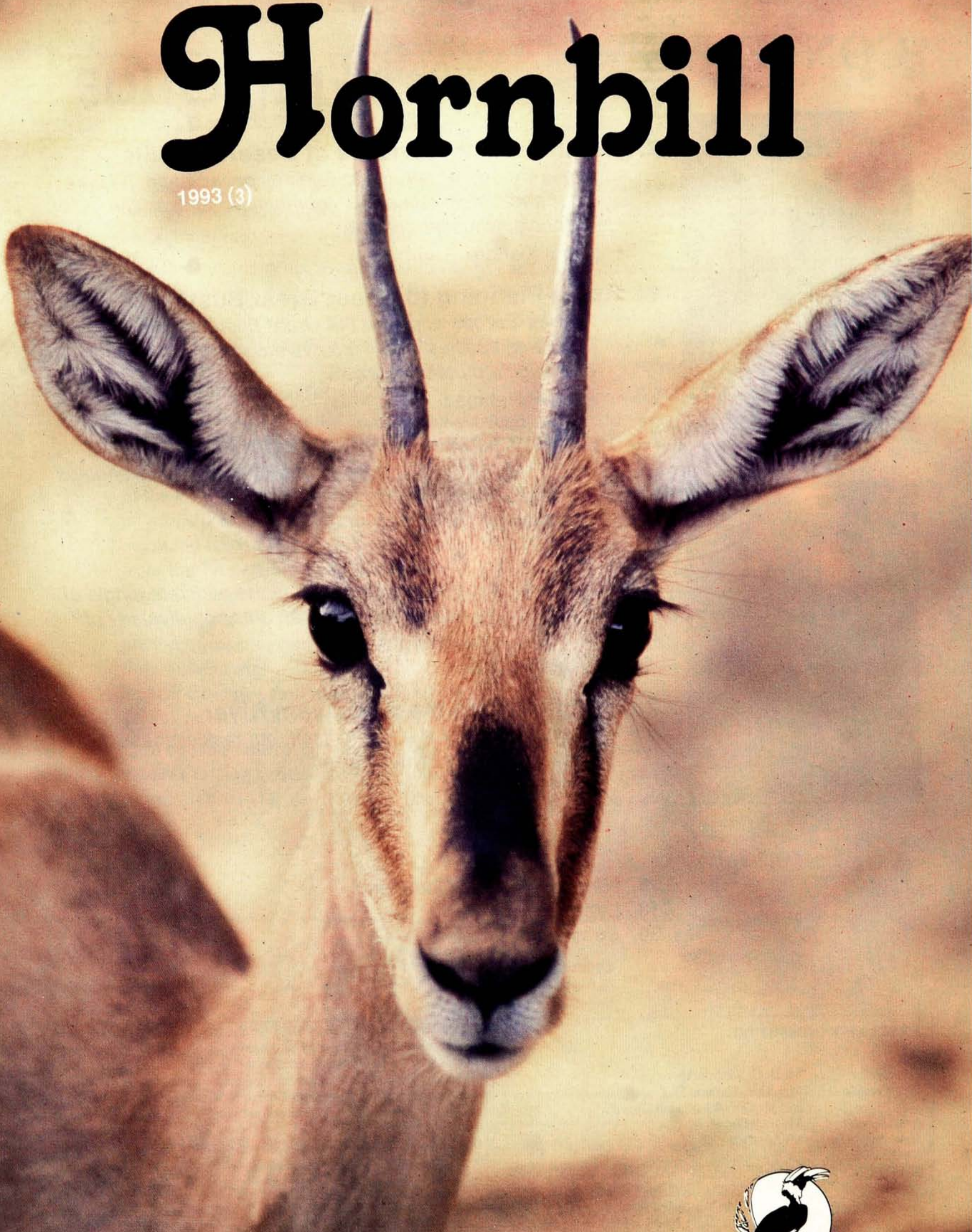


Hornbill

1993 (3)



BOMBAY NATURAL HISTORY SOCIETY



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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, 243421. Fax: 022-2837615.

EDITORIAL

The recent wave of denotification within protected areas such as Nalsarovar, Bhitarkanika and Melghat, in different parts of the country, has raised serious concern among naturalists and wildlife supporters.

After independence, many game reserves and forested areas (now around 500) were brought into the Protected Area (PA) network. Due to inadequate information on the local flora and fauna, some PAs excluded vital routes for wildlife movement or important habitats. In many cases, the boundaries of the PAs were based on administrative convenience, as well as local and political pressures, rather than the quality of the habitat for wildlife.

Recently, man-wildlife conflicts have become inevitable owing to encroachments into PAs for agriculture, grazing, habitation and commercial exploitation. The mechanism used by PA managers to avoid such conflicts is usually to denotify portions of the PAs, under the pretext of exclusion of villages or lands needed for developmental projects or industries, which are being located either in backward areas or so-called degraded lands. There has been adequate justification for reducing non-viable areas from the PA network only in very few cases, like Rehekuri in Maharashtra. Conservationists and wildlife experts in the country are really worried about the flood gates being opened by political intervention to denotify more and more PAs under the pretext of local development. In reality, locals who have co-existed with nature from time immemorial will not benefit from the short term gains of the so-called development and over-exploitation of natural resources, which are neither sustainable nor just. This is reflected in the recent protests by locals against denotification of PAs.

It becomes the responsibility of all nature lovers to act as watchdogs and contribute towards raising general awareness against the denotification of protected areas in the country. Otherwise it will be too late. Doomsday is not far away.

JAY SAMANT

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VISHNOIS: THE SAVIOURS OF DESERT WILDLIFE

By Jugal Kishor Tiwari

The desert may truly be called the promised land where nature seems to have retreated in a last ditch effort against the onslaught of civilization. Interestingly, in this unequal battle, nature has found an ally in man himself. Vishnois (vish = twenty, nois = nine), the people of the twenty-nine commandments, have allied themselves with nature. The impact of the unrelenting march of civilization has been lessened to a very great extent in areas dominated by Vishnois. These areas, comprising the arid and semi-arid districts of Barmer, Bikaner, Churu, Ganganagar, Jaisalmer, Jalore, Jhunjhunu, Jodhpur, Nagaur Pali, Sikar, and Sirohi, have harboured innumerable forms of flora and fauna since time immemorial.

Today, even in these areas, a grim scenario confronts the wild denizens of the desert, as they struggle for the already-scarce resources of a harsh environment along with a rapidly growing human population. This struggle would have been grimmer, were it not for the benevolent attitude of the Vishnois towards all forms of life. Even wood for household furniture is harvested from dead trees, rather than from live specimens.

The Vishnois believe in absolute non-violence and are strictly vegetarian. Their life revolves round the twenty-nine principles enunciated by their God Shri Jambhoji. To a Vishnoi, each blackbuck represents one of his ancestors and is, therefore, an object of veneration. The aggressive protection afforded by this community of farmers is reflected in the large numbers of blackbuck and other wildlife in Vishnoi-dominated areas. The twenty-nine principles of the Vishnois are enshrined in their religious book 'Sabda vani Jambh sagar' authored by Swami Gyan Prakashji. Of the twenty-nine principles, four principles, the 14th, 15th, 16th and 17th, deal specifically with the protection of wildlife and natural resources.

Vishnoi-ke-Dhani is a typical Vishnoi village of about one hundred families. Located about five kilometres east of my home town, Luni Junction, on the main Jodhpur-Delhi line, I have been in constant touch with the people of this village and the nearby Vishnoi hamlets over the last fifteen years. Their

way of life and the principles that they follow have left a deep impression on my outlook as a conservationist.

The Vishnois are basically a farming community, growing mainly cumin and bajra. They rear the famous Sanchori cow. They are tall, dark and tough looking. The men wear dhotis, kurtas and have a very distinctive head gear. Their women wear the normal saris and blouses. The Vishnoi houses are built using locally available materials like mud, grass and dung. They worship Shri Jambhoji who is considered to be an avatar of Lord Vishnu. They are particular about their ablutions which are a must in the morning before anything is eaten. Interestingly, they are one of the few Hindu communities who practise burial instead of cremation of the dead.

Besides Rajasthan, the Vishnois are found in the neighbouring states of Haryana, Uttar Pradesh and Madhya Pradesh. In Rajasthan, they are mainly concentrated in Bikaner, Barmer, Bhinmal, Jodhpur, Nagaur and Raniwara, while in Madhya Pradesh they are mainly found around Indore, Harda, Hoshangabad and Ujjain. Their main pilgrimage centre is located at Samrathal Dhora in Nokha Tehsil, Barmer District, where they have their annual religious fair in mid-March.

Another place connected with Vishnoi folklore is Khezrli — a small village located about twenty-five kilometres from Jodhpur. There, about 260 years ago in 1730 A.D., the Vishnois showed that if the need arose, they could also die for their principles. Taking its name from the khezri tree *Prosopis cineraria*, Khezrli village was the scene of a macabre slaughter of 363 Vishnois as they non-violently resisted the cutting of wood from places nearby Khezrli by the soldiers of the Maharaja of the State. As the soldiers trooped in to cut trees, Amritabai, a Vishnoi woman, gave the clarion call to her compatriots and embraced a khezri tree as it was being chopped down. She cried out to her people, saying, "It is worthwhile sacrificing your heads if the tree is saved thereby." Unmindful of the axe blows of the tyrants, she clung to the tree and became a martyr in the cause of conservation. The gory massacre that

followed took the life of 362 other men, women and children. Such sacrifices in the cause of conservation are indeed unique. Vishnois are one of the few communities who display such zeal for affording protection to the natural wealth around them.

It is high time the Government recognised the Vishnoi's instinctive empathy for nature by recruiting them as wildlife guards or in various other positions within the Forest Department and allied services. Even the IUCN and the World Wide Fund for Nature should recognise the meritorious and altruistic services of the Vishnois in the cause of nature conservation by at least a well-deserved mention of their sustained efforts in this field.

About ten years ago, I had counted about three hundred blackbuck near Vishnoi-ke-Dhani. Though the over-abundance of the blackbuck was a headache for the Vishnois, even then they did not allow anybody to disturb or kill the antelopes for it is their view that each form of life has a share in their agricultural crops. After the animals take their share, whatever is left belongs to the farmer.

