

Species diversity, relative abundance and habitat use of the birds in the Sundarbans East Wildlife Sanctuary, Bangladesh

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Avifaunal surveys were carried out in the Sundarbans East Wildlife Sanctuary, Bangladesh, from September 2001 to February 2003. A total of 198 species was recorded including Buffy Fish Owl *Ketupa ketupu* (second record for Bangladesh), Streak-breasted Woodpecker *Picus viridanus* (first record in the Indian Subcontinent since 1958) and nine species not previously recorded in the Sundarbans of Bangladesh.

INTRODUCTION

The Sundarbans is the largest single tract of tidal mangrove forest in the world, covering c.10,000 km² in the Ganges-Brahmaputra delta of Bangladesh and India. Roughly 60% lies in the south-west of Bangladesh and the rest is in the south-east of the Indian state of West Bengal. There have been a number of previous studies of the birds of the Bangladesh Sundarbans. Rashid *et al.* (1994) listed 315 species but this included species of hypothetical occurrence. Husain *et al.* (1983) recorded 83 species in the Bangladesh Sundarbans Nilkamal Sanctuary (Sundarbans South Wildlife Sanctuary) in May 1982,

and Islam *et al.* (1999) recorded 181 species in the Bangladesh Sundarbans during winter months (October–March) from 1995 to 1997. Rashid and Scott (1990) reported observations of waders, and some bird records in mangroves were provided by Khan (1986). Rashid (1967), Husain (1967, 1979), Khan (1982), Sarker and Sarker (1988), Harvey (1990), and Thompson and Johnson (1996) produced lists of birds in Bangladesh and indicated species that are found in the Sundarbans. Subsequent reports on notable birds (Thompson *et al.* 1993, Thompson and Johnson 2003) have updated the knowledge of the status and distribution of many species in Bangladesh.

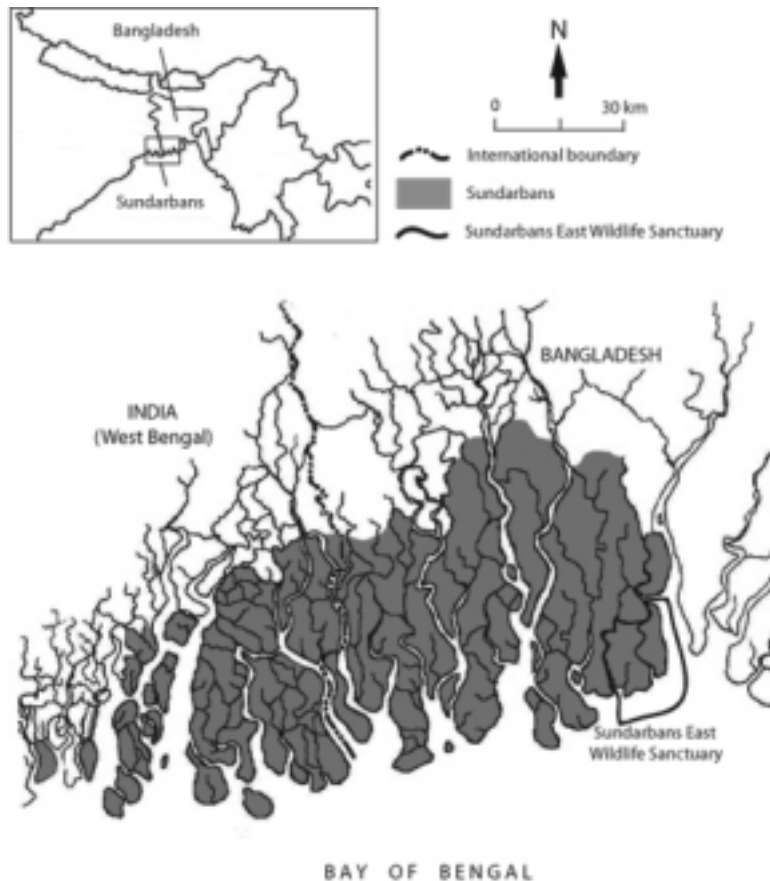


Figure 1. Map showing location of Sundarbans East Wildlife Sanctuary, Bangladesh.

