

Population Dynamics of Raptors in the Sundarban Forests of Bangladesh

Sohrab Uddin Sarker

ABSTRACT

The present study was carried out between December, 1980 and March, 1983. A total area of 3291 km² along the forest edge was surveyed, using the rivers and khals which intersect the forests. Ten trips were made in different seasons, during which 36 different species of raptors and two of crows were identified. The total of 5,154 individual raptors and 216 crows sighted gave a density of one raptor per 0.64 km and one crow per 15.7 km. The average density of breeding raptors was calculated at one pair per 32.91 km.

INTRODUCTION

The Sundarbans constitute the largest area of mangrove forest in the world and form an ideal habitat for wildlife. Their freedom from human habitation may have contributed to the high concentration of birds as compared with other parts of the country, since they provide better shelter and contain large expanses of water. In the past they were also free from human disturbance, due to the presence of tigers, crocodiles and King Cobras; to-day, however, the forests are invaded both by day and night by large numbers of woodcutters, fishermen, honey- and oyster-gatherers, using rowing boats and motor launches.

Little work has been done on the population dynamics and breeding rate of the raptors in the Sundarbans, apart from Sarker & Sarker 1982, Husain et al. 1983, and Sarker 1985a and b.

METHODS AND MATERIAL

The present study was carried out between December, 1980, and March, 1983. Ten surveys were made in different seasons in the Sundarbans, covering an area about 3,290 km in length and 1 km in width along the edges of the forests, on the banks of the rivers, channels and khals. Observations were made from wooden boats, dinghies and launches, the former moving at 3-4 km per hour, the latter at 12-15 km per hour. Binoculars were used, and also still and cinecameras to record the raptors and their habitats (Sarker & Sarker 1982; Sarker 1985a and 1985b).

RESULTS

A total of 5,154 individuals belonging to 36 different species, together with 216 individuals of two species of crow, were observed in the forests. The

average density was thus one raptor per 0.63 km and one crow per 15.7 km.

These 38 species included Osprey, four species of kite, three accipiters, 13 species of eagle, three species of vulture, three harriers, four species of falcon, five of owls and two of crows (Table 1).

Population Density

The relative density per type of raptor was one kite per 0.74 km, one eagle per 33.24 km, one vulture per 6 km and one owl per 329.1 km.

Among the kites, the Brahminy Kite was seen the most, and the Black-winged Kite the least often.

Among eagles, maximum density was shown by the White-bellied Sea Eagle and Crested Serpent Eagle, and minimum by the Spotted Eagles and Himalayan Fishing Eagle.

Among harriers and falcons, the Marsh Harrier showed the highest population density.

Overall, the Brahminy Kite was by far the commonest raptor (Table 1).

DISTRIBUTION

In all, 2,651 individual raptors (including crows) were observed in four ranges of the Sundarbans: 274 in Chandpai, 694 in Sarankhola, 785 in Nalianala and 898 in Burigoalini ranges.

The highest number occurred in Burigoalini and the lowest in Chandpai ranges. As regards the different species concerned, the maximum number was recorded in Nalianala (Khulna) and the minimum number in Sarankhola range (Table 2).

Vultures were common in Burigoalini and Nalianala but were not observed in Sarankhola.

Owls were seen in Nalianala but seemed to be very scarce in other ranges.

Black-winged Kites, Changeable Hawk Eagle, Eastern Steppe Eagle, Spotted Eagles, Pallas' Fishing Eagle, Himalayan Fishing Eagle, Pied Harrier and Marsh Harrier were observed only in Nalianala, and Long-billed Vulture only in Chandpai range.

The largest number of Black-eared Kites was seen concentrated at various fish-drying places in Sarankhola, and the minimum in Chandpai and other ranges. Brahminy Kites reached highest density in Nalianala and minimum density in Chandpai Range.

