

ENVIS Centre
AVIAN ECOLOGY

BUCEROS

ENVIS Newsletter

Vol. 13, No.3 (2008)



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BUCEROS

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ENVIS

ENVIS (Environmental Information System) is a network of subject specific centers located in various institutions throughout India. The Focal Point of the present 78 ENVIS centres in India is at the Ministry of Environment and Forests, New Delhi, which further serves as the Regional Service Centre (RCS) for INFOTERRA, the global information network of the United Nations Environment Programme (UNEP) to cater to environment information needs in the South Asian sub-region. The primary objective of all ENVIS centres is to collect, collate, store and disseminate environment related information to various user groups, including researchers, policy planners and decision makers.

The ENVIS Centre at the Bombay Natural History Society was set up in June 1996 to serve as a source of information on Avian Ecology and Inland Wetlands.

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by Saurabh Desai

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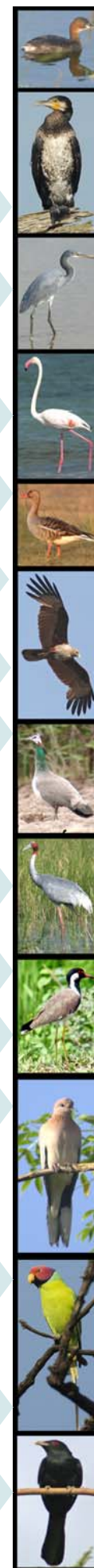
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Organisational News

International Conference: 'Conserving Nature in a Globalising India' from 17-19 February 2009

As a part of BNHS's 125th year celebration, we had successfully organised an **International Conference, 'Conserving Nature in a Globalising India' between 17-19 February 2009**, in collaboration with and at the Indian Institute of Science, Bangalore.

This conference was different from the other conferences on wildlife because various speakers from all over the world covered mainly the emerging conservation issues and policy imperatives through plenary and simultaneous technical sessions. BNHS provided a solid platform not only to the young, budding scientists but also to common people from remote villages who are engaged in community conservation. People enjoyed the continuous flow of diverse knowledge through brainstorming debates on various interdisciplinary aspects like tourism, trade and globalization, species recovery, economics and political economy of biodiversity conservation, emerging diseases, agriculture and conservation.



Release of the DVD consisting 100 volumes of the Journal of the Bombay Natural History Society



Dr. Nigel Collar of BirdLife International (Leventis Fellow in Conservation Biology, BirdLife International) was awarded the Sálím Ali International award

7th Rare Books Exhibition – “JEWELS of INDIA”

In collaboration with the Rotary Club of Bombay Seacoast, the BNHS organised its 7th Rare Books Exhibition, to share its treasure of rare books from 16th December-23rd December 2008 as a part of its 125 years celebrations. The exhibition was named as “JEWELS of INDIA”.

Books displayed were on various subjects such as Indian wildlife, art, natural history, heritage and culture. This collection of rare books was from the BNHS Library and from the private collection of Dr. Ashok Kothari, an EC member of the BNHS and a well-known bibliophile.



Enthusiastic visitors at the 7th Rare Book Exhibition



National News

Transmitters to unravel avian migration mystery

For the first time, migratory routes of birds that visit the Chilika lagoon would be determined through satellite telemetry. In all, 80 birds of different species have been fitted with satellite transmitters out of which 60 at Chilika lake and 20 at Koonthankulam, Tirunelveli district, Tamilnadu. A team from the United States Geological Survey (USGS) imparted technical training to the local forest as well as veterinary staff and staff of Bombay Natural History Society (BNHS). The BNHS has played a major role in this satellite telemetry project, along with the Food and Agriculture Organisation (FAO). More than 7,00,000 migratory birds visit Chilika during the wintering period. According to Chilika Development Authority (CDA), this project promises that initiative is likely to give vital information on the migratory behaviour of birds, which has remained more or less shrouded in mystery.