STUDY AREA

The Sundarbans is located at 21°30'–22°30'N 88°05'–89°55'E (Fig. 1). The monthly mean temperature and relative humidity normally varies from 23°C and 70% during December–January to 35°C and 80% during May–June. There are three wildlife sanctuaries in the Bangladesh Sundarbans: Sundarbans East, Sundarbans South and Sundarbans West; together they form a UNESCO World Heritage Site. The Sundarbans East Wildlife Sanctuary covers an area of 312 km² at the south-eastern end of the Sundarbans. There are five major habitat types: (1) mangroves, dominated by *Heritiera fomes*, *Excoecaria agallocha*, and *Sonneratia apetala*, covering c.35% of the sanctuary; (2) grasslands, typically with *Imperata cylindrica*, *Acrostichum aureum*, *Myriostachya wightiana*, covering c.5% of the sanctuary; (3) mudflats, including sandy tidal flats and beaches, covering c.3% of the sanctuary; (4) transitional zones between these three habitats, usually with few trees, sometimes with reeds, covering c.7% of the sanctuary; and (5) deep water, including rivers and estuaries, covering c.50% of the sanctuary.

METHODS

Birds were surveyed for about one week every month from September 2001 to February 2003. The research team was based on a houseboat, which was based mainly in Katka, Kochikhali and Supati. The survey was conducted on foot and from a dinghy. Observations were made with 7–21×40 binoculars, mainly in the morning and evening. Grimmett *et al.* (1998) and Ali and Ripley (1987) were used for identification, and in many cases photographs were taken in order to confirm the identification. Relative abundance was assessed as 'very common' (seen on 75–100% of visits), 'common' (seen on 50–74% of visits), 'uncommon' (seen on 25–49% of visits), or 'rare' (seen on <25% of visits). For wintering migrants, abundance was assessed only during the months they were present. Global threat status follows BirdLife International (2001); national threat status follows IUCN Bangladesh (2000).

RESULTS AND DISCUSSION

A total of 198 species of birds was recorded (see Appendix), of which 134 (68%) were resident (including 15 local migrants) and 64 (32%) were migrants. Rashid *et al.* (1994) found a similar proportion (27%) of migrant species among the 315 species in the entire Bangladesh Sundarbans. Compared to mangroves elsewhere, avian species diversity is very high in the Sundarbans. Approximately equal proportions of species fell into each of the four abundance categories: very common (26%), common (21%), uncommon (24%) and rare (29%). A total of 87 species (44%) primarily used mangroves (and an additional 60 species used this habitat secondarily), 29 (15%) used grasslands, 52 (26%) used mudflats and 30 (15%) used transitional zones.

A total of nine species were recorded for the first time in the Bangladesh Sundarbans: Blue-breasted Quail *Coturnix chinensis*, Spot-billed Duck *Anas poecilorhyncha*, Dollarbird *Eurystomus orientalis*, Indian Pitta *Pitta brachyura*, Black-naped Oriole *Oriolus chinensis*, Lesser Racket-tailed Drongo *Dicrurus remifer*, Scaly Thrush *Zoothera dauma*, Yellow-eyed Babbler *Chrysomma sinense* and Ruby-cheeked Sunbird *Anthreptes singalensis*. All were previously known from elsewhere in Bangladesh.

Sixteen species had only been previously recorded by Rashid *et al.* (1994): Eurasian Eagle Owl *Bubo bubo*, Pompadour Green Pigeon *Treron pompadora*, Yellow-footed Green Pigeon *Treron phoenicoptera*, Ruddy-breasted Crake *Porzana fusca*, Marsh Sandpiper *Tringa stagnatilis*, Black-winged Stilt *Himantopus himantopus*, Pied Avocet *Recurvirostra avosetta*, Greater Spotted Eagle *Aquila clanga*, Malayan Night Heron *Gorsachius melanolophus*, Cinnamon Bittern *Ixobrychus cinnamomeus*, Black-headed Ibis *Threskiornis melanocephalus*, Ashy Woodswallow *Artamus fuscus*, Orange-headed Thrush *Zoothera citrina*, Bank Myna *Acridotheres ginginianus*, Pale-billed Flowerpecker *Dicaeum erythrorhynchos* and Scaly-breasted Munia *Lonchura punctulata*.