Table 1. STATUS AND POPULATION DENSITY OF RAPTORS IN THE SUNDARBANS

Species	Status	Res./Mig.	No. ind.	Density: one ind. per km
1. Black-winged Kite	Uncommon	Res.	5	658.3 km
2. Pariah Kite	Frequent	"	19	173.2
3. Black-eared Kite	Abundant	Mig.	914	3.6
4. Brahminy Kite	Abundant	Res.	3458	0.9
5. Shikra	Common	"	19	173.2
6. Sparrowhawk	Rare	Mig.	1	3291
7. Crested Goshawk	"	Res.	-	-
8. White-eyed Buzzard	"	"	2	1645.80
9. Changeable Hawk Eagle	Uncommon	"	1	3291.0
10. Booted Hawk Eagle	Frequent	Mig.	6	548.6
11. Tawny Eagle	Rare	Res.	-	-
12. Steppe Eagle	"	Mig.	2	1645.8
13. Greater Spotted Eagle	"	Res.	1	3291.0
14. Lesser Spotted Eagle	"	"	1	3291.0
15. Black Eagle	"	"	4	822.9
16. White-bellied Sea Eagle	Endangered	"	62	53.1
17. Pallas's Fishing Eagle	Endangered	"	7	470.2
18. Grey-headed Fishing Eagle	Endangered	"	11	299.2
19. Himalayan Grey-headed Fishing Eagle	Rare	"	1	3291.0
20. White-backed Vulture	Common	"	530	6.3
21. Long-billed Vulture	Rare	"	14	235.0
22. Griffon Vulture	"	"	4	822.0
23. Pale Harrier	"	Mig.	2	1645.8
24. Pied Harrier	"	"	4	822.0
25. Marsh Harrier	Frequent	"	6	448.59
26. Crested Serpent Eagle	Common	Res.	60	54.7
27. Osprey	Uncommon	Mig.	6	545.59
28. Shaheen Falcon	Rare	Res.	2	1645.8
29. Hobby	"	"	-	-
30. Red-headed Merlin	"	"	-	-
31. European Kestrel	"	Mig.	2	1645.8
32. Barn Owl	"	Res.	1	3291.0
33. Brown Fish Owl	"	"	3	1097.16
34. Forest Eagle Owl	"	"	1	3291.0
35. Scops Owl	"	"	1	3291.0
36. Spotted Owl	"	"	4	822.0
37. House Crow	Frequent	"	55	59.84
38. Jungle Crow	Common	"	161	20.44

Res.: Resident, Mig. Migratory

No.ind.: Number of individuals calculated

-: Reported but not observed by the author

The density of White-bellied Sea Eagles was highest in Nalianala and Sarankhola, and lowest in Burigoalini and Chandpai ranges. Grey-headed Fishing Eagles were only seen in Nalianala and Chandpai ranges. White-backed Vultures were commonest in Burigoalini and Nalianala ranges.

Crested Serpent Eagles were more numerous in Nalianala and Sarankhola, with markedly fewer in Chandpai and Burigoalini ranges.

DISTRIBUTION IN RELATION TO HABITAT

Black-eared Kite, Brahminy Kite and Booted Hawk Eagle were widely distributed throughout the Sundarbans. All kites, and also the White-bellied Sea Eagle, were far more numerous at fishing and fish-drying places and at Mongla Port, where their food supply (e.g. marine fish and snakes) was readily available.

Generally speaking, more species of raptors were found to frequent the forest periphery along the mainland than the interior of the forest.

SEASONAL VARIATION

Birds of prey reached maximum numbers in winter and minimum in summer. Between December and January in particular the population increased noticeably, after reaching its lowest density in November. During summer, populations were highest in July and lowest in May.

The winter increase was due to the arrival of migrants, e.g. Black-eared Kites, Pied Harriers, Marsh Harriers, European Kestrels, etc. (Table 1), and breeding pairs occupying their territories, e.g. Pallas' Fishing Eagle, and Grey-headed Fishing Eagle, combined with an abundance of prey at this time of year.