Credit: Dr. S. Balachandran

Dr. Balachandran and P. Sathiyaselvam of BNHS with PTT fitted Brahminy Shellduck *Tadorna ferruginea*

For more details:

<http://www.expressbuzz.com/edition/story.aspx?Title=Transmitters+to+unravel+avian+migration+mystery&artid=zaivOc0twJE=&SectionID=mvKkT3vj5ZA=&MainSectionID=fyV9T2jIa4A=&SectionName=nUFeEOBkuKw=&S>

Indian Vulture centers get machines to detect diclofenac

Diclofenac, one of the anti-inflammatory veterinary drugs has been identified as the major cause of mortality from renal failure resulting from visceral gout in vultures. A machine to detect diclofenac may prove useful in the battle to save these scavenger birds. The Britain-based charitable organisation the Royal Society for the Protection of Birds (RSPB) is funding the placement of these machines at three Vulture Breeding Centers - one each in Haryana, West Bengal and Assam run by the Bombay Natural History Society (BNHS). The diclofenac-detection machine will be in use after approval from the Indian Veterinary Research Institute, Uttar Pradesh. The machines will be used to detect the presence of the drug in the carcasses fed to the birds in captivity. Though diclofenac has been banned in the country, environmentalists suspect that many veterinarians still use it. As a precautionary measure, the vultures in captivity are being fed animals that are reared at the centers.



Indian White-backed Vulture *Gyps bengalensis*
(Credit: Saurabh Desai)

For more details:

http://www.thaindian.com/newsportal/uncategorized/indian-vulture-centres-get-machines-to-detect-poison_100140504.html

Poachers using kids to hunt birds in Orissa's Chilika Lake

Poachers are using children to hunt birds in Orissa's Chilika lake - India's largest brackish water lagoon - after authorities increased their surveillance in the area, according to officials and conservationists. Officials are concerned because poachers have adopted new methods to hunt birds and now engage children aged 12 to 17 years for the purpose, as they think children are least suspected.

For more details: http://timesofindia.indiatimes.com/Flora_Fauna/Poachers_using_kids_to_hunt_birds_in_Orissas_Chilika_Lake/articleshow/3838260.cms



National News

Traditional farming methods in India protect birds

Betelnut *Areca catechu* farmers at the foothills of the Western Ghats have something new and important to teach India and the rest of the world. The traditional methods used in Karnataka have not only made the farmers economically prosperous but have also made their Betelnut plantations good for 90% of the bird species, which are usually found in the carefully preserved forests in nearby areas. Where nature is losing the battle to agriculture and species are rapidly disappearing, threatened species such as the Malabar Grey Hornbill *Ocyceros griseus* and the Great Pied Hornbill *Buceros bicornis* have been spotted in these plantations. This is particularly significant in the Western Ghats which is famous for large number of endemic birds. The complex, forest-like structure of the plantations where the tall palms of Betelnut are grown in lush fields intercropped with other cash crops such as Coconut, Banana, Vanilla, Pepper and fruit trees, which furnishes a hospitable environment for various birds. Such traditional farming methods can provide solutions on how to reconcile harmoniously the often-conflicting needs of agriculture and nature.



Malabar Grey Hornbill
Ocyceros griseus
(Credit: Nikhil Bhopale)

For more details: <http://www.deccanherald.com/Content/Dec92008/environmet20081208105466.asp>

Majestic Lesser Flamingos survive in contaminated Indian waters

A University of Leicester ecologist is setting out to discover why Flamingos are so much in the pink of health. Research on Lesser Flamingos was carried out by Dr. David Harper in the lakes of East Africa but the investigations carried out in India, gave him a shock. According to Dr. Harper, the Lesser Flamingo *Phoenicopterus minor*, a graceful, majestic bird with its pink plumage, stands for everything that is pure and pristine in Africa. In complete contrast to Africa, where Lesser Flamingos only live on inland soda lakes, untouched by man's activities and are never seen at the coast, in India he observed 20,000 Lesser Flamingos happily feeding on tidal mudflats in front of an oil refinery and creeks bringing untreated waste from millions of people of Mumbai. In Africa, he and his team members have satellite-tagged birds to find their migration routes and to study their feeding and behaviour. According to Dr. Harper, the deaths of Lesser Flamingos in East Africa over the past 15 years have been blamed on poisoning from industries or the consequence of too much fertiliser or human wastes in the lakes, but people who blame human wastes should visit India to see how well Lesser Flamingos thrive and how pink they grow, when they are surrounded by heavy industry and by polluted water. He now plans to write a full grant proposal to Darwin Initiative and in collaboration with Indian universities and conservation groups to better understand how Flamingos can thrive in waste water.