Nearly all the previous avifaunal lists for the area include some species of hypothetical occurrence, and most refer to the entire Bangladesh Sundarbans. However, at least 19 species have previously been recorded in the Sundarbans East Wildlife Sanctuary that I did not observe: Lesser Yellowname *Picus chlorolophus*, Oriental Scops Owl *Otus sumia*, Collared Scops Owl *Otus bakkamoena*, Little Stint *Calidris minuta*, Red-necked Stint *Calidris ruficollis*, Curlew Sandpiper *Calidris ferruginea*, Oriental Pratincole *Glareola maldivarum*, Grey Plover *Pluvialis squatarola*, River Tern *Sterna aurantia*, Little Grebe *Tachybaptus ruficollis*, Darter *Anhinga melanogaster*, Purple Heron *Ardea purpurea*, Dusky Warbler *Phylloscopus fuscatus*, Yellow-browed Warbler *Phylloscopus inornatus*, Blyth's Leaf Warbler *Phylloscopus reguloides*, Jungle Babbler *Turdoides striatus*, Oriental Skylark *Alauda gulgula*, Orange-bellied Flowerpecker *Dicaeum trigonostigma* and Scarlet-backed Flowerpecker *Dicaeum cruentatum*. In some cases these omissions are likely to be due to identification difficulties.

Four globally threatened species recorded: Masked Finfoot *Heliopais personata* (Vulnerable), White-rumped Vulture *Gyps bengalensis* (Critically Endangered), Greater Spotted Eagle (Vulnerable) and Lesser Adjutant *Leptoptilos javanicus* (Vulnerable), plus three Near Threatened species: Brown-winged Kingfisher *Halcyon amauroptera*, Black-headed Ibis *Threskiornis melanocephalus* and Mangrove Pitta *Pitta megarhyncha*. Additionally, seven nationally threatened species were recorded: Dollarbird (critically endangered), Ruddy Kingfisher *Halcyon coromanda* (vulnerable), Brown Fish Owl *Ketupa zeylonensis* (vulnerable), Masked Finfoot (endangered), White-bellied Sea Eagle *Haliaeetus leucogaster* (endangered), Malayan Night Heron (critically endangered) and Lesser Adjutant (endangered).

Thankfully, the Sundarbans East Wildlife Sanctuary and its birds are not under severe pressure yet, but over-exploitation of the natural resources, poaching, increasing water salinity and pollution are

some of the growing threats. Moreover, the area is susceptible to cyclones and rising sea level.

MASKED FINFOOT *Heliopais personata*

This species was seen uncommonly throughout the year, with sightings in October, November and December 2001; February, April, August, October and December 2002. Most records were of singles, with females seen more often than males, but a pair with two juveniles was seen in October 2001 and another pair was seen in April 2002, both in creeks in Katka. Birds were usually seen foraging along the bank of the creeks, feeding on small crabs during low tide, and resting under bushes on the bank of creeks.

WHITE-RUMPED VULTURE *Gyps bengalensis*

One group of seven individuals was seen soaring over the Kochikhali area on 22 September 2002. Local fishermen reported that vultures rarely come down to the mudflats of the sanctuary.

GREATER SPOTTED EAGLE *Aquila clanga*

Singles were seen on 11 January and 14 December 2002, on the banks of the river Baleshwar at the eastern end of the Sundarbans. It is occasionally seen on the mudflats of big rivers and estuaries (e.g. Meghna, Jamuna and Padma) elsewhere in Bangladesh (Khan 1982, Harvey 1990, Thompson and Johnson 1996).

LESSER ADJUTANT *Leptoptilos javanicus*

This species was seen quite commonly throughout the year, usually single or in groups of up to five individuals (mean flock size was 1.6 birds). They were normally seen foraging along the muddy banks of the creeks, in wet grasslands, resting in trees or flying. Juveniles were seen three times, all in October 2002. On three occasions I found parts of feathers or legs of this species in the scats of tiger *Panthera tigris*. The remains of killed adjutants were also found five times, surrounded by tiger pugmarks, clearly indicating that they had been hunted and eaten by tigers.