It is drought and famine which control the antelope and other wildlife populations. The

weak and ill die and many are driven by hunger and thirst to migrate locally, to places beyond the Vishnoi sphere of influence, where they fall prey to shikaris and other meat-eating communities. In spite of the extremely grim conditions during periods of drought, the Vishnois do their best to save the wildlife in their areas. "If the government were to come forward with some arrangement for water and fodder, our combined efforts would go a long way towards salvaging the situation during conditions of scarcity," says the Vishnoi Haringa Ram, with the conviction of a person who feels the pain of a starving animal.

The wanton destruction of wildlife that has taken place is the result of our callousness. By being silent spectators we have condoned the mass slaughter of many species to such an extent that, in some cases, the germplasm has been lost for ever. In this selfish age when neighbouring states compete with each other to utilize scarce resources like river water, it is indeed heartening to see the Vishnois sharing their crops with the wildlife in their neighbourhood, even under harsh desert conditions. Indeed, while we pay lip service to wildlife conservation, it is the poor and simple folk of the countryside who lead the way.



A Vishnoi family keeping alive their unique tradition



A typical Vishnoi dwelling

VISHNOI PRINCIPLES EMPHASISING NATURAL RESOURCE PROTECTION

Four of the twenty-nine Vishnoi principles deal specifically with the protection of wildlife and natural resources

Principle 14: *Jeeva daya rakho man mahi
jeehi rakho sabh agh meetjahi.*

Be kind to animals; this will solve all your problems.

Principle 15: *Vriksha aadi sthavar sabh sristhi
Brahm roop jan sabh smasthi.*

Trees are a form of Lord Brahma, the creator of this universe.

Principle 16: *Enme nanà jeeva viraje
chetan roop sakal vapu chaje.*

In this natural world several creatures survive; let them live.

Principle 17: *Beena vichare nahi enhe harna
kaat chhat nahi ghar main dharna.*

Without thinking, do not cut and store natural wealth in your houses.

Jugal Kishor Tiwari is a field biologist at the BNHS. He has worked in the Bird Migration Project and is presently working in the Society's Grassland Project at Banni, Rajasthan.

Whitebellied Sea Eagle



Loke Wan Tho

We are grateful to Messrs A. K. Motiwala Jewellers, Bandra, Bombay, and a well-wisher for sponsoring this page

NEWS NOTES COMMENTS



HIGHLIGHTS OF EARTH SUMMIT'S AGENDA 21

(Courtesy *Forest News* Vol. VI: No. 2, 1992)

At the Earth Summit held at Rio de Janeiro in June 1992, leaders from all over the world made public commitments to conserve global biodiversity. Several agreements and conventions such as the Rio Declaration, the Biodiversity Convention, the Convention on Climate Change, the Statement on Forest Principles and Agenda 21 were signed to strengthen international efforts towards conservation action.

The following are highlights of Agenda 21, signed during the Earth Summit, held in Rio de Janeiro from June 3 to 14.

Introduction

Agenda 21 is a comprehensive programme of action It provides a blueprint for action in all areas relating to the sustainable development of the planet from now until the 21st century

International cooperation to accelerate sustainable development in developing countries

Section I, Chapter 2

Policies that affect trade and the flow of global finances have a major impact on sustainable development. Developing countries are weighed down with external indebtedness, inadequate development finance, barriers to Northern markets and falling prices for the commodities which dominate many economies in terms of production, employment and export earnings

Protection and promotion of human health

Section I, Chapter 6

Environmental control measures are indispensable, especially in the area of water supply and sanitation, in order to curb many communicable diseases including cholera, malaria, schistosomiasis and diarrheal diseases

... For municipal and local governments overwhelmed by urban health problems, the global objective is to achieve, by the year 2000, a 10 to 40 percent improvement in health indicators for infant mortality, maternal mortality, percentage of low birth-weight newborns and specific indicators (e.g. tuberculosis as an indicator of crowded housing). The emphasis should be on strengthening "enabling strategies" that emphasize "doing with" rather than "doing for". Programs should promote community involvement, public education and collaboration among various agencies

Policymaking for sustainable development

Section I, Chapter 8

... Integrating environmental issues into policymaking will require more extensive information-gathering and improved ways for assessing environmental risks and benefits. Management techniques should be flexible enough to accommodate multiple goals and changing needs. Planning and management responsibilities should be delegated to the lowest levels of public authority, and indigenous methods of managing natural resources should be considered....

Protecting the atmosphere: making the energy transition

Section II, Chapter 9

... Most fuels used today to produce energy for human consumption harm the atmosphere and are not sustainable. Improvements can be made in energy efficiency (and environmental cleanliness) while making a transition to environmentally sound energy system (ESES) and new and renewable sources of energy that respect the atmosphere and environment as a whole

Conservation and rational use of forests ...

To support and develop the multiple ecological, economic, social and cultural roles and functions of trees, forests and forest lands, Agenda 21 calls on countries to strengthen their forest-related institutions and improve their technical and professional skills through measures such as:

... Conducting research on forests, including gathering data on forest cover, areas suitable for afforestation and ecological values.

Halting the spread of deserts

Section II, Chapter 12

... For regions prone to desertification and drought, better information and monitoring systems are needed to identify priority areas for action. Governments should establish and/or strengthen national systems, which should also measure the economic and social consequences of desertification.

... Regional programs such as the Permanent Inter-State Committee on Drought Control in the Sahel (CILSS) and international organisations such as the Sahara and Sahel Observatory should be supported

Protecting mountain ecosystems

Section II, Chapter 13

... Countries should create incentives for local people to engage in conservation practices; diversify mountain economies; establish natural reserves in species-rich areas; and identify areas most vulnerable to erosion, floods, landslides, earthquakes, avalanches and other natural hazards, and to air pollution from industrial and urban areas.

Meeting agricultural needs without destroying the land

Section II, Chapter 14

... Agricultural policies need to be reviewed in relation to economic factors such as foreign trade, subsidies and taxes. Open trade and the removal of trade barriers should be encouraged. Demographic trends and population movements need to be taken into account.

... Laws, regulations and incentives that lead to food security and the transfer of appropriate farm technologies (such as food storage and distribution) need to be formulated

Safeguarding the ocean's resources

Section II, Chapter 17

... Controlling pollution from shipping will require improved monitoring and compliance with shipping protocols and agreements. Stricter international regulations to reduce the risk of accidents are also needed.

... Ocean spill response centers and a global database on marine pollution should be set up. Port facilities are needed to collect rubbish, oil and chemical residues from ships

Protecting and managing freshwater resources

Section II, Chapter 18

... There needs to be more and better waste water treatment facilities. Mandatory environmental impact assessments on major development projects affecting water supplies should be carried out; pesticides and nitrate fertilisers should be used rationally; purified waste water should be used in agriculture, industry, aquaculture and other sectors; and there should be increased development and use of biotechnology

Agenda 21 calls for a supply of 40 liters of safe water per person per day; the establishment of discharge standards for municipal and industrial effluent; and the environmentally sound collection, recycling, or disposal of 75 percent of the solid waste from urban areas

Safe use of toxic chemicals

Section II, Chapter 19

Improved risk assessment is essential. Communities and individuals have the right to know when they are dealing with toxic chemicals. Approximately 100,000 chemical substances are used in commerce but only a small percentage have been assessed, including commonly used pesticides.

Some 500 chemicals should be assessed by the year 2000 and the information shared internationally. Research leading to improved methods for assessing risk be undertaken ...

Seeking solutions to solid waste problems

Section II, Chapter 21

By the end of this century, 2 billion people will be without basic sanitation. Some 5.2 million — including 4 million children — die each year from waste-related diseases. Half of the urban population in developing countries has no service for solid waste disposal. Globally, the amount of municipal waste produced is expected to double by the end of the century and double again before the year 2025.

... This will require countries to establish targets for waste reduction that will influence patterns, production and consumption.

Management of radioactive wastes

Section II, Chapter 22

The growing volume of radioactive wastes poses serious environmental and health dangers. Reducing this will require national management that minimizes the production of nuclear wastes and provides for their safe processing, transportation and disposal.

Governments (should) promote policies and practical measures to limit the generation of radioactive wastes and provide for safety at every stage of their use

Action for women: sustainable and equitable development

Section III, Chapter 24

Consideration should be given to issuing, by

the year 2000, a strategy for eliminating constitutional, legal, administrative, cultural, behavioral, social and economic obstacles to women's full participation in sustainable development and public life.

By 1995, there should be national, regional and international mechanisms to assess the impact of development and environment programs on women and ensure that they participate and benefit

Social partners for sustainable development

Section III, Chapters 25-32

... By 2000, more than 50 percent of each country's youth should have access to secondary education or equivalent vocational training. Education should incorporate environmental awareness and sustainable development concepts. Human rights abuses against the young, particularly females, should be fought

Indigenous people generally have an historical relationship with their lands and a holistic traditional scientific knowledge of natural resources and the environment. Their participation in national and international sustainable development decisions should be strengthened.

Nongovernmental organizations play a vital role in participatory democracy and possess diverse expertise in fields important to sustainable development. The United Nations system and Governments should strengthen mechanisms to involve nongovernmental organizations in decision making.

Workers and trade unions have valuable experience in industrial change and an essential stake in protecting the working environment. To allow their full participation in sustainable development, Agenda 21 calls on Governments and employers to respect workers' rights to freedom of association and organization, and to promote the active participation of workers and unions in industrial strategies and policies

Business and industry are crucial to economic development and can play a major role in reducing resource use and environmental damage. Governments, business and industry (including transna-

tional corporations) should promote more efficient and cleaner production, including increased reuse and recycling of residues and reduction of the quantity of waste discharged.

A mix of economic incentives and legal measures should be used to promote these goals. Accounting and pricing mechanisms should incorporate environmental costs.

Cleaner production will result in savings for enterprises

Financial resources and mechanisms

Section IV, Chapter 33

... Developed countries reaffirm their commitments to reach the accepted United Nations target of 0.7 percent of GNP for ODA and, to the extent that they have not yet achieved that target, agree to augment their aid programs in order to reach that target as soon as possible and to ensure a prompt and effective implementation of Agenda 21. Some countries agree or have agreed to reach the target by the year 2000.

Funding for Agenda 21 and other outcomes of the Conference should be provided in a way which maximizes the availability of new and additional resources and which uses all available funding sources and mechanisms such as:

International development Association (IDA) ...

Regional and subregional development banks ...

The Global Environment Facility, managed jointly by the World Bank, UNDP and UNEP

The secretariat of the Conference has estimated the average annual costs (1993-2000) of implementing in developing countries the activities in Agenda 21 to be over \$600 billion, including about \$125 billion on grant or concessional terms from the international community. These are indicative and order of magnitude estimates only, and have not been reviewed by Governments.