Lesser Flamingos *Phoenicopterus minor*
(Credit: Abhijit Avalaskar)

For more details: <http://www.sciencedaily.com/releases/2008/03/080311123417.htm>



International News



Nonggang Babbler *Stachyris nonggangensis*
(Credit: James Eaton)

A new species of babbler discovered in China

A new species of babbler has been discovered in Guangxi province in south-west China. It has been named Nonggang Babbler *Stachyris nonggangensis*, after the reserve in which it was discovered. This new species is closely related to Sooty Babbler *Stachyris herberti* but is larger and has white crescent patches behind the ear coverts and dark spots on the upper breast and throat. Ornithologists, Zhou Fang and Jiang Aiwu from Guangxi University first sighted the birds in surveys during 2005 and confirmed its identity as an undescribed taxon. A formal description was published in a recent edition of ornithological journal *The Auk*. In general behaviour it resembles a Wren-Babbler of the genus

Napothera in that it prefers running to flying, and seems to spend most of its time on the ground foraging for insects between rocks and under fallen leaves. This is in contrast to other closely-related babbler species that spend most of their time foraging in undergrowth and trees, seldom coming to the ground. About 100 pairs of the birds have been observed in Nonggang. This taxon will be assessed in due course by the BirdLife taxonomic working group. If treated as a full species, its conservation status will then be evaluated by BirdLife, the Red List authority for birds on the IUCN Red List of threatened species. **For more details:** <http://www.sciencedaily.com/releases/2009/02/090201125926.htm>

Great Bustards breed in UK for first time in 175 years

The Royal Society for the Protection of Birds (RSPB) has welcomed news of the first breeding of Great Bustards *Otis tarda* in Great Britain in 175 years. The Great Bustard Group (GBG) has been releasing birds on Salisbury Plain each year since around 2004, but did not expect nesting to take place until 2008, as males have to reach 4 or 5 years of age before they can breed. Chicks were raised in Russia from eggs rescued from nests destroyed by cultivation and then released in the Wiltshire countryside. The GBG made the announcement some time after the discovery of the bird's nest that the breeding of bird was unsuccessful, to minimize the risk of eggs being stolen or disturbed. However, after examination, the eggs were found to be infertile. Great Bustards need a mixture of chalk grassland, with lots of insects in summer and farmland providing cereal food in the winter. They particularly favour the areas being managed for Stone Curlews. There is still a long way to go to secure a sustainable population of Great Bustards in the UK, but the historic breeding attempt proves that suitable conditions exist to tempt the birds to try to breed and conservationists are hopeful that the birds will try again next year. The RSPB hopes to continue working closely with GBG to re-establish the spectacular birds in the U.K. **For more details:** <http://www.sciencedaily.com/releases/2007/07/070722215911.htm>



Great Bustard *Otis tarda*
(Credit:
IUCN Bustard Specialist Group)



International News

DNA confirms fastest evolving birds

Birds from the family *Zosteropidae* also called white-eyes could be poster children for rapid evolution. According to new research, they form new species faster than any other known bird. DNA analysis reveals that all 80 species of white-eyes emerged in the last 2 million years. According to Christopher Filardi, a handful of other birds and mammals have been known to adapt to new environments in such a short period. But white-eyes are unique because their speciation isn't a simple reaction to shifts in local habitats, they evolved into dozens of new species extremely fast while simultaneously spreading across much of the southern hemisphere. White-eyes may evolve faster, partly because females can start breeding as young as 4 months old, which is least amongst all tropical songbirds. They forage, travel and even preen together, making it easier for them to colonize. Once they arrive at a new location, they quickly settle in for the long haul, genetically isolating them. Different species in the Solomon Islands exist just 1.2 miles from one another. The Splendid White-eye *Zosterops luteirostris* is endemic to the Solomon Island of Ranongga and has a range that can be traversed in a single day's walk. The study has appeared in the journal *Proceedings of the National Academy of Sciences* and was funded in part by the National Geographic Society's Committee for Research and Exploration.