BROWN-WINGED KINGFISHER *Halcyon amauroptera*

This species is locally very common in the Sundarbans and it was seen in all months during the study period. In Bangladesh it is found mainly in the Sundarbans and surrounding areas (Khan 1982, Harvey 1990, Thompson and Johnson 1996).

BLACK-HEADED IBIS *Threskiornis melanocephalus*

One pair was seen on 14 September 2002 in Supati. Although the species is rare in the Sundarbans, it is quite common in the Meghna estuary, about 100 km to the east (personal observations).

MANGROVE PITTA *Pitta megarhyncha*

This species was seen rarely, with records in September and November 2001, January, February, April, June and August 2002, and January 2003, indicating that it is resident. One was seen carrying an invertebrate in its bill on 8 September 2001 in Kochikhali, indicating that it probably had a nest nearby. A juvenile was seen on 3 February 2002 in the same area. In the Indian subcon-

continent it is found only in the Sundarbans (Grimmett *et al.* 1998).

STREAK-BREASTED WOODPECKER *Picus viridanus*

This species was seen rarely, with records throughout the year in September, October and November 2001, and April, June, September, October and December 2002 (Plate 1). Most were singles, but an adult and a juvenile were seen foraging together on 6 June 2002, and a pair seen foraging together on 18 September 2002. Birds were identified by their grey cheeks (often with streaking), distinct black moustachial patch on an unstreaked pale brown throat, red iris, dusky bill with yellow lower mandible and dark tip and black tail with few white bars. The combination of these characters distinguishes the species from Streak-throated Woodpecker *Picus xanthopygaeus* and Laced Woodpecker *Picus vittatus*. The only previous confirmed record of Streak-breasted Woodpecker in the Indian subcontinent was one specimen collected from Burigoalini, about 50 km south-west of Khulna (in the north-west of the Bangladesh Sundarbans) on 12 April 1958, but it was misidentified as Laced Woodpecker (Paynter 1970, Short 1973, Harvey 1990, Grimmett *et al.* 1998). Rasmussen (2000) compared this specimen with the specimens of Streak-breasted Woodpecker collected from adjacent Myanmar and re-identified it as Streak-breasted Woodpecker. She noted that unlike typical South-East Asian birds, individuals from the north-western populations have a plain throat and breast.

BUFFY FISH OWL *Ketupa ketupu*

This species was recorded uncommonly throughout the year, with records of singles or pairs in January, September and October 2002 and January 2003 (Plate 2). Birds were mainly seen in trees on the banks of narrow creeks. They were identified by their rich brown upperparts, bare tarsi, relatively short tail with few whitish bands and the lack of fine horizontal cross-barring on the underparts. The combination of these characters distinguished birds from the similar Brown Fish Owl *Ketupa zeylonensis*, Tawny Fish Owl *K. flavipes* and Eurasian Eagle Owl *Bubo bubo* (Grimmett *et al.* 1998, König *et al.* 1999, and Neumann-Denzau and Denzau 2003). In the Indian subcontinent, there had been no record of this species since the early 20th century (Baker 1922–1930, Stevens 1915), until a record in Katka, Sundarbans East Wildlife Sanctuary in November 2000 (Neumann-Denzau and Denzau 2003). Grimmett *et al.* (1998) commented that it was recorded in east Assam (India) in early 20th century; and was presumably once resident, but its current status is unknown with no recent published records. König *et al.* (1999) give the present western limit of this species as southern Myanmar. The discovery that the species is resident in the Sundarbans has pushed the limit of its known current distribution 300 km to the west. Both Buffy Fish Owl and Streak-breasted Woodpecker are essentially South-East Asian species. Their presence indicates that some birds with South-East Asian affinity are found in the Sundarbans, as also pointed out by Paynter (1970) and Neumann-Denzau and Denzau (2003).



Plate 1. Streak-breasted Woodpecker *Picus viridanus*, Sundarbans East Wildlife Sanctuary, June 2002.



