

My wife and I were on a six week grand trek of Ladakh. We walked along the Pangong Tso from end to end, watching the frequent changes in the hues of its waters with the passage of the sun. We walked up to flocks upon flocks of Turkestan pigeons

sunning among the debris of long extinct glaciers. Made unsuccessful photo-overtures for close-ups of black-necked cranes at the Chushul and Hanle marshes. Tried in vain to close the gap with the ever playful kayangs. Then we crossed the Polo Kanakr La to descend into the vast Tsokr amphitheatre for two days and nights of sheer joy, listening to the honking of

hundreds of bar-headed geese. At this juncture, we got lost! Several days behind schedule when we trudged to Leh and met the errant army driver, he had that look in his eyes "didn't I tell you that officers lose map-reading skills with each promotion!" May be he was right. For, who can resist the eerie whistles of a Himalayan marmot colony. Watch them pop out erect three quarters of their body above their burrows and



then vanish just as impulsively with a mischievous squeal suggesting "Catch me if you can!" We must have followed them round and round over the ground which, with their interminable burrows, resembled a giant sieve.

On the last leg of our trek, we entered the valley of the Shyok river. We set out to walk up its tributary, the Nubra river,

.....

*"All camels are discontented. They hate being camels, but they would hate to be anything else, because in their opinion all other living creatures are beneath contempt, especially human beings.*

*The expression upon their faces when they pass you on the road indicates that they regard you as a bad smell".*

.....

to its source at the Sasar La and then beyond to Daulat Beg Oldie at the foot of the Karakoram Pass. One evening, a bit tired and ruck-sack shoulder straps digging into our flesh, we were jolted out of our lassitude. Totally unanticipated, there at about twenty paces stood one solitary, magnificent specimen of the bactrian camel. Never before had we seen one in flesh and blood. The adrenaline of excitement sent heart beats

pounding. I photographed a few frames before the bactrian trotted away. It was an experience of a life time in the literal sense.

How many? How, where from and when did they come to Ladakh? This was our staple conversation with the locals of Nubra over the next few days. The tally of bactrians varied from thirty to fifty. That they had been in Nubra from as far back as local oral history could recall, there was no doubt. Maybe from the times of their great-great grandfathers at least. That would be more than seventy-five years ago. We did not come across more than six bactrians that were tethered and used for loads. And we were delighted to sight two foals with their domesticated parents. The rest of the bactrians roamed freely.

Back in Leh, we spoke to a member of the Moravian Mission established over a hundred years ago. This, coupled with flashbacks from our reading of Younghusband, John Keay OF MEN AND MOUNTAINS, Robert Shaw VISITS TO HIGH TARTARY and Seven Hiden's account of his explorations and crossing of the Takla Makan, the Western extremity of the Gobi desert, led us to believe that the bactrians perhaps first entered the Nubra Valley in 1890, or thereabouts. The Nubra Valley lies on the ancient trade route from Kashgarh to Leh. Bactrian camels must have been used by

some enterprising Central Asian merchants for carriage of man and merchandise. Having got them over the Karakoram Pass, 18,000 ft up in the stratosphere to the highest pass in the World, the bactrians were probably abandoned in the Nubra Valley. By accident or by design? How many and how often the bactrians plied on this route remains to be ascertained?

I estimated that about twenty bactrians were free-ranging in the total feral state for perhaps more than eighty years. Was not that tantamount to a return to the wild status? Whatever, here was one single population outside its only acclaimed home in Mongolia and the Gobi desert.

There is need to study them and preserve them. Of all the other endangered species in the World the bactrians in Nubra can be protected at almost little or no cost. To date, there is no record of their being hunted by the locals or sportsmen or killed by poachers. They were not in competition with the local livestock for grazing. The Valleys physical lie makes it an impregnable sanctuary. It is widest at its base, about four km in all. The Shyok river, unfordable, flows at its base. The other two sides of the Valley are two formidable ridges of the Karakoram which converge at the Sasar La, making the Valley a triangle. The Nubra river originates at the Sasar La and bisects the Valley almost in the



## To the Rescue of the Nilgiri Tahr

middle. In the lower reaches both the banks of the Nubra river are fringed by low sand dunes having a depth of about half a kilometre at the widest near its confluence with the Shyok. The Indian Army's presence in Siachen lends total security to the Nubra Valley. Altogether it is an ideal situation for a bactrian camel sanctuary in India, and making it an ex-situ line gene-bank for the only other surviving population of 700-800 bactrians in the World between Mongolia and the Gobi desert.