Splendid White-eye *Zosterops luteirostris*
(Credit: C. Filardi/CBC/AMNH)

For more details: <http://news.nationalgeographic.com/news/2009/01/090126-bird-evolution-missions.html>

Disappearance of Pine trees in Spain's Cantabrian Mountains threatens the bird Cantabrian Capercaillie

Disappearance of Pine trees is one of the important points, regarding the problem of revival and conservation of Cantabrian Capercaillie *Tetrao urogallus cantabricus*. As the bird is now in danger of becoming extinct, a team of researchers from the Universidad Politécnica of Madrid (UPM) has re-constructed the landscape of the Cantabrian Mountains to interpret the current situation of the Scots Pine *Pinus sylvestris* woodlands and their implication in the survival of the Cantabrian Capercaillie. The research was carried out in Vega de Viejos, an area at an altitude of 1,300 meters. According to study, pine forests in the oceanic regions of the Cantabrian Mountains began to decline 10,000 years ago. The first evidence of the deterioration caused by the actions of human beings is 5,000 years old. Since that time the situation of the pine forests and Cantabrian Capercaillie has worsened. Juan Manuel Rubiales, the principal author of the study, confirms to SINC (Sites of Importance for Nature Conservation) that the Cantabrian Capercaillie has changed its habits, to ensure its survival. The population instability of these birds could get more severe by the absence of natural conifers in the best preserved ecosystems of its habitat situated in the Cantabrian mountain region.

For more details: <http://www.sciencedaily.com/releases/2008/11/081121151920.htm>



Tools & Techniques

Radio tracking: an essential tool in bird migration studies

Compiled by Sujit Narwade

Scientist-In-Charge,

ENVIS Centre

One of the most difficult studies in ornithology is migration of birds. There was a new approach in migration studies of the birds in the mid 20th century from when radio transmitters became available. In further advancement very high frequency (VHF) radio transmitters got replaced by light and reliable satellite transmitter terminals (small platform transmitter terminals - PTTs) in last couple of decades. Data from these PTTs have been effectively used to collect precise information on the exact locations and habitats used by the birds. The migration cycle, identification of inaccessible sites and prioritizing sites for conservation can easily be identified by research groups with help of data received from satellites. In the 21st century, global positioning system (GPS) transmitters, along with GIS and RS (Geographical Information System and Remote Sensing) have become available to researchers to get the high resolution data about the location of birds.

Someone may be curious about why mainly the birds are the favourite target group for radio tracking. This is because of the small size and long migratory routes of birds like cranes, storks, raptors, warblers and ducks, which are widely dispersed and can move quickly over inaccessible terrains. The PTTs can be mounted on the birds or implanted under their skin. A wide range of institutions including the US Fish and Wildlife Service and Geological Service, Wild Bird Society of Japan, Yamashina Institute of Ornithology and International Crane Foundation are working on satellite transmission studies. Recently a team of BNHS has initiated the installation of radio transmitters on ducks and other shorebirds with the help of FAO (Food and Agriculture Organisation).

I got an opportunity to work with a team of scientists from Czech Republic who are studying the migration pattern of Black Stork *Ciconia nigra* in India in collaboration with ENVIS Centre, BNHS since the year 2003. That time I realised the essentiality of radio tracking tool in ornithological studies. Some technical details and functioning of radio tracking are given below.

Telemetry: It is a system of sending data, usually measurements over a distance. The term is derived from the Greek *telistos* (“remote”) and *metros* (“measure”). The data received from telemetry may be physical, environmental or biological. Telemetry is typically used to gather data from distant, inaccessible locations, or when data collection would be difficult or dangerous for a variety of reasons. Specialized instruments carry out measurements and store or transmit the resulting signal.

Biotelemetry: This is the electrical measuring, transmitting, and recording of qualities, properties and actions of organisms and substances, usually by means of radio transmissions from a remote site. In biotelemetry, scientists capture the animals and install radio tagging machines on them, which not only help them to collect information on environmental variables like temperature, humidity and altitude surrounding the animal, but also on behavioural and physiological parameters. Such data enables scientists to accurately study the habitat use and development of management plans for conservation.

Basic components of a radio-tracking system: (1) a transmitting subsystem consisting of a radio transmitter, a power source and a propagating antenna, and (2) a receiving subsystem including a “pick-up” antenna, a signal receiver with reception indicator (speaker and/or display) and a power source. Most



PTT installed on the back of Black Stork *Ciconia nigra* by scientists of Czech Republic (Credit: Sujit Narwade)



Receiver : to receive signals from transmitters (Credit: Dr. S. Balachandran)

radio tracking systems involve transmitters tuned to different frequencies (analogous to different AM/FM radio stations) that allow individual identification.

Types of radio-tracking devices:

- (1) Very high frequency (VHF) radio tracking,
- (2) Satellite tracking
- (3) Global Positioning System (GPS) tracking.