Strengthening institutions for sustainable development

Section IV, Chapter 38

... The Economic and Social Council would assist the General Assembly in Conference followup and implementation of Agenda 21 by directing systemwide coordination through ... a high-level Commission on Sustainable Development, to act as the main subsidiary organ of ... ECOSOC, to integrate environment and development issues.

INFORMATION WANTED

FIGS AND FIG WASPS

Dr Martine Hossaert of Centre d'Ecologie Fonctionnelle et Evolutive, CNRS, France and the University of Miami, Florida, is studying the pollination biology of tropical figs. She requires information on the wasps that pollinate *Ficus altissima*.

If you can collect the fruit of *F. altissima* with emerging wasps, please send the fruit, wasps, and a few leaves to Dr Renee M. Borges, Bombay Natural History Society, Hornbill House, Shahid Bhagat Singh Road, Bombay 400 023. You can send the fruit, wasps and leaves dried carefully between absorbent paper. Please include the exact date and place of collection.

INFORMATION WANTED

FALCO PELEGRINOIDES/PEREGRINUS BABYLONICUS

Dieter Schmidl is preparing a book on the Red-naped Shahin, also called the Russett-headed Falcon or Desert Peregrine Falcon *Falco peregrinus babylonicus* or *Falco pelegrinoides babylonicus*.

This illustrated book will contain a) an historical overview of this falcon, including falconry; b) a manual chapter similar to that of CRAMP's *Birds of the Western Palaearctic*, but including the whole distribution area and all available information; c) a chapter on captive propagation as it is carried out by members of the Red-naped Shahin Breeding Project (RSBP) as this falcon is an endangered species in the wild; and finally d) a bibliography of the Red-naped Shahin.

To bring this book up to the highest standards concerning knowledge about this falcon, Dieter Schmidl urgently needs the **help of Indian ornithologists**.

Please send the author any information you have on: a) literature mentioning this falcon, e.g. from handbooks, checklists, expedition reports, b) published or unpublished manuscripts with observations of your own, e.g. breeding records, c) addresses of institutions or persons engaged in the study of this falcon with regard to museum skin collections (data on skins will be very useful), field observations, falconry, captive breeding or any other type of research.

Every piece of information will be acknowledged and the sender will be informed about the progress of the book, at least when it is to be published. *Please send your information to* Dieter Schmidl, Max-Planck Institut, D-82319 Seewiesen, Germany. Tel: (8157)- 29268 Fax: (8157) - 29209.

BOOK REVIEW

JUNGLE AND BACKYARD

M. KRISHNAN

OXFORD UNIVERSITY PRESS

Price Rs. 100

A generation of naturalists had cut their teeth on the writings of M. Krishnan, the doyen among Indian natural history writers. This small and varied collection of elegant essays on facets of life and habits of Indian wildlife should raise nostalgic memories. Krishnan, whether describing a tusker taking a mudbath or the insidious inroads that have been made into the Indian wilderness by the lantana, writes natural history based on personal observations. Krishnan's integrity is reflected in these essays. He wrote of what he saw, without frills, and with a wry sense of humour. How does one tame a hunting cheetah? A pastime now mercifully a matter of history as the cheetah is extinct in India and its prey, the blackbuck, severely endangered. Krishnan reports that you catch it as an adult and break its spirit; its wildness. Perhaps all domestication, whether of an elephant or of a falcon, follows the same principle. The dog apparently gave up thousands of generations ago. Krishnan's acute powers of observation are well served by his writing, whether describing the manner in which a cat goes over a wall or a stand-off between a mongoose and a bandicoot. Unfortunately, for those it would most benefit, the student community, the book is steeply priced — or perhaps the reviewer suffers from the illusion that even in these days of inflation, one hundred rupees is a high price!

J C Daniel

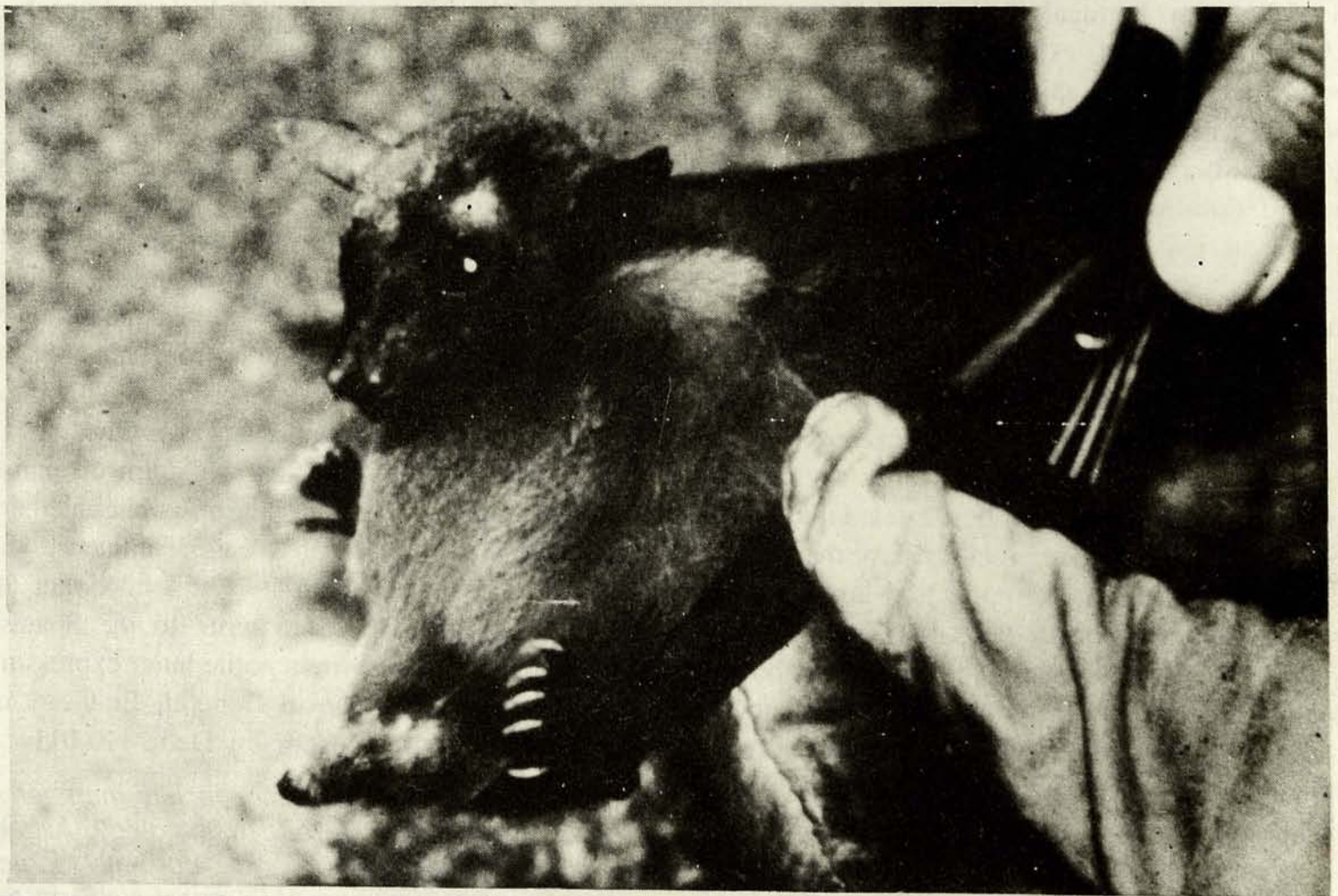
REDISCOVERY OF SALIM ALI'S FRUIT BAT

The Bombay Natural History Society and Harrison Zoological Museum, U.K., are jointly working on a project on Indian mammals. This largely involves revisiting areas surveyed during the monumental Mammal Survey of India, Burma and Ceylon (1911-1923) which was conducted by the BNHS. The re-survey project will provide valuable information on changes in species and habitat composition after nearly eight decades.

During a trip to the High Wavy mountains in Tamil Nadu in April 1993, a project team consisting of Manoj Muni (BNHS) and Nikky Thomas (Harrison Zoological Museum) rediscovered Salim Ali's fruit bat *Latidens salimalii*.

The only other time anyone else had laid eyes on this creature was in 1948, when A.F. Hutton collected a single specimen, also from the High Wavy Mountains, and brought it to the BNHS. Rare as the species was, Hutton mistook it for another, fairly common species, *Cynopterus sphinx*. The error was corrected only in 1972, when Kitti Thonglongya realised that this was a species hitherto unknown to science, and named it *Latidens salimalii*, after India's eminent ornithologist, the late Dr Salim Ali. This bat is listed in the Guinness Book of World Records (1993) as one of the world's three rarest bats.

Any rare species is difficult to study, bats even more so because they are small, swift and usually nocturnal. Absolutely nothing is known about *Latidens salimalii*, but the BNHS plans to undertake a long-term study on this species.



Salim Ali's fruit bat *Latidens salimalii*

SPAIN PLANNING TO SHOOT GREAT BUSTARD

Asad R. Rahmani

Except in the Iberian Peninsula, all over Europe and Asia the Great Bustard *Otis tarda* is a dying species. It became extinct in the United Kingdom in 1838 and shortly afterwards from France. Attempts to reintroduce it in the United Kingdom in the early 1970s were unsuccessful. Like most bustards, the Great Bustard lives in grasslands and steppes — the habitat most easily converted into cropland. Despite strict protection in many countries, the Great Bustard everywhere is declining. For example, numbers of bustards reported in 1980 ranged from 16 in Poland, about 30 in Yugoslavia to nearly 300 in Romania. The species went extinct in Germany recently. A few thousand Great Bustards still survive only in the former USSR, Spain, Portugal, Turkey and Hungary. The world population is estimated to be about 14,000, with Spain and Portugal having more than half of the world's Great Bustards. This is mainly due to the availability of bustard habitat in these two countries where traditional agricultural practices are still prevalent.

Like many Mediterranean countries, Spain does not have a good animal protection record. A country where thirty thousand bulls are ritually slaughtered every year for "entertainment", and where the head of a helplessly hanging bird is severed with one blow as a sign of valour and manly strength, the plight of wildlife could not be expected to be better. Spain, Greece and Italy probably have the most lax anti-cruelty and wildlife protection laws. Incidentally, Spain was one of the last countries to ban shooting of Great Bustards in 1976. Now, bowing to the hunting lobby, the Director of the Agency for the Environment of the Government of Extremadura Province has proposed to shoot 30 adult male Great Bustards every year.