The Wild Camel Protection Foundation, in collaboration with the Chinese authorities, plans to create a Sanctuary in the Gobi desert. They must now be motivated for similar initiatives in the Nubra Valley as well. And who is better placed to translate this idea into reality, and at once, than the BNHS? Of course, a flight to Leh and a drive over Khardong La into the Nubra Valley, before the winter intervenes, to verify and validate my facts which date back to September 1979, is of immediate and utmost necessity.

Lastly, why all this fuss to preserve a species of camel, unknown to most and in a remote corner of India? Well, firstly as Mallory simply said of Everest "because it is there". But most importantly because of the bactrian camel's "Himalayan" ego and his un-put-downable self-esteem as revealed by Arthur Weigall! May they roam the Nubra Valley forever. 🌿



The Nilgiri Tahr Foundation has been launched in Kerala with the objective of studying, monitoring and conducting research on the highly endangered tahrs (mountain goats) of the Western Ghats.

Eravikulam National Park in Munnar, 110 km away from Cochin has the only viable population of tahr. Other areas have only fragmented populations.

It is estimated that there are around 2,000 tahr in the Western Ghats, a recent census says that 800 tahrs occupy Eravikulam National Park.

Apart from Eravikulam, there are small populations in the Ghats in Mukurti, Palni hills, Anaimalais, Parambikulam, Silent Valley, Periyar Tiger Reserve and Agasthyakoodam.

Mohan Alepath, President, of the Foundation, has served as Range Officer and Warden of Eravikulam. G. Shaheed, Secretary is an environment journalist and a former member of the Kerala Wildlife Board. He is Chief Reporter of Mathrubhumi, Cochin.

The immediate objectives of this non governmental Foundation are to make a data base including the mapping of the pockets in the Western Ghats and to conduct field trips to the different parts of the Ghats for visual count.

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# A final attempt to survive?



Kamal Das

The world famous Kakaijana Reserve Forest, Bongaigaon, is only 15 km from Bongaigaon town and about 195 km from Dispur, Assam. The 1720 ha land of the Reserve Forest has found new residents, the Schedule-I rare species, golden langur (*Presbytis geei*).

The langurs were discovered on November 5, 1995, by nine members of the Nature's Foster, a Bongaigaon based NGO, along with two forest guards of HaPachara beat office while conducting our first field trip. We spotted six adults with a newborn baby at a distance of

about 17 m on another slope and observed about twenty-five golden langurs, including some newborn, in five different groups on the same day. We also spotted the rhesus macaque (*Macaca mulatta*) on the western side of the hills. The golden langur population was earlier recorded from Manas and Chakrashila Wildlife Sanctuary, both of which are totally isolated from the Kakaijana Reserve Forest, which is on the hilly banks of River Aie. The golden langur locally known as *Boga Bandar*, *Sonali Bandor* in Assamese and *Rangol* in Garo.

Several experts later con-

firmed the new distribution sites of the golden langur at the Kakaijana Reserve Forest. The golden langur inhabits evergreen forests in small troops of about 9 animals, consisting of an adult male, one or more females and several subadults. Continued deforestation by the locals is taking its toll on the habitat of the golden langur. Nature's Foster and Aranya Suraksha Samiti, Bongaigaon district unit have come forward to create awareness among the locals so that the golden langur gets one more chance to survive. It may be a final attempt to survive before it becomes extinct. 🍌



## What do Sloth Bears like?



HANUMANTHA RAO

COMPILED BY: RACHEL REUBEN

What do sloth bears like? Not, apparently, the artificial dens constructed in Mudumalai National Park by the Tamil Nadu Forest Department (TNFD), in the hope of improving the habitat of this increasingly endangered species.

BNHS scientist N. Baskaran and his colleagues, in a year long collaborative study with TNFD, located 19 dens. Most were in excavated holes and under overhanging tree-roofs along banks of *nullas*. Rocky ground was the second preference. Dens were not used continuously — mainly in the rains and when cubbing. The dubious privilege of an encounter with an irate mother bear while monitoring dens was, fortunately, denied to the team.

The scientists estimated that their 120 sq. km study area supported a minimum of 20 bears, a healthy 1.7 bears per sq. km, which compares favourably with published studies elsewhere. One female and her cubs covered a home range of 19 sq. km, and a pair of subadult siblings separated from their mother 5.5 sq. km.

