

BIRDS OF PREY AND THEIR CONSERVATION IN THE SUNDARBANS MANGROVE FORESTS, KHULNA, BANGLADESH

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ABSTRACT

Between November 1980 and February 1983, observations were made along the edge of the Sundarbans mangrove forest from boats. Some 35 species of raptors of 4 families were identified, among which 26 species were resident and 9 migratory. 30 species were diurnal birds of prey and the remaining 5 were owls.

Among the species studied, four were considered endangered, sixteen were rare, four uncommon, six frequent, four common and only one abundant.

Raptor populations are rapidly decreasing in the area studied, because of habitat destruction. Human disturbance and lack of food are other causes of population decline. The necessary conservation measures are discussed.

INTRODUCTION

This paper describes the status, distribution, habits, habitat and conservation problems of birds of prey in the Sundarbans mangrove forests of Khulna, Bangladesh. These forests probably comprise the largest area of mangrove in the world. They are free from human settlements and form a wintering area for northern migrants.

MATERIALS AND METHODS

Field work was carried out for 27 months between December 1980 and February 1983. Surveys along the edge of the forest on the rivers were conducted mainly from wooden boats, locally called 'tapuria', and dinghy-canoes manipulated by one or two boatmen. The boats travelled at three to five kilometres per hour. For surveys near the coast of the Bay of Bengal in the southern part of the area, we had to use forest launches with a crew of three or four men and a speed of 12-16kph. About 3290km of the forest edges were surveyed. Observation within the forests were made on foot, accompanied by guards. Observations were made from 16.00 to 23.00hrs using torches and spotlights at night.

STUDY AREA

The Sundarbans mangrove forests are situated at the southern extremity of the Ganges Delta, along the sea coast of the Bay of Bengal, and extend about 80km north from the Bay, between latitudes 21°30' and 22°30'N and longitudes 89° and 90°E.

The forests as a whole, both of Bangladesh and India, cover 10,000km², of which 6600km² are land. The Bangladesh part covers 7129km², of which 5030km² are land and the rest is water.

The entire forest is bounded by rivers and khals, and is thus completely separated from the mainland by a distance ranging from a few metres to several kilometres. It is further intersected by a number of large and small rivers and a complex network of khals, making the whole area a dense aggregation of numerous islands. The forest is divided into 55 compartments, each consisting of 45–155km² of land area.

The various fishing and fish-drying places within the forests are used between November and February.

Tidal water floods the forested areas twice daily for about six hours. The tidal rise and fall remains more or less constant at 1.5–2.0m throughout the year. The rivers of the eastern boundary bring fresh water, so the water salinity increases and soil fertility decreases from east to west across the forests. There are no natural fresh water sources, but some excavated ponds provide drinking water for people working in the forests.

The vegetation is mainly of mangrove (*Rhizophoraceae*), but other trees occur, including *Sonneratia*, *Avicennia*, *Heritiera*, *Excoecaria*, *Carapa*, *Bruquiera*, *Rhizophora*, *Barringtonia*, *Azelia*, *Diospyros*, *Ficus*, *Cerbera* and others.

SYSTEMATIC LIST OF SPECIES

Crested Honey Buzzard (*Pernis ptilorhynchus*)

A rare resident of the Sundarbans, it was seen once, in March 1981, on the bank of a river near Kalabogi forest station in the Khulna Range.

Pariah Kite (*Milvus migrans govinda*)

Common resident scavengers, recorded in every survey, either flying over the rivers or perched in tree-tops on the bank. They usually frequented the periphery of the forest, and between November and February concentrated around the fishing and fish-drying places, feeding on fish and other animals rejected by the fishermen. After the fishing period, they usually dispersed. On the mainland they bred from August to April.

Large Pariah Kite (*Milvus migrans lineatus*)

A frequent wintering migrant, regularly observed between August and April. The first groups of 20–50 individuals appeared each year in mid-August and left between late March and early May. They were concentrated especially near Mongla, Kochikhali, Dublarcher and Katka, like the resident Pariah Kites, and took similar food.

Brahminy Kite (*Haliastur i. indus*)

Abundant everywhere in the Sundarbans, with 30–50 seen daily. They were more or less uniformly distributed, except at the forest periphery, where

they were more numerous near human habitation. Concentrations were seen in fish-drying places (November to February only). They were generally observed in pairs and frequently flying over the water or perched on trees along the bank.

Several pairs occupied nests along the forest edges. From December, eggs were observed and in March mature young, which fledged in late March or April. Clutches contained two or three eggs. The male always supplied food to the female, who seemed to incubate alone. The incubation period was 44–46 days. Up to three young fledged from each nest, after a nestling period of about 35 days. Breeding success was comparatively higher than for other raptors in the Sundarbans area, and higher here than on the mainland. Fish and snakes from brackish and estuarine waters formed the principal food items.

Shikra (*Accipiter badius*)

Resident and uncommon; three birds seen, in July 1981.

White-eyed Buzzard (*Butastur teesa*)

A rare bird in the Sundarbans, and only one seen in our surveys. It may occur on the mainland and roost in the forest.

Changeable Hawk Eagle (*Spizaetus cirrhatus limnaetus*)

A rare visitor, recorded only once, in March 1981.

Booted Hawk Eagle (*Hieraetus pennatus*)

Regularly observed in December, February and March, perched high in trees on the river banks.

Steppe Eagle (*Aquila nipalensis*)

Observed once.