The reasons given are that bustard numbers have increased (totally wrong according to Spanish scientists working on this species), they damage

crops (again unsubstantiated), and the third reason which takes the cake is that shooting to eliminate old males would be good because these "old males get the ownership of a flock and degenerate it". Actually, these so-called "old males" are the most successful individuals and are at their prime breeding age. They do not degenerate a flock; instead eliminating them would degenerate a population. In the highly competitive mating system of the Great Bustard, only the most successful males get a chance to establish territories and to display to attract hens. As any stock breeder can tell, mating should occur between healthy and dominant individuals. Through social interactions, physical fights and behavioural adjustments, a hierarchy is established in a wild bustard flock and the best individuals contribute to maintain a good gene pool. Bustards certainly do not need the help of 'sport' hunters to improve their genetic stock!

Dr Sebastian J. Hidalgo of the University of Extremadura, and an expert on the Great Bustard, has sent a passionate plea to bustard experts of the world to convince the Extremadura Government to rescind the plan to start shooting Great Bustards. In a country which regularly receives petitions from animal lovers and humanists — sometimes signed by half a million people as happened during the recent Olympics in Barcelona — to stop the macabre form of animal torture masquerading in the name of "public entertainment", it is unlikely that any outside influence will stop bustard shooting, but it is still important for members of the BNHS to write to the Spanish Government. Please write a polite letter expressing your views to the Consul General, Embassy of Spain, 12 Prithviraj Road, New Delhi 110 011.

Asad R. Rahmani is a senior faculty member at the Centre for Wildlife and Ornithology, Aligarh Muslim University (AMU), and is currently leading a joint project between AMU and BNHS on the ecology of Indian grasslands.



Sebastian J Hidalgo

A male Great Bustard



PHOTO: SUDHIR SAPRE

A typical "startle display" of a praying mantis, in which the wings are opened suddenly, revealing prominent eye-spots to scare away predators.

Letters

Sir,

Granites have always been a favourite of mine, since I first stepped barefoot into the temples of Tamil Nadu. A feeling of strength, dependability, warmth, and a sort of life seems to emanate from this stone. Granites are not confined to temples. They find a place in daily life in terms of housing, grinding stones, water tanks, and where would the kilometres of roads and railway tracks be without good old granite? In recent years, hi-tech polishing machines that polish these igneous rocks to a sheen and beauty far surpassing that of marble, have converted these "lowly" rocks into items used to build or decorate five-star hotels, posh buildings, luxurious kitchens and bathrooms. In addition, there is a huge demand for granite from foreign countries, especially from the Japanese, who are reported to use them mainly for tombstones.

Left alone, rock formations can be a delight to behold. Rocks of all sizes and shapes, piled up on each other by none other than the master sculptor — nature, surpass the beauty of any temple, church or mosque. These formations have taken millions of years to take shape, as the saying "as old as the hills" appropriately goes. However, with the demands of the ever-increasing human population and the fact that polished granite is generally more costly than marble, there is now a "granite boom" — the second black gold rush. Granite is being feverishly extracted from hills and subterranean deposits at a relentless pace.

Newspapers regularly print tenders inserted by granite entrepreneurs calling for lease of lands capable of yielding "good quality blocks of black galaxy, red, green and white granite". Poor villagers, who once owned worthless land, are making money by leasing out their lands to granite extractors. And after the stones are carted off, the farmer is none the worse, for he has levelled and rockless land, fit for cultivation.

It is agreed that India gets the much needed foreign exchange, the poor get work, and some

get rich. But should progress be at the cost of a total loss of aesthetic sense? It should be remembered that unlike forests and wildlife, which have or could possibly have success stories of restoration, the same is not true for the hills. What is lost is lost forever. Will there be a day when children see hills only in the pictures of their textbooks and sing —

"Oh where, oh where, have the hills gone,
Oh where, oh where, have they gone,
With their peaks so loft and the valleys so deep,
Oh where, oh where, have they gone?"

Ranjit Manakadan

Rollapadu

Sir,

You must have read the recent newspaper reports of the "mysteriously dying flamingoes in the Rann"! Actually it is partly good and interesting news for us, in that the birds have started breeding in good numbers in a new location in the Great Rann of Kutch. This is almost in the extreme western end. Soon after the monsoon rains last year, the birds had collected in the traditional 'Flamingo City' area, but owing to the water drying up fast there, they shifted westwards. The army authorities first informed me about their collecting in the new location in February. From this, I could roughly calculate that nesting activities started some time in December/January and the first brood was successfully raised. It is the second brood and the young of some late-breeding pairs (?) which suffered from both the drying up of the area and the ingress of the high tidal waters in May/June. This increased the brine content in that part of the Rann that is joined by both the Kori and Sir Creeks. Thus the young (at least those that I saw) that appeared to be from about two to four months old, started walking away eastwards till they either got bogged down in mud or reached the hard-baked surface and salt-encrusted areas where they died of exhaus-

tion and starvation. My own rough estimate of such birds, in brownish-grey or grey immature plumage, which perished, is 1000. Some of these may have been affected by some toxic substance which could have been swept in with the tidal waters or in the water that is being regularly pumped out in that area of the Rann by the Pakistani authorities of Sind. The Forest Department has sent the stomach contents of a couple of such dead birds for analysis. So, let us wait for the chemical reports to come in.

As we know, by itself, the phenomenon so dramatically reported by the media is not new in the breeding cycle of the Phoenicopteridae. Cases of young perishing en masse are known both in our country and elsewhere.

I shall be grateful if you would kindly let me know whether there are any reports of the occurrence of the Brown Shrike in recent years in Gujarat.

M. K. Himmatsinhji
Bhuj, Gujarat

Sir,

A few years ago, while proceeding towards Malvan for the Birdwatchers Conference, when our bus stopped in a village, I watched a crow carry a small fish, place it on the ground, cover it with a piece of cloth and place a stick above it. After taking these precautions of concealing the fish, the crow flew away, probably to get another one. This is when another silent spectator to this intelligent display, another equally intelligent crow, landed from its treetop watchpost, picked up the stick, moved the cloth and flew off with the fish. Unfortunately the conductor decided to break my sequence of observations and our bus moved on. I wanted to observe the events when the first intelligent crow came back.

Anirudh Chaoji
Pune

Sir,

One Sunday evening, towards the end of March 1992, I was taking a walk along the picnic spot at Powai Lake in Bombay with my family.

Around 6 p.m. I spotted a Whitebellied Sea Eagle *Haliaeetus leucogaster* flying away about 100 metres from us. The eagle had apparently spotted something of interest on the opposite shore since it was flying straight towards that area. I lost sight of the bird, however, due to poor light. Yet I kept looking in the same direction and soon noticed the bird fluttering on the shore, unable to fly off since its legs were entangled in something along the shoreline. Before I could even start moving towards the bird, two boys rushed out from the bushes on the opposite bank where they were hiding, ran towards the eagle, captured it and retreated into the shelter of the forest. It was only then that I realised that I had just witnessed an incident of eagle poaching probably with the use of a baited trap.

I started running towards the opposite shore but was promptly stopped by the municipal guard who said that the area was not open to the general public! Maybe the poachers form part of a special public and hence were allowed to be on that side! I hurriedly explained the incident to him and managed to continue but was too late in reaching the area. The boys had disappeared over the adjoining hill.

It is very unlikely that the eagle was captured for the purpose of eating. It would most certainly be sold to an illegal animal trader. It may land up at Crawford Market for sale or might be smuggled out of the country to the Middle East.

Many questions come to mind after witnessing such an incident. How often does this sort of poaching go on? What is the success rate? Which other birds are trapped similarly? The Brahminy Kite? The Osprey? The Harrier? On my return, I asked the guard if this sort of incident had been noted before. The answer was the standard escapist one that all this was the responsibility of the Forest Department and not of the Bombay Municipal Corporation!

Though Powai lake is not within the Borivli National Park as far as human boundaries are concerned, for wildlife it is all part of their hunting and feeding grounds. BNHS members who have been visiting Vihar Lake would recollect seeing these magnificent birds hunting from the island in the lake. Was this one of the same pair?

The Whitebellied Sea Eagle is listed in Schedule I of the Wildlife Protection Act and is by no means a common bird in this area. Any such additional pressure over a period of time will prove disastrous for the species. It is regrettable that so magnificent a bird should meet such a sorry end. Whose duty is it to prevent such an activity? We also hope that this note will make our members aware that even this type of poaching activity is being carried out along the boundaries of the Borivli National Park.

Noshirwan Sethna
with
N P Behramfram
Bombay

Sir,

The note on 'The Peacock' in Folklore — Hornbill 1993(2) — is perfectly correct in saying that the peacock is the *vahana* of Subramanya (Kartikeya, any number of aliases). In Tamil Nadu, the main home of Subramanya, where the god is most cherished and which holds all his most important shrines, 'Mayilvahanan' (he whose *vahana* is the peacock) is not an uncommon name for a man. But in the statement, "Kartikeya, the son of Saraswati, the Goddess of Learning", the note is sadly in error. Kartikeya is the son of Parvati whose consort is Siva. Saraswati is the goddess of learning all right, but her consort is Brahma and her son Narada.

M Krishnan
Madras

Sir,

I must congratulate you on the ever-improving character of "Hornbill". There is so much of general and conservation interest, and it is so well produced that I find myself wanting to pass it on to all my old ex-Assam friends.

With best wishes for the future.

T Norman
Dorset

Sir,

Apropos the article "Ganda Bawal" in Hornbill 1993(2), I fully agree with the author with regard to the invasion of the "Mad Acacia" in India. In the far south of the country, especially the central and eastern districts of Andhra Pradesh and Tamil Nadu, *Prosopis juliflora*, the other species of "Mad Acacia" has invaded beyond expectation and extermination. However, the firewood requirements of the poor in the rural areas and even in the cities are being mainly met with by this species, despite its poisonous thorns and noxious smoke. The charcoal made out of this species has an attractive market in Bombay. Lorry loads are being sent from Tamil Nadu and Andhra Pradesh.

Ecologically, the species is a good indicator or, one may even say, the best indicator of decreasing subsoil moisture, and it does not tolerate water stagnation. Due to repeated years of drought, most of the tank beds in Tamil Nadu which are dry for more than eight months have been encroached upon by this species. It is very pathetic that the already shrunken mangrove forests of the Cauvery Delta and Point Calimere Sanctuary have been invaded by this species which indirectly denotes the degradation, nay, desertification of these "ecologically fragile" areas of Tamil Nadu.