Plate 2. Buffy Fish Owl *Ketupa ketupa*, Sundarbans East Wildlife Sanctuary, October 2002.

GREAT THICK-KNEE *Esacus recurvirostris*

This species was recorded throughout the year on sandy beaches in the south-east of the sanctuary at Katka-Kochikhali, Egg Island and Pokkhir Char. Singles (rarely), pairs or small flocks of up to eight were seen. Pairs were recorded in October and December 2002, January and February 2003. Two nests were found on Katka beach in February and March 2002. Both nests were simple depressions in the dry sand, with a few dry twigs, on the upper part of the beach; each had two pale buffy eggs with dark brown patches. Injury feigning (by sitting on the knees and hopping) was displayed by one bird in December 2002. In Bangladesh, the species is found mainly in the Sundarbans (with one record in the river Jamuna: P. Thompson *in litt.* 2004), where it was previously known only in winter (Harvey 1990, Grimmett *et al.* 1998).

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APPENDIX

List of birds seen in the Sundarbans East Wildlife Sanctuary, Bangladesh

Species	Relative abundance	Status	Primary habitat	Secondary habitat
BLUE-BREASTED QUAIL <i>Coturnix chinensis</i>	UC	R	G	T
RED JUNGLEFOWL <i>Gallus gallus</i>	VC	R	W	T
LESSER WHISTLING-DUCK <i>Dendrocygna javanica</i>	R	R	M	W
COTTON PYGMY-GOOSE <i>Nettapus coromandelianus</i>	R	R	M	W
GADWALL <i>Anas strepera</i>	UC	M	M	W
SPOT-BILLED DUCK <i>Anas poecilorhyncha</i>	R	R	M	W
RED-CRESTED POCHARD <i>Netta rufina</i>	R	M	M	W
TUFTED DUCK <i>Aythya fuligula</i>	UC	M	M	W
EURASIAN WRYNECK <i>Fynx torquilla</i>	R	M	T	W
SPECKLED PICULET <i>Picumnus innominatus</i>	UC	R	W	T
GREY-CAPPED PYGMY WOODPECKER <i>Dendrocopos canicapillus</i>	C	R	T	W
FULVOUS-BREASTED WOODPECKER <i>Dendrocopos macei</i>	VC	R	W	T
RUFIOUS WOODPECKER <i>Celeus brachyurus</i>	C	R	W	T
GREATER YELLOWNAPE <i>Picus flavinucha</i>	UC	R	W	T