During the fishing season, fish are dried in the sun, whilst many dead fish and snakes etc. are thrown out by the fishermen. This readily available source of food led to many raptors concentrating in these areas.

In all, 1,193 individual raptors were observed in January-February and November-December, whereas only 583 were seen between March and July. Thus the population doubled during the winter months.

PRODUCTIVITY

A total of 130 breeding pairs of raptor were studied in three successive years, during which they fledged only 100 young.

Table 2

POPULATION VARIATION OF RAPTORS IN THE SUNDARBANS

Species	C	S	N	B
1. Black-winged Kite	-	-	4	5
2. Pariah Kite	1	3	15	-
3. Black-eared Kite	93	500	157	154
4. Brahminy Kite	94	132	347	183
5. Shikra	11	-	7	1
6. Sparrowhawk	-	-	1	-
7. Changeable Hawk Eagle	-	-	1	-
8. Booted Hawk Eagle	-	1	2	-
9. White-eyed Buzzard	-	-	2	-
10. Eastern Steppe Eagle	-	-	2	-
11. Greater Spotted Eagle	-	-	1	-
12. Lesser Spotted Eagle	-	-	1	-
13. Black Eagle	-	2	2	-
14. White-bellied Sea Eagle	5	19	35	3
15. Pallas's Fishing Eagle	-	-	6	-
16. Grey-headed Fishing Eagle	3	-	8	-
17. Himalyan Grey-headed Fishing Eagle	-	-	1	-
18. White-backed Vulture	12	-	165	353
19. Long-billed Vulture	14	-	-	-
20. Griffon Vulture	2	-	2	-
21. Osprey	-	-	4	2
22. Pied Harrier	-	-	4	-
23. Marsh Harrier	-	-	6	-
24. Crested Serpent Eagle	11	18	20	11
25. Shaheen Falcon	-	-	1	1
26. European Kestrel	-	-	2	-
27. Barn Owl	-	-	-	1
28. Brown Fish Owl	-	1	1	-

* C = Chandpai Range

* S = Sarankhola Range

* N = Nalianala (Khulna) Range

* B = Burigoalini (Satkhira) Range

From 11 occupied nests of White-bellied Sea Eagles, only three young fledged between March and May; out of three active breeding pairs of Pallas's Fishing Eagle, only one young was observed to fledge in March; one breeding pair of Grey-headed Fishing Eagles fledged one young; and out of 100 breeding pairs of White-backed Vultures, only 95 young were successfully fledged from 95 nests. (It was not possible to ascertain how many young fledged from the 15 nests of Brahminy Kites studied). Thus breeding success in the Sundarbans is apparently very low compared with other parts of the world. The causes of this populations decline and recommendations for conservation measures have been discussed in Sarker & Sarker 1982, and Sarker 1985a and 1985b.

REFERENCES

- CHAUDHURY, A. 1968. Working Plan of the Sundarban Forests Division for the period 1960-61 to 1970-80. Vols. I & II. E. Pakistan Govt. Press, Dacca.
- HUSAIN, K.Z., SARKER, S.U. & RAHMAN, M. 1983. Summer Birds of the Sundarbans, Nilkanal Sanctuary. Bangladesh J. Zool. 11: 41-51.
- SARKER, S.U. & SARKER, N.J. 1982. The Raptorial Birds of the Sundarbans and their Conservation. Conservation Studies of Raptors, ICBP Technical Publication No. 5, 1985.
- SARKER, S.U. 1985a. Ecological Observations on the endangered White-bellied Eagle (*Haliaeetus leucogaster*) in the Sundarbans, Bangladesh. Proc. Endang. Marine Animals and Marine Parks, 12-16 Jan. 1985, Cochín.
- SARKER, S.U. 1985b. Study on Density, Productivity and Biomass of Raptorial Birds of the Sundarbans. Proc. SARC Seminar, 15. April 1985, Dhaka.
- Md. Sohrab Uddin Sarker, Dept. of Zoology, University of Dhaka, Dhaka 2, Bangladesh.