The most pathetic incident of the ill-fated, innocent raptors described in the article reveals that the spread of this species in bird sanctuaries and in wetlands used by birds for breeding is not conducive to the safety of the birds. The intrusion of *Prosopis juliflora* and the displacement of indigenous nest hosts such as *Acacia nilotica* and *Barringtonia acutangula* may cause thousands of migratory winter visitors to abandon wetlands infested by this dreaded species. The attendant loss of rich organic manure to the dependant agricultural lands will be colossal.

S. Bala Kathiresan, IFS (Retd.)
Madurai

INSTRUCTIONS TO AUTHORS

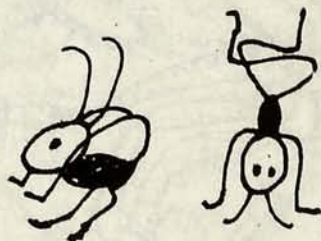
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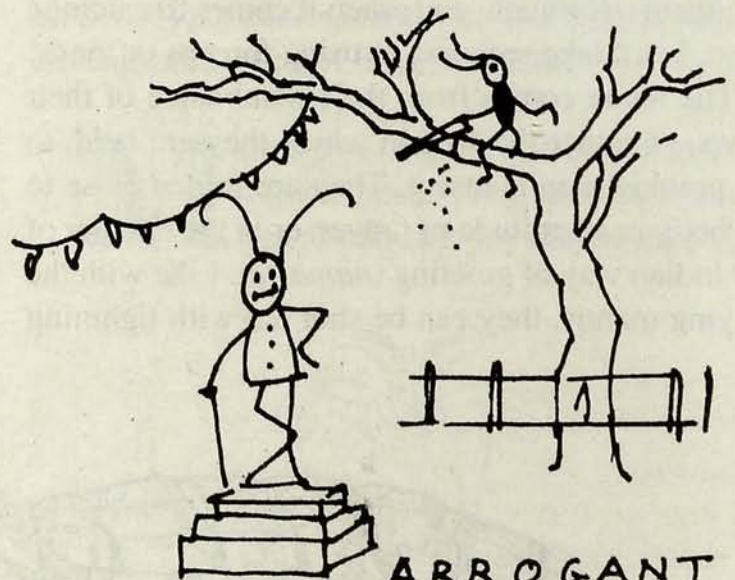
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PENITANT



PLIANT



ARROGANT

LITA GARGALY

SEASHORE LORE

14 — Mean and Horrible

Beefsea



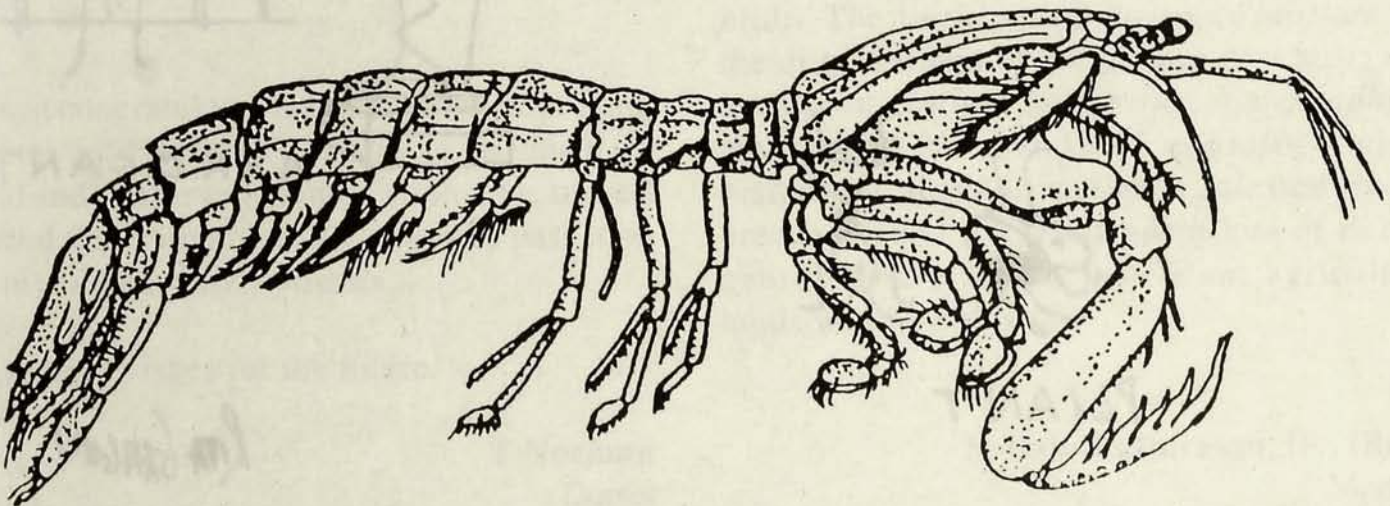
..... or under rocks their food
In jointed armour wait

If you ask me which animal in the sea I would least like to handle, I shall not have to think twice; it is the mantis shrimp. My work on crabs fetched me my master's degree, so it is but natural that I have a soft corner for crabs. Now, large rock crabs (also called stone crabs or mangrove crabs — *Scylla serrata* to scientists) can have claws as thick as one's wrist which can crush or break a finger with ease, yet I handle them with impunity, though also with respect. But, though mantis shrimps got me my doctorate, I would not say that I like them overmuch, and when it comes to catching them, I still take recourse to using forceps or tongs.

The name comes from the resemblance of their claws, or rather the way in which they are held, to the praying mantis insect. They are folded close to the body in an attitude of prayer, or in the manner of our Indian way of greeting (*namaste*). Like with the praying mantis, they can be shot out with lightning

speed to catch prey. The body is short, with three pairs of weak walking legs. It continues into a long "tail" (actually abdomen), on the underside of which are the swimming paddles. Both are armed with sharp ridges and numerous spines which provide a strong deterrent to enemies. The abdomen can be curled under the body, and the strong claws are ever ready for action. If you try to hold a mantis shrimp by its tail, the head will curl under to snap at your fingers, and if you take care to hold it near its front end, the tail will curl under to jab you. Fishermen call them thumb splitters; if they are a bit careless when sorting the fish catch, a mantis shrimp's claws can inflict a nasty cut half an inch deep.

Fishermen have another reason to hate mantis shrimps. When the number of mantis shrimps in the trawl catch increases, that of prawns declines. Mantis shrimps are edible:

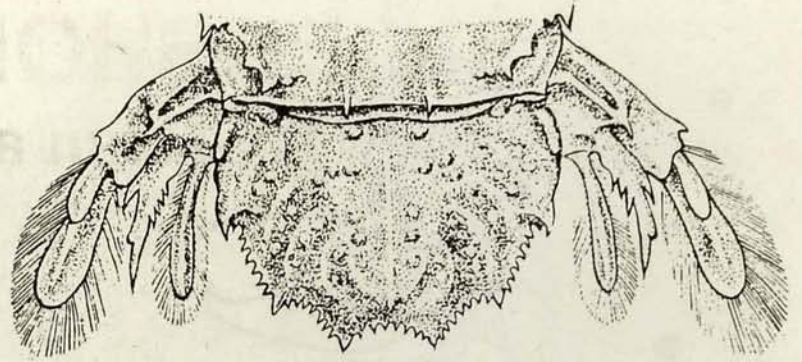


Mantis shrimp

their flesh is as delicious as a prawn's, but, while a prawn's thin shell can be easily peeled, that of a mantis shrimp is as thick as a lobster's. While they are a delicacy in south-east Asia, our fishermen throw them away.

Most mantis shrimps are about the length of one's finger, and they are abundant throughout the year in trawl catches. But, during the rainy season, two very large species of mantis shrimps appear in large numbers in the fishermen's nets. The larger of these two (*Harpisquilla raphidea*) was described by Kemp to be as much as 33.5 cm long. I have collected a specimen of this mantis shrimp exactly as large as Kemp's specimen. Had it been just a couple of millimetres longer, I would have broken the record for collecting the world's largest mantis shrimp. My specimen now reposes in the Prince of Wales Museum, Bombay.

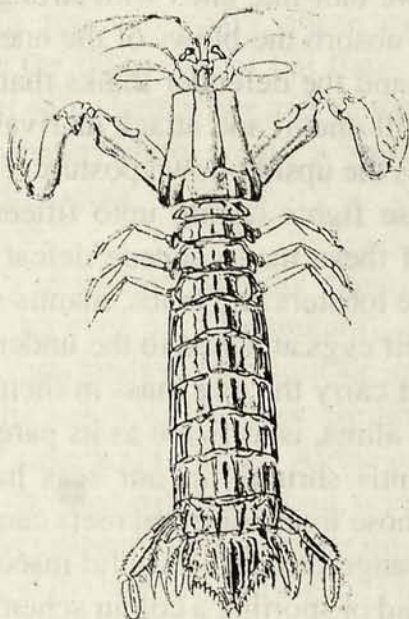
How is the price of an article determined? Any commerce student will tell you that it depends on the supply-and-demand principle. Hence, the rarer an item, the costlier it will be. When there were less than ten *gloriamaris* cone shells with collectors, the price of each was in thousands of dollars, but when divers found a reef where they were abundant, the price fell. Our white tigers are so expensive because there are less than a hundred of them in the world. So what should be the price of a mantis shrimp of which only one specimen is known? During my studies, I was fortunate to



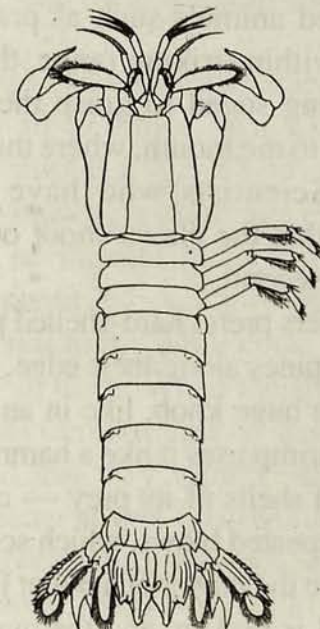
The tail of Clorida bombayensis from Bombay — one of the rarest mantis shrimps in the world. (Only one specimen is known so far)

discover two new species of mantis shrimps, which were not known earlier. Of one of them, I could collect only one specimen, and, so far, no more specimens of this species have been found. Dr Salim Ali's bat (*Latidens salimalii*) as a new species, was based on only one specimen, hence it gained an entry in the Guinness Book of World Records. But, this year, six more specimens of this bat were collected in South India by a BNHS scientist. So, though our Society's scientists were justifiably happy to have more specimens to study, the entry in the Guinness book is no longer valid. (Incidentally, I have not tried to sell my rarest of rare mantis shrimps to the highest bidder. As per zoological ethics, it is lodged with the Zoological Survey of India, Calcutta.)