STREAK-BREASTED WOODPECKER <i>Picus viridanus</i>	R	R	W	T
STREAK-THROATED WOODPECKER <i>Picus xanthopygaeus</i>	UC	R	W	T
GREY-HEADED WOODPECKER <i>Picus canus</i>	UC	R	W	T
COMMON FLAMEBACK <i>Dinopium javanense</i>	UC	R	T	W
BLACK-RUMPED FLAMEBACK <i>Dinopium benghalense</i>	VC	R	W	T
GREATER FLAMEBACK <i>Chrysocolaptes lucidus</i>	VC	R	W	T
LINEATED BARBET <i>Megalaima lineata</i>	C	R	W	T
COPPERSMITH BARBET <i>Megalaima haemacephala</i>	UC	R	W	T
COMMON HOOPOE <i>Upupa epops</i>	C	R	G	T
INDIAN ROLLER <i>Coracias benghalensis</i>	UC	RM	T	W
DOLLARBIRD <i>Eurystomus orientalis</i>	R	RM	W	T
COMMON KINGFISHER <i>Alcedo atthis</i>	VC	R	W	M
BLUE-EARED KINGFISHER <i>Alcedo meninting</i>	UC	R	W	M
BROWN-WINGED KINGFISHER <i>Halcyon amauroptera</i>	VC	R	W	M
RUDDY KINGFISHER <i>Halcyon coromanda</i>	UC	R	W	M
WHITE-THROATED KINGFISHER <i>Halcyon smyrnensis</i>	VC	R	W	M
BLACK-CAPPED KINGFISHER <i>Halcyon pileata</i>	VC	R	W	M
COLLARED KINGFISHER <i>Todiramphus chloris</i>	VC	R	W	M
PIED KINGFISHER <i>Ceryle rudis</i>	R	R	M	W
GREEN BEE-EATER <i>Merops orientalis</i>	VC	RM	G	T
BLUE-TAILED BEE-EATER <i>Merops philippinus</i>	VC	RM	G	T
CHESTNUT-HEADED BEE-EATER <i>Merops leschenaulti</i>	C	RM	G	T
CHESTNUT-WINGED CUCKOO <i>Clamator coromandus</i>	R	RM	W	T
COMMON HAWK CUCKOO <i>Hierococcyx varius</i>	VC	R	W	T
INDIAN CUCKOO <i>Cuculus micropterus</i>	VC	RM	W	T
EURASIAN CUCKOO <i>Cuculus canorus</i>	UC	RM	W	T
PLAINTIVE CUCKOO <i>Cacomantis merulinus</i>	C	RM	G	T
ASIAN KOEL <i>Eudynamis scolopacea</i>	VC	R	W	T
GREEN-BILLED MALKOHA <i>Phaenicophaeus tristis</i>	VC	R	W	T
GREATER COUCAL <i>Centropus sinensis</i>	VC	R	W	T
ROSE-RINGED PARAKEET <i>Psittacula krameri</i>	C	R	W	T
ASIAN PALM SWIFT <i>Cypsiurus balasiensis</i>	VC	R	T	G
EURASIAN EAGLE OWL <i>Bubo bubo</i>	UC	R	W	T
BROWN FISH OWL <i>Ketupa zeylonensis</i>	UC	R	W	T
BUFFY FISH OWL <i>Ketupa ketupu</i>	UC	R	W	T