Sloth bears play an important role as dispersers of seeds. Fruit forms a major part of their diet, especially in the dry season. Important diet items identified from seeds include ber (*Zizyphus mauritiana*), pods of Indian laburnum (*Cassia fistula*) and figs. They also eat ants, termites, beetles and honeycombs. They compete for resources with minor forest produce gatherers and with wild elephants, which strip bark from fruit trees and destroy saplings. Fire and lopping of fruiting trees to feed working elephants also add to the problem. The TNFD has an ingenious method for saving *Ficus* saplings from fire and trampling: they plant them in hollows of other trees, high above the ground.

The sloth bears of Mudumalai are doing fine for now. Recommendations by the study team for specific habitat improvement included planting and preservation of fruiting trees. Natural den sites are plentiful here and are actually underutilized. This may not be so in other sanctuaries where it may be necessary to provide artificial dens. 🐾



## Status of the Whitebellied Sea Eagle on Ratnagiri coast

Members who do their birdwatching along coasts and off-shore islands will be familiar with the whitebellied sea eagle (*Haliaeetus leucogaster*), easily recognised by its white head and underparts and white wedge-shaped tail. It can be seen sitting on a rock or a tree overlooking the sea, or sailing along above the surf parallel to the shore. This magnificent fishing eagle is found on the west coast from around Mumbai southwards, and up the east coast to Bangladesh. It also occurs in the Andamans and Nicobars, Sri



Lanka and the Maldives. The whitebellied sea eagle is not an endangered species but it is listed as 'vulnerable' in the Red Data book. Loke Wan Tho photographed and studied its nesting behaviour in the fifties (JBNHS 50(3): 618-622, 618m 1952) but no systematic study seems to have been carried out since then.

The Sahyadri Nisarga Mitra, Chiplun, led by BNHS members Vishwas Katdare and Ram Mone, recently carried out a status survey of this species on the Ratnagiri coast, sponsored by the Sálím Ali Nature Conservation Fund (SANCF). They visited the 164 km coastal strip during the breeding season in two successive years. In 1996-1997 they located 58 nests, of which 43 were judged to be active, on the basis of adult birds sighted on the nest, nestlings or plentiful droppings below. In the next year (1997-1998) 62 nests were observed, of which 45 were active. Mango and casuarina trees were most often chosen for nesting, with peepal and banyan next in order of preference. The nest is an enormous untidy platform of twigs, sometimes 1.5 m across. The same nest is repaired, added to and used year after year. Some pairs may have more than one nest close to each other, which they use in different years. Of those nests for which information was available, about half had been built within five years or less, but about one fifth were said to be between 20 and 50 years old. The villagers are well acquainted with the bird, and generally tolerate it. But conflict often arises in October, when breeding starts, and it is also time to spray the mango trees with insecticide. Fearing attacks by breeding eagles, the villagers often destroy nests, sometimes with eggs or nestlings, before beginning to spray.

The baseline data which has been collected in this study will be very useful in assessing population trends for this spectacular bird in years to come. 🐦



## World's largest moth found in SGNP-Mumbai



V. SHUBHALAXMI

SOURCE: BNHS

The Atlas moth is the world's largest moth and is seen very rarely. It has a wingspan of nearly one foot and, unlike most moths that you see at night, it is extremely beautiful. V. Shubhalaxmi, Education Officer, BNHS, is currently doing her doctoral research on the Atlas moth and informs us about her find in the Sanjay Gandhi National Park (SGNP) at Borivli, Mumbai.

The moth belongs to the wild silk moth group. The females are larger than the males. The adult lifespan is about 12 days, when they do not feed. This is not for lack of availability of food, but because they do not have a digestive system. They survive on the energy stored up in their bodies when they were caterpillars. How do they find their soulmate? The females secrete a chemical attractant which the male can locate even a kilometer away. The males usually die after mating, while the females do so after laying around 200 eggs. The eggs hatch into caterpillars that feed on the leaves of the Queen's flower, custard apple and guava. The caterpillars pupate inside a cocoon which they weave by secreting silk between leaves. It emerges later to continue the life cycle. The moth is rare, however, it has been sighted from time to time by frequent visitors to the SGNP. 🐦





MOHANAN



Participants at the IBA workshop, Bharatpur

## Coming Together to Save Birds

The Bombay Natural History Society (BNHS) in collaboration with BirdLife International, and with funding from the Royal Society for the Protection of Birds (RSPB) have launched the Important Bird Areas (IBA) programme in India.

Habitat loss is one of the major causes for extinction of species. 76 species of birds are threatened with extinction and many more are

following suit. To save birds it is essential to save their habitats. The programme aims to identify, document and protect a network of sites that are critical for the long-term survival of wild birds.