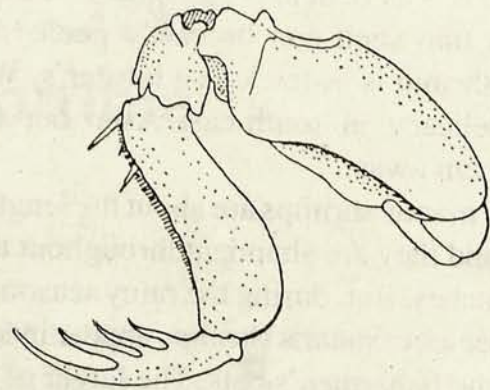
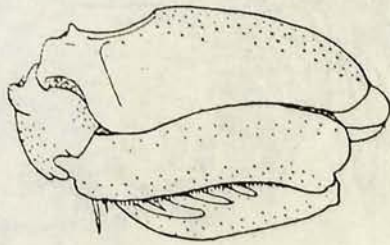
Mantis shrimps live in tropical and subtropical seas. They are not found in fresh water. Mostly burrowing in mud



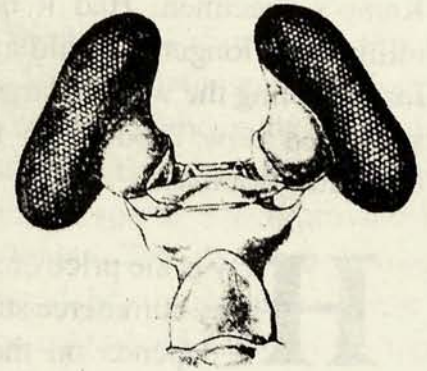
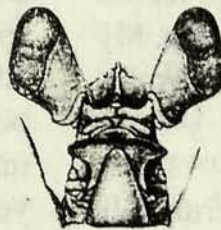
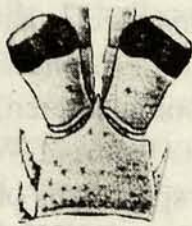
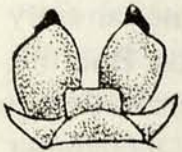
A "spearer" mantis shrimp



A "smasher" mantis shrimp



The business end of a mantis shrimp; (left) the claw (folded), and (right) shot out to grasp prey



The eyes of different mantis shrimps can be tiny or huge

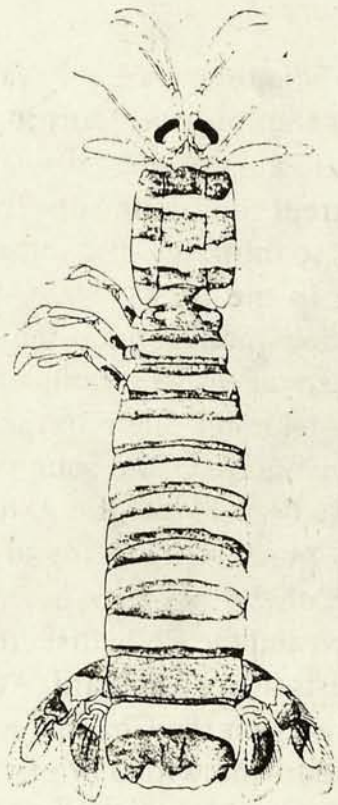
or sand, they can also excavate tunnels under rocks or in coral crevices. They can be grouped into two types, based on the manner of killing their prey. There are spearers, and there are smashers.

The spearers have their flattened claws armed with five to six hooked spines. A mantis shrimp will lie motionless at the mouth of its burrow, with folded arms in the typical attitude of prayer. When its prey — soft bodied animals such as prawns, worms or fish, comes within striking range, the arms are shot out at lightning speed to grasp the prey, and then brought back to the mouth, where the prey is chewed and eaten. Scientists who have filmed mantis shrimps say that the claws shoot out at a speed of 1000 cm per second.

The smashers prefer hard-shelled prey. Their claws do not have spines along their edge, but the elbow is swollen into a huge knob, like in an arthritis patient. The mantis shrimp uses it like a hammer to rain blows upon the hard shells of its prey — clams, snails and crabs. With repeated blows, which scientists have calculated to have the power of a bullet from a .22 calibre rifle, the shell is broken, and the mantis shrimp then leisurely feeds on the soft inner parts.

Mercy is not a quality to be expected from mantis shrimps. When establishing a territory, they will often fight to a finish, with the winner devouring the vanquished. Mantis shrimps are equally comfortable upside down on their backs. A mantis shrimp will often lie on its back and coil its abdomen to act as a shield to block the blows of its rival. The tails of smashers have ball-like ends with strong ridges on them. These absorb the blows of the enemy. A few such blows, and the defender thinks that enough is enough. It will uncoil and attack its rival which, in turn, assumes the upside-down posture. I have often watched these fights lasting upto fifteen minutes, when one of these may concede defeat and swim away. Unlike lobsters and crabs, mantis shrimps do not carry their eggs attached to the underside of the abdomen but carry the egg mass in their jaws. The larva, called alima, is as fierce as its parents.

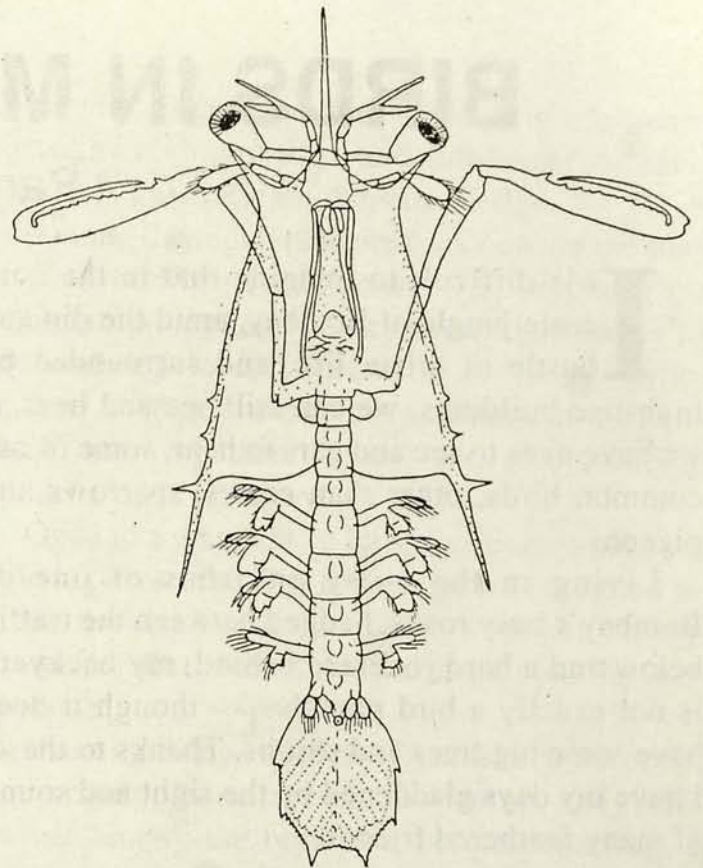
Most mantis shrimps in our seas have a drab colour, but those living on coral reefs can be colourful. Just as dangerous or distasteful insects or caterpillars, instead of sporting a colour scheme blending with the background (camouflage), display bright



Lysiosquilla maculata

and conspicuous "warning colouration", some mantis shrimps, too, flaunt a gaudy dress. One (*Lysiosquilla maculata*), for example, has black and yellow stripes, as in some bees or wasps. Some mantis shrimps, like the peacock mantis shrimp, have brightly coloured "eye spots" on the tail flaps. The creamy yellow tail has two cobalt blue spots edged with red. Normally, these eye spots are covered by the other pair of tail flaps, but, like the eye spots of some butterflies and moths, they can be suddenly displayed to create a startle effect on would-be predators.

As in insects, lobsters, prawns and crabs, the eyes are "compound", consisting of thousands of tiny units on an eyestalk. In some mantis shrimps, the eyes are tiny, while the eyestalk is huge and bulbous. At the other extreme are mantis shrimps with very long, transparent, bottle-green eyes placed at right angles on a rather short eyestalk. And the baleful, glaring eyes have an eerie, almost hypnotic, effect. Many a time, while diving



Alima larva of the mantis shrimp

underwater, I have come across a mantis shrimp at the entrance to its burrow, its body securely hidden inside, with only the head peeping out. Normally, I would have been curious and stopped to have a closer look, but the steady stare almost gave rise to a foreboding of evil.

The spine-tailed mantis shrimp (*Echinosquilla*) has its tail ending in a spiked ball, somewhat like the ones used by medieval warriors in battle. When threatened, they enter their burrow head first, blocking the entrance with the sea urchin-like spiky tail to deter the enemy.

Mantis shrimps can also cause scientists to make *faux pas* once in a while. An expert on the oceanographic ship R.I.M.S.S. *Investigator* once caught over 500 mantis shrimps. Since there were so many of them, he thought them to be a common species. So he preserved only two specimens, and handed over the rest to the ship's cook, who prepared 'Prawn' curry with them. When the ship returned to base, the scientist examined the two specimens and, to his horror, found that they were a new species. As zoological museums at that time would gladly have paid £ 1 for a specimen of the new species, named *Squilla investigatoris*, the prawn (!) curry proved to be one of the most expensive dishes served on the ship!

BIRDS IN MY BACKYARD

Panna Raiji

It is difficult to imagine that in the concrete jungle of Bombay, amid the din and bustle of urban life, and surrounded by high-rise buildings, we can still see and hear, if we have eyes to see and ears to hear, some of our common birds, other than crows, sparrows and pigeons.