Species	Relative abundance	Status	Primary habitat	Secondary habitat
BROWN WOOD OWL <i>Strix leptogrammica</i>	R	R	W	T
LARGE-TAILED NIGHTJAR <i>Caprimulgus macrurus</i>	VC	RM	W	T
INDIAN NIGHTJAR <i>Caprimulgus asiaticus</i>	R	RM	W	T
ORIENTAL TURTLE DOVE <i>Streptopelia orientalis</i>	R	RM (M)	T	G
SPOTTED DOVE <i>Streptopelia chinensis</i>	VC	R	G	T
EURASIAN COLLARED DOVE <i>Streptopelia decaocto</i>	VC	R	G	T
EMERALD DOVE <i>Chalcophaps indica</i>	UC	R	W	T
ORANGE-BREASTED GREEN PIGEON <i>Treron bicincta</i>	C	RM	W	T
POMPADOUR GREEN PIGEON <i>Treron pompadora</i>	C	R	T	W
YELLOW-FOOTED GREEN PIGEON <i>Treron phoenicoptera</i>	UC	R	T	W
MASKED FINFOOT <i>Heliopais personata</i>	UC	R	W	T
SLATY-BREASTED RAIL <i>Gallirallus striatus</i>	R	R	W	T
WHITE-BREASTED WATERHEN <i>Amaurornis phoenicurus</i>	R	R	W	M
RUDDY-BREASTED CRAKE <i>Porzana fusca</i>	R	R	T	G
PINTAIL SNIPE <i>Gallinago stenura</i>	UC	M	G	M
COMMON SNIPE <i>Gallinago gallinago</i>	C	M	G	M
BLACK-TAILED GODWIT <i>Limosa limosa</i>	UC	M	M	W
WHIMBREL <i>Numenius phaeopus</i>	VC	M	M	W
EURASIAN CURLEW <i>Numenius arquata</i>	C	M	M	W
COMMON REDSHANK <i>Tringa totanus</i>	VC	M	M	W
MARSH SANDPIPER <i>Tringa stagnatilis</i>	VC	M	M	W
COMMON GREENSHANK <i>Tringa nebularia</i>	VC	M	M	W
WOOD SANDPIPER <i>Tringa glareola</i>	C	M	M	W
TEREK SANDPIPER <i>Xenus cinereus</i>	R	M	M	W
COMMON SANDPIPER <i>Actitis hypoleucos</i>	VC	M	M	W
RUDDY TURNSTONE <i>Arenaria interpres</i>	R	M	M	W
SANDERLING <i>Calidris alba</i>	UC	M	M	W
PHEASANT-TAILED JACANA <i>Hydrophasianus chirurgus</i>	R	R	T	M
GREAT THICK-KNEE <i>Esacus recurvirostris</i>	UC	R	M	G
BLACK-WINGED STILT <i>Himantopus himantopus</i>	R	M	M	W
PIED AVOCET <i>Recurvirostra avosetta</i>	R	M	M	W
PACIFIC GOLDEN PLOVER <i>Pluvialis fulva</i>	R	M	M	G
KENTISH PLOVER <i>Charadrius alexandrinus</i>	UC	M	M	W
LESSER SAND PLOVER <i>Charadrius mongolus</i>	VC	M	M	W
GREATER SAND PLOVER <i>Charadrius leschenaultii</i>	C	M	M	W
GREY-HEADED LAPWING <i>Vanellus cinereus</i>	R	M	M	G
RED-WATTLED LAPWING <i>Vanellus indicus</i>	VC	R	G	M
SMALL PRATINCOLE <i>Glareola lactea</i>	R	R	M	W
PALLAS'S GULL <i>Larus ichthyaetus</i>	R	M	M	W
BROWN-HEADED GULL <i>Larus brunnicapillus</i>	VC	M	M	W
BLACK-HEADED GULL <i>Larus ridibundus</i>	UC	M	M	W
GULL-BILLED TERN <i>Gelochelidon nilotica</i>	VC	M	M	W
CASPIAN TERN <i>Sterna caspia</i>	R	M	M	W
GREAT CRESTED TERN <i>Sterna bergii</i>	R	M	M	W
COMMON TERN <i>Sterna hirundo</i>	UC	M	M	W
LITTLE TERN <i>Sterna albifrons</i>	VC	M	M	W
WHISKERED TERN <i>Chlidonias hybridus</i>	VC	M	M	W
OSPREY <i>Pandion haliaetus</i>	R	M	W	T
BLACK-SHOULDERED KITE <i>Elanus caeruleus</i>	UC	R	G	T
BLACK KITE <i>Milvus migrans</i>	UC	R	M	W
BRAHMINY KITE <i>Haliastur indus</i>	VC	R	W	M
WHITE-RUMPED VULTURE <i>Gyps bengalensis</i>	R	R	M	W
WHITE-BELLIED SEA EAGLE <i>Haliaeetus leucogaster</i>	VC	R	W	M
CRESTED SERPENT EAGLE <i>Spilornis cheela</i>	VC	R	W	T
EURASIAN MARSH HARRIER <i>Circus aeruginosus</i>	R	M	G	T
PIED HARRIER <i>Circus melanoleucos</i>	R	M	G	T
SHIKRA <i>Accipiter badius</i>	VC	R	W	T