VHF radio-tracking is the standard technique in use since 1963. An animal wearing a VHF transmitter can be tracked by a person on the ground or in the air with a special receiver and directional antenna. Briefly, the advantages of VHF tracking are relatively low cost, reasonable accuracy for most purposes and long life. Disadvantages are that it is labour intensive and can be weather-dependent if aircraft-based. Nevertheless, VHF radio-tracking is by far the most useful and versatile type of radio-tracking, for not only does it yield location data, but it also allows investigators to gather a variety of other types of information. Satellite tracking employs a much higher-powered transmitter attached to an animal. The signal is received by satellites and the animal's calculated location is sent to a researcher's computer.



Antenna (Credit: Dr. S. Balachandran)

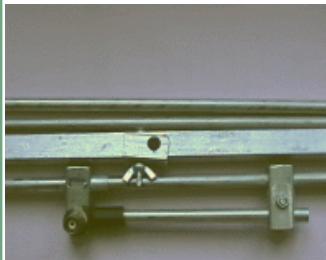
Satellite tracking requires a much higher initial cost and is much less accurate and for most species, is shorter-lived than VHF systems. If only animal locations and gross movements are of interest to a study, such as a dispersal path, satellite tracking is advantageous because it requires no personnel in the field once the tracking device is placed on the animal. It is especially useful for monitoring long-range movements. However, most wildlife studies also require a variety of other information that satellite tracking does not provide, including number of companions, individual productivity, behavior and population size and trend. For carnivores, information about predatory habits such as rates, location, species, age, sex and condition of their kills, cannot be obtained by satellite tracking.

GPS tracking is based on a radio receiver (rather than a transmitter) in an animal's collar. The receiver picks up signals from a special set of satellites and uses an attached computer to calculate and store the animal's locations periodically. Depending on collar weight, some GPS collars store the data and drop off the animal when expired to allow data retrieval; others transmit the data to another set of satellites that relay it to the researchers; and still others send the data on a programmed schedule (e.g., daily) to biologists who must be in the field to receive them. GPS tracking also has high initial costs and at present is relatively short-lived and applicable to mammals the size of a wolf or larger, or to birds on which solar cells can be used. GPS tracking is highly accurate and especially suited to studies where intensive and frequent data (many locations/day) are needed or useful. Depending on several variables, GPS tracking may or may not require frequent field visits.

Types of antennas:

As per the requirements of habitat and infrastructure available, modified antennas will be used accordingly.

- 1) Standard very compact "H" antenna with a high front-to-back ratio and a good gain (Effective in compact antenna systems, tracking in a dense vegetation)
- 2) Two fixed car mounted antennas directed to the sides provide effective scanning of the area during the ride in the car. When searching for signals, both are together connected to a receiver. Three ways switch (left/both/right) together with a car positioning enable the signal location.
- 3) Two fixed car mounted antennas directed to the sides (light version)
- 4) Two fixed antennas directed to the sides in a vertical position are effective in mountainous regions.



(1)



(2)



(3)



(4)

(Credit: Lubomir Peske)

What locations to accept

Evaluation is always based on a) logical analysis, b) interrelation, c) basic knowledge of studied species behaviour (fidelity, home ranges, movements, speed etc. of the bird). In breeding, feeding, stopover and wintering areas, majority of birds are tied to a particular place and a restricted area. Field observations are necessary to get the ecological and geographical data for analysis part.

I am very grateful to Zoologist Lubomir Peske (Czech Republic) and U.S. Geological Survey (USGS) for providing the technical information for this article.

Abstracts

Recent changes in populations of resident *Gyps* Vultures in India

V. Prakash, R.E. Green, D.J. Pain, S. Saravanan, N. Prakash, R. Venkitachalam, R. Cuthbert, A.R. Rahmani and A.A. Cunningham.