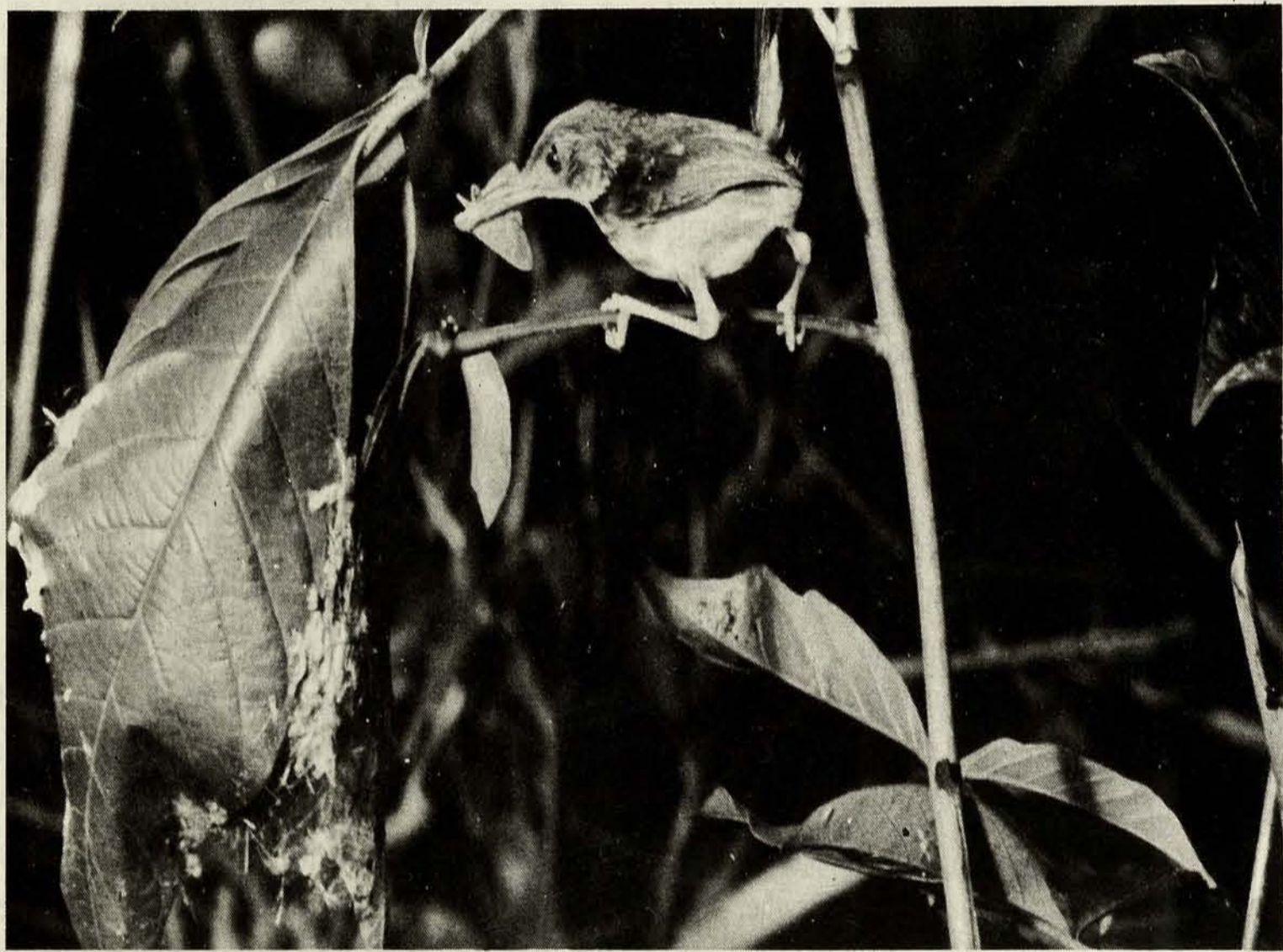
Living in the noisy environs of one of Bombay's busy roads, hedged between the traffic below and a hard rockface behind, my backyard is not exactly a bird paradise — though it does have some big trees and shrubs. Thanks to these, I have my days gladdened by the sight and sound of many feathered friends.

In the cool hours of an early winter morning, I hear the melodious trill of the Magpie Robin. If lucky, I see this dapper black and white bird on an exposed branch, heralding the day with his lovely song. Very soon the "raga" is taken up by the strident notes of the Whitebreasted Kingfisher. Tracing the call to its source, I see this resplendent blue and chocolate fellow per-

ched on the TV antenna, merrily calling out to its mate to come and enjoy the morning air — almost like a muezzin summoning the lazy laggard to awake and greet the rising sun. Every year this pair — I like to think it is the same pair — nests in a crevice in the rockface of my backyard. If his mate does not respond, he flies down to the pipal tree near his nest hole and calls again, or goes in to take her place in the nest.

The day advances ... And soon the bulbul calls from the leafy branches of the Ashoka trees. His joyous notes punctuate the sound of the traffic and the cries of the hawkers down below. Both the Redvented and the Redwhiskered Bubluls are welcome guests in my backyard. At times a perky pair even alights on the Champa tree on my terrace and honours me with a brief visit.

As the sun rises higher, the jaunty little Tailor Bird joins the morning medley. Unmindful of the sounds of humanity around, he chirps a loud and clear "towit-towit" as, his tail cocked, he restlessly hops from branch to branch in search of some



Don't be surprised to find the Tailor Bird nesting among your house plants



Pruning dead branches will deprive the Coppersmith of suitable nesting sites

unwary prey. Another all-time resident is the Crimsonbreasted Barbet. Emerging from his sheltered nook, the call of this grass-green bird with his crimson breast and brow is reminiscent of a busy copper-smith. Though not easily visible among the branches, his distinct and familiar "took-took" is repeated almost throughout the day as he searches for berries on the gular tree.

The barbet's calls are drowned by the koel making its presence felt by shrieking raucously to its mate. As the duet rises in crescendo, it reminds me that Bombay's brief cool season is almost over and the summer heat will soon descend on us. But ere the summer comes, a flash of gold zooms past my vision. It is the gorgeous Golden Oriole, paying a fleeting visit. Once a more frequent visitor, he used to thrill me with a lingering stay. Now he is a rare treat for sore eyes. He comes with his more sober mate and is gone even before you have realised that he is there on his annual visit. He seems to say, "I have not forgotten my old haunts even though you have destroyed my leafy abode. Maybe some day when you really miss me you will lure me back with a verdant bower."

Come monsoon and the stern face of the rocky backyard is draped in a mantle of green. It is now a "well" of greenery and nature responds to the

rains with a gay abandon. Now there are many butterflies, dragonflies and hordes of insects. Squirrels too frolic on the stony ledge.

Among the regulars to the backyard are the sunbirds. Now when the *Ixora* and the *Calliandra* are in bloom on my terrace they even come boldly to my doorstep to suck nectar from the flowering bushes. I silently watch them, flitting in the sunshine, enjoying their "drink" and giving cheery thanks as they fly away.

Once in a way, not so long ago, even a peahen, straying from the Raj Bhavan estate, deigned to grace my backyard sanctuary with her stately presence. But now she is conspicuous by her absence.

Evening brings a flock of parakeets. Screeching noisily from treetop to treetop, they rest awhile among the branches, before departing to roost in the nearby Kamala Nehru Park.

With a nip in the air comes the Fantailed Flycatcher. Though dressed in sober brown, he has one of the most melodious songs in the bird kingdom, as it is a way of nature that the plainest birds have the sweetest songs. Fanning out his tail, he hops among the branches looking for insects, now and then interrupting his search with a delightful trill.

As the seasons come and go, so do my winged friends. But an all-time resident is the Barn Owl. He has made a large hole in the rockside his permanent home. Here he and his mate raise their brood year after year. They have an excellent arrangement with the rock pigeons. During the day when the owls enjoy their siesta, the pigeons keep a respectful distance. But when dusk descends, the roles are reversed. The owls are out hunting. So the pigeons occupy the dormitory — an easy, friendly co-existence. Surely a fine example to us squabbling mortals!

Our feathered friends, how much joy and happiness they can give us, if only we will let them. All they ask for are some trees, a shady nook, an opportunity to live and let live. If only we will respect their needs. If only ... But that alas, is another story.

Panna Raiji has done her doctoral studies on Indian films and when working with the Films Division wrote the script for the biographical film on Dr Salim Ali.

ENCOUNTER ON THE ANAKAYAM RIVER

R. Kannan

During the eight months that have passed since I started the hornbill project in the Anaimalai hills, no fewer than two human beings have been killed by wild elephants in the Indira Gandhi Wildlife Sanctuary. How do these manslaughters occur? What type of elephants are likely to attack during a confrontation? What precautionary measures should one employ in avoiding them? These are some of the questions most on my mind. My interest here is probably more out of a protective instinct than a purely academic one. My own work here involves extensive leg-work in deep evergreen forests as I follow phenological patterns of over 600 forest trees in heavy elephant country. Needless to say, I steer clear of these great pachyderms and am constantly on 'red-alert' to avoid any encounter.

Most of my enquiries and two fact-finding trips to actual elephant-kill sites revealed the importance of exercising certain amount of care while walking about elephant country. Both the kills mentioned

above occurred apparently out of carelessness. It seems vitally important to keep all senses alert while at work in an elephant area. To drive this crucial point home to all naturalists, I relate below an episode in which we averted what could well have been a tragic manslaughter resulting out of sheer carelessness on the part of the people involved.

In mid-April 1992, I accompanied a group of Madras Naturalists Society members on a whirlwind survey of the Vazhachal division of Kerala for Great Hornbill breeding sites. We cruised down the ill-used and heavily forested Valparai-Sholayar-Chalakudy road, stopping here and there to look around and make enquiries. It was late in the evening when we came to a halt in the middle of a narrow bridge spanning the Anakayam river, a little past Sholayar. The river was fairly turbulent and in the deepening gloom, we could barely make out the huge rocks around which the waters gurgled past below us. The river was flanked on either side by thick evergreen forests. Enthralled by the wild



N. Sivaganesan

Protective females with calves are easily provoked to attack.



A dangerous disposition lurks behind this benign, majestic appearance

scenario and prompted by the security afforded by the bridge, we got out of the vehicle and gazed across the river.

We stood there on the bridge, enjoying the sounds of the river and the peculiar 'vee-veeu' calls of the Great Eared Nightjars. A good five minutes passed before one of my companions gave a start, pointed at some rocks on the river and hissed "Elephants". Three of the 'rocks' almost directly beneath us were indeed elephants. Thrilled into silence, we watched an adult female grooming a juvenile and an infant in the fading light. The infant was completely wet and apparently enjoying a bath while the other two waded around apparently oblivious of our presence above. We refrained from using our powerful Commander torch in order to leave them in peace.

By and by, it became nearly pitch-dark and we were just about to resume our drive across the bridge when we saw the lights of an approaching van. We backed up the way we came to allow the vehicle to pass. But the van driver stopped the vehicle at the other end of the bridge. We were slightly nervous. Here were two vehicles

facing each other with headlights on, at the two ends of a bridge. Traffic is almost unknown in this desolate section of highway. We wondered if they were some of the notorious poachers who infest the area.