Regional workshops are being conducted in which ornithologists, birdwatchers, forest officials and individuals involved in conservation from different states, work together to identify sites that might qualify as IBAs in India. Their combined expertise will help to save Indian birds from extinction.

Workshops are being organised with the help of local NGOs and Forest Departments. Workshops covering 15 Indian states and 2 Union Territories have been conducted in Jaipur, Calcutta, Bharatpur, Parambikulam, and Hyderabad. They will be conducted in Maharashtra and Assam in December 1999, and in the Andaman and Nicobar Islands in February 2000.

*For more information, please contact the IBA team at BNHS.*

ISAAC KHEMKA



Mr. Bhalachandra observing the postal stamps with the Hon. Treasurer and Hon. Secretary

## Wildlife Week Celebrated

The Bombay Natural History Society held a series of programmes to celebrate the National Wildlife Week, October 3-9. An exhibition of postal stamps depicting nature and wildlife was inaugurated by the Chief Post Master General, Mr. D.S. Bhalachandra, Maharashtra and Goa Circle, on October 4, at Hornbill House, among other programmes.

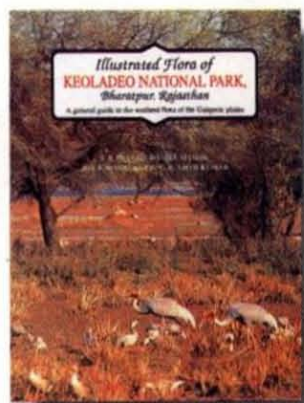
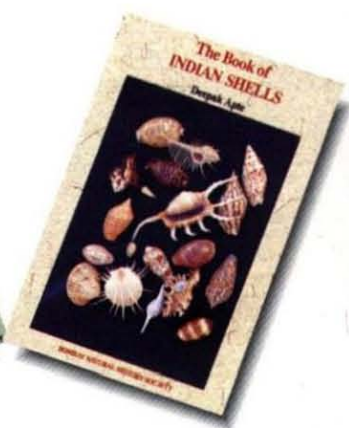
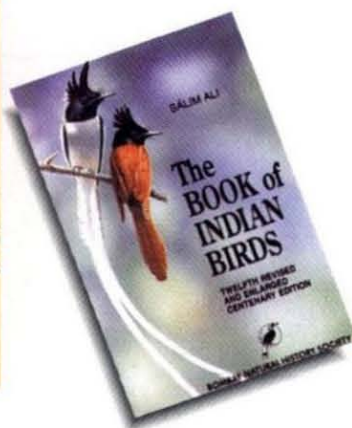
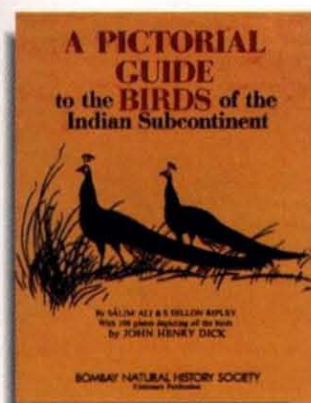
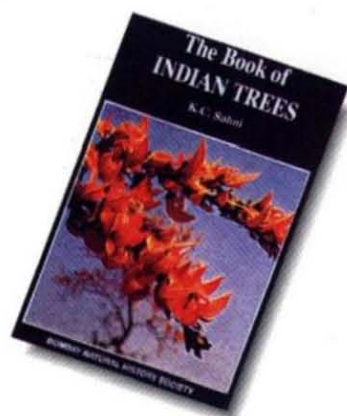
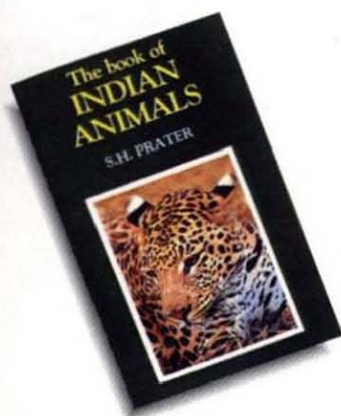
## Emmy Award-winning Film Screened

The 'snake man' of India, Mr. Romulus Whitaker was at Hornbill House on October 22, for a screening of his Emmy Award-winning film — King Cobra. He spoke about snakes and his experiences while filming

the king cobra, "...there are several kinds of snakes in India, but the king cobra is a superstar among snakes." A large, enthusiastic audience saw the 50 minute film, and later questioned myths and notions about this feared reptile.



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