Nine species of vultures are recorded from the Indian subcontinent. The population of three resident *Gyps* Species, namely Oriental White-rumped Vulture *Gyps bengalensis*, Long-billed Vulture *Gyps indicus* and Slender-billed Vulture *Gyps tenuirostris* crashed during the mid nineties of the last century. Vulture declines were first documented at Keoladeo National Park, Bharatpur in Rajasthan. Subsequently, the crash in population was documented across the country. During the present study, surveys on identified tracks were done in 2007 to repeat surveys done previously in 1992, 2000, 2002 and 2003. This was done to determine the population trend in the three species of vultures and also to get the rough estimate of the surviving population of vultures in 2007. The latest repeat surveys were carried out from March to June 2007 by driving in a motor vehicle and recording vulture within 500m on either side of each transect. The results indicate that the population of the three species of vultures continues to decline at an alarming rate. Numbers of Oriental White-rumped Vulture declined by 99.9% between 1992 and 2007 on the transects surveyed each year during that period. The equivalent decline in the combined total of *Gyps indicus* and *Gyps tenuirostris* was 96.8%. The population of the Oriental White-rumped Vulture has an average annual rate of decline of 43.9% between 2000-2007, whereas the combined average annual rate of decline of *G. indicus* is over 16%. A complete ban on the use of Diclofenac in livestock and the establishment of conservation breeding centres are suggested to prevent the extinction of these three species of vultures.

***J. Bombay Nat. Hist. Soc.*, (2007), Vol. 104 (2): pp. 127-133.**

Avifauna of the Andaman Islands: Preliminary inventory and distributional patterns

Davidar P., K. Yoganand, T. Ganesh and K. G. Nayak

The distribution of 78 species of resident birds from 27 families was recorded during a survey of 45 islands in the Andamans. The species richness of birds in each site was recorded by repeated walks along transects until the species accumulation curve reached an asymptote. Species restricted to larger islands were not recorded on smaller islands. The number of species in the different islands groups such as the North, Middle, South and Little Andaman Islands, did not differ appreciably. Frugivores and omnivores tended to have a wider distribution than raptors, which tended to be restricted to larger islands. This database will provide a baseline with which to compare species distributions in the future.

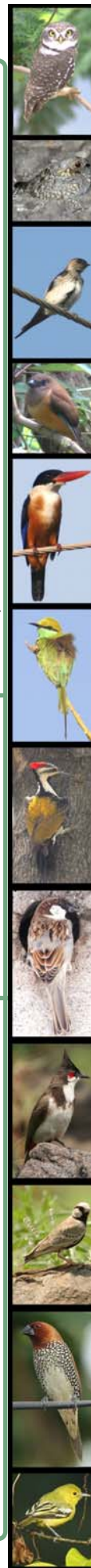
***J. Bombay Nat. Hist. Soc.*, (2007), Vol. 104 (3): pp. 298-310**

Quantification of threats and suggested ameliorative measures for the conservation of the critically endangered Jerdon's Courser *Rhinoptilus bitorquatus* and its habitat

Jeganathan P., A. R. Rahmani, R. E. Green, K. Norris, I. n. Vogiatzakis, C. Bowden and D. Pain

Jerdon's Courser *Rhinoptilus bitorquatus* is a nocturnally active cursorial bird that is only known to occur in a small area of scrub jungle in and around Sri Lankamaleswara Wildlife Sanctuary, Cuddapah district, Andhra Pradesh, India, and is listed as Critically Endangered by the IUCN. Jerdon's Courser prefers a specific type of scrub jungle with open areas and there is considerable pressure from human use of apparently suitable habitats. Although major threats to the survival of the Jerdon's Courser have been identified, there is no quantitative information available. During our study, nine specific threats were identified to the survival of the Jerdon's Courser and its habitat. Habitat destruction and alteration is the major threat among them. However, the immediate threat for the only known population of the Jerdon's Courser in the world and its habitat is the construction of the Telugu-Ganga Canal near Sri Lankamaleswara Wildlife Sanctuary and Sri Peninsula Narasimha Wildlife Sanctuary. The presence of the Jerdon's Courser was detected in three new locations in and around the Sri Lankamaleswara Wildlife Sanctuary and one of these sites was destroyed due to the canal construction. There is an urgent need to save the scrub jungle habitat in and around the sanctuaries. We suggest several ameliorative measures for the conservation of the Jerdon's Courser and its habitat.

***J. Bombay Nat. Hist. Soc.*, (2008), Vol. 105 (1): pp. 73-83**



Abstracts

An ecological survey of the Trans-Himalayan wetlands of the proposed Changthang Biosphere Reserve, India, for conservation planning

S. A. Hussain, R.K. Singh and Ruchi Badola

We examined the water quality of seven lakes and associated marshes and the extent of their use by breeding birds, mammals of conservation significance as well as humans in the southwestern Tibetan plateau of Changthang, Ladakh. The assessment revealed that the physical and aggregate properties, inorganic non-metals and metals in the water of the lakes were significantly different from each other. The physical and chemical properties of the lakes have changed since the first immunological study conducted in 1932, largely due to increasing anthropogenic factors. During the study 16 species of water birds were recorded from the area, of which seven species were breeding. The Bar-headed Goose *Anser indicus* was found nesting at almost all of the lakes. The mean encounter rate of Bar-headed Goose varied between 3.5 to 17 km⁻² among lakes, where as for Ruddy Shelduck *Tadorna ferruginea* it was 1 to 58 km⁻². The area has high biodiversity value in terms of habitat for mammals of conservation significance.