Lesser Spotted Eagle (*Aquila pomarina hastata*) and Greater Spotted Eagle (*Aquila clanga*)

These two species were observed once, in March 1981. They roosted in the trees on the river bank at the outskirts of the forest near Sutarkhali Forest Station and Nalianala Range.

Black Eagle (*Ictinaetus malayensis*)

One pair observed in January 1981, at Kachikhali, Sharankhola Range.

White-bellied Sea Eagle (*Haliaeetus leucogaster*)

A common resident and the largest raptor in the forest. Uniformly distributed but comparatively more numerous near the seashore. They were always found in pairs. During the warmer part of the day they were found under a shady tree, some two to three metres from the ground. In the evening, they became more vocal and called a great deal. They fed exclusively on marine fishes (coral, vetki) and marine snakes (*Hydrophis* spp.). Nesting was observed in October, incubation in November and December, and young fledged in March. Only one young flew out of six active nests.

Pallas's Fishing Eagle (*Haliaeetus leucoryphus*)

One pair occupied an empty nest at Sutarkhali in March 1981, and another attended a nest near Kassiabad in Khulna Range.

Grey-headed Fishing Eagle (*Ichthyophaga ichthyaetus*)

Resident and uncommon; found at edge of the forest with watery areas nearby. Observed near Chandpai Range and seen breeding at Kassiabad in Khulna Range.

Himalayan Grey-headed Fishing Eagle (*Ichthyophaga nana*)

A rare resident, sparsely distributed in the study areas.

King or Black Vulture (*Sarcogyps calvus*)

Formerly a common resident in the Sundarbans, as well as in the surrounding plains. Now apparently extinct in Bangladesh.

White-backed Vulture (*Gyps bengalensis*)

A common resident, usually along the forest edges near the mainland. Two breeding colonies were located near Kassiabad and one near Kaikhaili, in the forest. Fledglings were seen in March. The birds depended on carcasses of domestic animals found on the mainland.

Long-billed Vulture (*Gyps indicus*)

An uncommon resident, occasionally seen with the White-backed Vulture. It depended on carcasses of domestic animals, also of wild deer and pigs killed by tigers.

Crested Serpent Eagle (*Spilornis cheela*)

A common resident. Solitary birds often seen in trees along the forest edges.

Brown Fishing Owl (*Bubo zeylonensis*)

Seen near Supoti in Sharankhola Range and at Kalabogi in Khulna Range.

In addition to the above species *Elanus caeruleus*, *Pandion haliaetus*, *Falco peregrinus*, *Circus melanoleucos*, *C. macrourus*, *C. pygargus*, *C. aeruginosus* and *Falco tinnunculus* were occasionally seen in the forest's periphery. They normally hunted on the mainland and were rare migrants in the Sundarbans.

Tyto alba and *Athene brama* were reported along the forest edge, particularly near human settlements (breeding recorded), but were not seen by us. Also *Accipiter trivirgatus*, *Gyps fulvus*, *F. chicquera*, *F. severus* and *Otus scops* were reported by Hendrichs (1975) and Seidensticker (1978), but were not seen by us during the study period.

CONSERVATION

Most raptors were concentrated along the forest edges, in less disturbed areas where food items were abundant during the breeding period. *Haliaeetus leucoryphus*, *Ichthyophaga ichthyaetus* and *Gyps bengalensis* were common, breeding along the forest edge and feeding outside the forest. Most of the breeding sites were in forest disturbed by wood-cutters and other people. Trees with occupied nests have been cut down during the breeding season, especially when water areas dried up before the fledglings had left the nest.

The raptors of the Sundarbans mangrove forests are rapidly decreasing, apparently due to several factors, including destruction of their habitat (e.g. cutting of old trees); human disturbance during the breeding season; shortage of

food; and pesticide use in the hunting areas, particularly on the adjacent mainland. For their conservation, the following aspects need to be considered:

1. Maintenance of water areas in those parts of the mainland which are used by raptors, at least during the breeding season.
2. Maintenance of sufficient water in the lakes, canals and khals, so that food items remain available.
3. Fishing by humans should be reduced to provide more food for raptors. Overfishing causes food shortage and thus limits raptor populations.
4. Large trees should be preserved around watery areas, so as to provide hunting sites for raptors, and also in the forest to provide nest sites.
5. Populations of other prey species, e.g. lizards, snakes, frogs, toads, rats and mice should be maintained.
6. Use of DDT should be stopped or minimized.
7. People around the forest should be educated about raptors, so that they become more interested. Many birds are concentrated around human habitations, but more numerously in Hindu than in Muslim areas because of lower disturbance in the former.
8. Wood cutting should be stopped in the breeding areas at least during the breeding season.
9. Every year a large number of sea snakes—a staple food of Sea Eagles and other raptors—are caught in fishing nets. They should be released rather than killed.

ACKNOWLEDGEMENTS

The present work has been done under a research project financed by the University Grant Commission (Bangladesh). The authors gratefully acknowledge the U.G.C. for their financial support. They also express their gratitude to Mr Golam Habib, D.F.O., A.C.F., and other employees, Sundarbans Forest Division, Khulna, Department of Forests, who helped them in all aspects of their work, including transport and accommodation.

Thanks are also due to the Chairman, Department of Zoology, University of Dacca, for use of laboratory equipment for photography in the field, and to Mr Rafiqul Islam for typing this paper.

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