Shortly later, we saw some movements around the van and then detected some points of light making their way around and below the bridge. At first we dismissed them as fireflies, but then came the jolting realisation that they were torch lights. Some people were walking down to the river for a bath, totally unaware of the danger lurking in the waters!

Our reaction was swift and decisive. We drove fast to the middle of the bridge. There was obviously no point in hollering. The men were by now already at the water and there was no way they could hear us clearly over the roar of the river. There was no sense in flashing the torch at them either - that would only blind and confuse them. Hence we did the only thing that seemed reasonable. We directed the beam of light from the torch right onto the elephants.

The men, about five in all, had already started wading in the waters when they got the fright of their lives. Clearly illuminated a short distance away were the elephants. The men ran helter-skelter in sheer terror. One moment they were blissfully bathing in the knee-deep torrent, the next moment they were running for their lives. It took just seconds for the scantily-clad terrified human beings to regain the safety of the bridge. They were too shocked to even speak clearly! We learnt later that they were delivering mangoes and were on their way to a nearby settlement. They gasped out their thanks, grinned at us sheepishly and drove away. We later found them jabbering excitedly in Malayalam to a group of Forest Department personnel, obviously venting out the tension of the close encounter.

Here, then, is a classic example of recklessness. Getting out of a vehicle in the dark in the middle of elephant country is a risk in itself, but going down to a river to bathe during a time when most other water bodies are dry is inviting disaster. The mango-deliverers learned an important survival lesson that evening — nearly the very hard way.

R. Kannan is a Ph.D. student at the University of Arkansas, and has been studying hornbills mainly at Top Slip, Anaimalais, for his doctoral degree.

CONSERVATION NOTES

BAUXITE MINING AT RADHANAGARI WILDLIFE SANCTUARY

There is a proposal to mine bauxite from an area located in the heart of the Radhanagari Wildlife Sanctuary. The 351 sq. km sanctuary, which includes the former Dajipur Bison Sanctuary, is on the Sahayadri Ranges or the Western Ghats, in Kolhapur district of Maharashtra. Like most of the forested tracts in the area, Radhanagari is rich in mineral deposits, particularly bauxite. An area of about 7.8 sq. km near Iderganj was leased for bauxite mining in 1968 when it was not within the protected area. After mining for a few years, the operations were suspended by the mining company for economic reasons. At the time of establishment of Radhanagari Wildlife Sanctuary in 1985, the leased site was not included in the protected area and it now lies totally surrounded by the sanctuary. The lease agreement expires in 1998 but the Indian Aluminium Company (INDAL) proposes to increase the lease period by another 30 years under the new proposal.

The Sahayadris are thickly forested, receive very heavy rainfall (500 to 600 cm with over 100 rainy days per year), and form the major catchment areas of the river systems in the region. They display a wide ecological spectrum and are second only to the Himalayas in species richness and diversity. The area of the sanctuary includes two important dam catchments and reservoirs — Radhanagari (on the Bhogawati river) and Dudhganga.

The vegetation of Radhanagari is of a tropical submontane evergreen type with *Actinodaphne*, *Syzygium* and *Memecylon* as dominant trees. The forest in the northern parts of the sanctuary consists mostly of stunted crest-line formations and does not include many lofty trees. However, the forest to the south of the Kolhapur – Phonda road, which includes the Iderganj area, has taller formations within which endangered arboreal species such as the Giant Squirrel (*Ratufa indica*) occur. This species does not occur in the former Dajipur Bison Sanctuary limits as it requires tall trees with connected canopies and dense forma-



M. Krishnan

Should renewal of mining leases or protecting endangered animals like the Gaur be a priority in our wildlife sanctuaries?

tions. As habitats suited for the Giant Squirrel are also suitable for a variety of other endangered species such as hornbills, flying squirrels and civets, these habitats need enhanced protection. Moreover, extensive tracts of this vegetation type are found only in the Mahabaleshwar-Koyna area, whereas in other areas of Maharashtra it occurs as small, isolated, fragmented patches such as at Kalsubai-Harischandragad, Matheran and Bhimashankar. This is an endangered forest formation and requires protection.

The sanctuary has been named as one of the important 'hot-spots' for environmental conservation in Maharashtra and in the Western Ghats and is one of the three areas to come under an ambitious World Bank funded project of the State Forest Department.

The whole idea of mining inside Radhanagari Wildlife Sanctuary is unacceptable due to the following reasons:

1. The forests of Iderganj are within the catchment area of the existing dams. Any disturbance to the area is bound to have serious consequences for the longevity of these dams. There will be considerable soil loss through wind and rain erosion during the mining operation. This will cause siltation of the reservoirs. The cost of desilting them will be enormous.

2. The cost-benefit analysis of the mining operation has not taken the actual cost of eco-restoration of the mined sites into consideration. This may make the whole exercise uneconomical. Although it has been suggested that trees will be planted in the mined areas, it is known that it is impossible to duplicate the flora and fauna on the fragile Sahayadri plateaus. Secondly, proper eco-restoration will involve growing existing vegetation like grass, herbs and shrubs for which hardly any expertise exists. The reforestation that INDAL is talking about is probably going to be a monoculture of fast growing trees which may be more harmful than beneficial.

3. The proposed mining site, a typical treeless ridge, is right in the centre of the sanctuary. The surrounding forests are used extensively by wildlife including the endangered Gaur, Dhole and Giant Squirrel. The contention of INDAL,

that the ridge top is denuded of forest, is as preposterous as their plan to afforest the tract after mining as it is natural to have treeless spurs in the region. Interfering with them in any way may disturb the balance of nature. The grassy spurs are often used by many forest-dwelling herbivores to forage in the open.

The mining operation which is going to continue for over 30 years and the subsequent creation of an artificial barrier in the form of a monoculture of trees will interfere with the natural movement patterns of the wild animals.

4. Although the mining company proposes to use a "new" mining technique — ripping and dozing, there is nothing to prove that it will actually minimise the damage to the environment in a fragile ecosystem such as Radhanagari. In any case, there is nothing new about this technique as the company suggests. It is just more expensive than conventional open-cast mining techniques, which explains its limited usage. Moreover, INDAL has done little to restore the old mined sites at Iderganj.

5. The pollution levels will far exceed the specified limits for sensitive areas. The limits quoted by the company, which mentions that their estimated levels of pollution are within the limits, are not for sensitive areas like a wildlife sanctuary.

The mining company says that it will get an environmental impact assessment (EIA) done and carry out the mining in a benign and environment friendly way. The Bombay Natural History Society strongly feels that an EIA for the proposed bauxite mining at Iderganj would only reveal how much ecological damage will be caused. That there will be damage is indisputable.

We feel that there is no need to experiment with a so-called new technique of mining inside a wildlife sanctuary, when the same can be tried outside a protected area.

In fact, we believe that the leased area at Iderganj should immediately be notified as part of the wildlife sanctuary and complete protection should be accorded to it as it is an integral part of the sanctuary.

Sunjoy Monga



Between the concrete jungle closing in and the quarrying away of the hill slopes, what is left of Sanjay Gandhi National Park is ravaged by human encroachments, graziers and poachers

STONE QUARRIES AROUND SANJAY GANDHI NATIONAL PARK

Around mid-1993, a committee was constituted by the Bombay Metropolitan Region Development Authority (BMRDA) to look into complaints concerning the stone quarries operating in Dharkadi and other areas bordering Sanjay Gandhi National Park. Besides the local administration, mine safety experts and forest department officials, the Bombay Natural History Society was invited to the meetings and field investigations by the committee to provide an opinion on the effects of the quarries on the environment of the National Park.

A large part of the 103 sq. km Borivli National Park, as the Sanjay Gandhi National Park is commonly known, is located within the metropolis of Bombay. In addition to being the lungs for the city it acts as the catchment area for the lakes supplying drinking water to millions.

We believe that the operation of stone quarries close to the boundary of the National Park is causing severe disturbance to the flora and fauna of the Park and their habitat. Areas of the Park adjoining the quarries have significantly lower biodiversity. In these areas the abundance of certain species of birds, mammals and butterflies indicative of undisturbed habitat is also considerably lower than other similar areas of the Park away from the active quarries. The natural

vegetation in these areas too is highly degraded due to direct as well as indirect effects of the stone quarries, such as blasting of rocks, crushing of stones by scores of mechanical crushers, movement of vehicles and disturbance caused by labourers. Moreover, if these quarries are not actually eating into the Park area, they are quarrying right upto the Park boundary, converting the natural slopes to precipices of exposed rock and loose soil.

We have recommended that all the quarrying operations within a distance of one kilometre from the nearest Park boundary should be immediately stopped for effective preservation of the Park habitat which is so vital for the survival of Bombay. However, the recommendations of the Society and the committee seem to be entombed in files like most such reports and quarrying carries on around the Park. Some of the quarry operators go to the extent of using strong-arm tactics and refuse government officials entry into their area.

If we wish to save Radhanagari and Borivli from further damage, all of us should write to the Chief Minister of Maharashtra, expressing our concern and requesting him to initiate appropriate action.

*Compiled by Dr Goutam Narayan,
Conservation Officer, BNHS.*

NATURE ALIVE

Ashok Captain



A female scorpion carrying her young

Scorpions are related to spiders and have evolved many millions of years ago. They do not lay eggs but give birth to live young. Soon after birth, the young scorpions clamber onto their mother's back and are carried about until they moult their external covering for the first time.

When we think of scorpions feeding, we usually think of their stings. But scorpions don't always sting captured prey. In 1919, C.H. Dracott wrote an interesting note in the Journal of the Bombay Natural History Society. One June morning in Jamshedpur, after a heavy rain, clouds of winged ter-

mites were leaving a termite mound. Dracott observed twenty-four scorpions waiting near the exits of the mound and grabbing the winged creatures in their front claws before devouring them. The largest scorpion was jet black and eight inches long. As he watched, some Santal and Kol tribal women began collecting the swarming termites in brass bowls filled with water. These were to be eaten, fried in oil, after the wings were removed. Scorpions and humans sharing the same resource at the same time! After the swarming was over, the scorpions disappeared into the earth, out of sight.

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BNHS members enjoy a range of activities — film shows and lectures on natural history, regular weekend bird-watching trips, and the opportunity to participate in environmental conservation campaigns, and even field studies in wildlife sanctuaries and national parks.



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