Among the eight identified human use parameters, which could pose threat to the integrity of these lakes and associated wetlands are uncontrolled tourism, excessive grazing by livestock, biomass extraction and diversion of stream water for agricultural purpose. The overall disturbance regime was highest for Tso Kar and Tso Moriri. Recognizing the conservation significance of the area, the Indian Changthang has been declared as a Protected Area, forbidding any form of resource extraction and only limited tourism. However, because of lack of alternative livelihood options, local people are forced to depend on the scarce natural resources and the declaration of the PA has been ineffective. Proposal to declare the area as a Biosphere Reserve is a welcome step, but ultimately it is the complementarity of conservation and development at the landscape level that will secure the sustainability of this fragile ecosystem.

Biosphere Conservation, (2008), Vol. 9 (1): pp. 53-63

Is malaria the cause for decline in the wild population of the Indian White-backed Vulture (*Gyps bengalensis*)?

Ajay Poharkar, P. Anuradha Reddy, Vilas A. Gadge, Sunil Kolte, Nitin Kurkure and Sisinthy Shivaji

The populations of three species of *Gyps* vultures have shown a decline of more than 95% between 1988 and 1999 in the Indian subcontinent and are now classified as 'critically endangered'. The indiscriminate and widespread veterinary use of diclofenac has been implicated for the decline of the White-backed Vulture (*Gyps bengalensis*) in Pakistan, India and Nepal. Similar trends in population decline as seen in the northern regions have also been recorded in Central and South India, but the cause for the decline was not investigated. Here we report a study carried out in a densely forested and sparsely populated region in Central India. An intracellular malarial parasite was identified from the tissues of both live and dead White-backed vultures. Further, amplification and sequence analysis of the consensus sequence of the mitochondrial small and large sub-unit rRNA genes indicated a 95-96% similarity with the mitochondrial sequence of *Plasmodium falciparum* (DQ642845) and other *Plasmodium* species. In addition, amplification and sequencing of a 502 bp fragment of the mitochondrial *cyt b* gene identified the haemoprotozoan with *Plasmodium* sp. AP70, an avian malarial parasite. During the course of this study we also rescued two terminally ill vultures with symptoms of malaria and treatment with anti-malarials led to their recovery. None of the affected vultures had diclofenac residues, thus implying that malaria could be an additional cause for the decline for the White-backed vulture population.

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User Forum

Different facilities for users on www.bnhsenvis.nic.in website are as follows:

- Users can search the information through different **databases** focussing on avian ecology. Databases include bibliography, abstracts, endemic birds of India, threatened birds of India, Ramsar sites, Important Bird Areas (IBAs) etc.
- **Abstract service** has been launched recently and provides abstracts of research papers on avian ecology. Right now very few abstracts are available online and our team is working on this database.
- Basic information like establishment and **objectives** of ENVIS Centre is provided on 'About ENVIS' page.
- The list and contact details of the **other ENVIS Centres** on various subject areas facilitate users to navigate in different subject areas of environmental studies.
- The detailed information about **BNHS**, our parent organisation and its functioning has been provided.
- Link to the **other websites** and **journals** devoted to the Avian Ecology are available.
- **"Kid's Corner"** aimed towards school-going children.
- All issues of **Buceros**, **BNHS-ENVIS publication** are available in PDF format.
- Information like **powerpoint presentations, photogallery** are also available.

Request for Articles & Literature

Dear Readers,

- 1) You are welcome to contribute articles, photographs pertaining to avian ecology, in our subsequent newsletters.
- 2) To strengthen our databases we would like to request you to send us literature which is not available on our website.

Feedback & Queries

You can send your feedback pertaining to our website and Buceros publication via post or email. Any queries related to avian ecology can be sent on the following addresses.

Please send us your Email ID so that we can send you soft copy of the Buceros.

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