Species	Relative abundance	Status	Primary habitat	Secondary habitat
GREATER SPOTTED EAGLE <i>Aquila clanga</i>	R	M	M	W
CHANGEABLE HAWK EAGLE <i>Spizaetus cirrhatus</i>	UC	R	W	T
COMMON KESTREL <i>Falco tinnunculus</i>	UC	M	T	G
PEREGRINE FALCON <i>Falco peregrinus</i>	R	M	T	W
LITTLE CORMORANT <i>Phalacrocorax niger</i>	R	R	M	W
LITTLE EGRET <i>Egretta garzetta</i>	VC	R	M	W
GREY HERON <i>Ardea cinerea</i>	R	R	M	W
GREAT EGRET <i>Casmerodius albus</i>	VC	R	M	W
INTERMEDIATE EGRET <i>Mesophoyx intermedia</i>	C	R	M	W
CATTLE EGRET <i>Bubulcus ibis</i>	R	R	M	G
INDIAN POND HERON <i>Ardeola grayii</i>	C	R	W	M
LITTLE HERON <i>Butorides striatus</i>	VC	R	W	M
BLACK-CROWNED NIGHT HERON <i>Nycticorax nycticorax</i>	R	R	G	W
MALAYAN NIGHT HERON <i>Gorsachius melanolophus</i>	R	RM	W	T
CINNAMON BITTERN <i>Ixobrychus cinnamomeus</i>	R	R	W	M
BLACK-HEADED IBIS <i>Threskiornis melanocephalus</i>	R	R	M	W
LESSER ADJUTANT <i>Leptoptilos javanicus</i>	C	R	M	W
INDIAN PITTA <i>Pitta brachyura</i>	R	R	W	T
MANGROVE PITTA <i>Pitta megarhyncha</i>	R	R	W	T
GOLDEN-FRONTED LEAFBIRD <i>Chloropsis aurifrons</i>	UC	R	W	T
BROWN SHRIKE <i>Lanius cristatus</i>	UC	M	T	G
LONG-TAILED SHRIKE <i>Lanius schach</i>	C	R	T	G
GREY-BACKED SHRIKE <i>Lanius tephronotus</i>	R	M	T	G
RUFIOUS TREEPIE <i>Dendrocitta vagabunda</i>	C	R	W	T
HOUSE CROW <i>Corvus splendens</i>	C	R	W	T
LARGE-BILLED CROW <i>Corvus macrorhynchos</i>	UC	R	W	T
ASHY WOODSWALLOW <i>Artamus fuscus</i>	VC	R	T	W
BLACK-NAPED ORIOLE <i>Oriolus chinensis</i>	R	M	W	T
BLACK-HOODED ORIOLE <i>Oriolus xanthornus</i>	C	R	W	T
LARGE CUCKOOSHRIKE <i>Coracina macei</i>	VC	R	W	T
BLACK-WINGED CUCKOOSHRIKE <i>Coracina melaschistos</i>	R	M	W	T
SMALL MINIVET <i>Pericrocotus cinnamomeus</i>	VC	R	W	T
SCARLET MINIVET <i>Pericrocotus flammeus</i>	C	R	W	T
BAR-WINGED FLYCATCHER-SHRIKE <i>Hemipus picatus</i>	UC	R	W	T
WHITE-THROATED FANTAIL <i>Rhipidura albicollis</i>	C	R	W	T
BLACK DRONGO <i>Dicrurus macrocerus</i>	VC	R	T	G
ASHY DRONGO <i>Dicrurus leucophaeus</i>	C	M	T	W
BRONZED DRONGO <i>Dicrurus aeneus</i>	VC	R	W	T
LESSER RACKET-TAILED DRONGO <i>Dicrurus remifer</i>	R	M	W	T
SPANGLED DRONGO <i>Dicrurus hottentottus</i>	UC	R	W	T
GREATER RACKET-TAILED DRONGO <i>Dicrurus paradiseus</i>	C	R	W	T
BLACK-NAPED MONARCH <i>Hypothymis azurea</i>	C	R	W	T
COMMON IORA <i>Aegithina tiphia</i>	C	R	W	T
BLUE ROCK THRUSH <i>Monticola solitarius</i>	UC	M	T	W
ORANGE-HEADED THRUSH <i>Zoothera citrina</i>	R	R	W	T
SCALY THRUSH <i>Zoothera dauma</i>	R	M	W	T
DARK-SIDED FLYCATCHER <i>Muscicapa sibirica</i>	R	M	T	W
RED-THROATED FLYCATCHER <i>Ficedula parva</i>	C	M	W	T
VERDITER FLYCATCHER <i>Eumyias thalassina</i>	UC	M	T	W
BLUE-THROATED FLYCATCHER <i>Cyornis rubeculoides</i>	R	M	W	T
ORIENTAL MAGPIE ROBIN <i>Copsychus saularis</i>	C	R	T	G
BLACK REDSTART <i>Phoenicurus ochruros</i>	R	M	G	T
COMMON STONECHAT <i>Saxicola torquata</i>	UC	M	G	T
CHESTNUT-TAILED STARLING <i>Sturnus malabaricus</i>	C	R	T	W
ASIAN PIED STARLING <i>Sturnus contra</i>	C	R	G	T
COMMON MYNA <i>Acridotheres tristis</i>	UC	R	G	T
BANK MYNA <i>Acridotheres ginginianus</i>	C	R	G	M

Species	Relative abundance	Status	Primary habitat	Secondary habitat
JUNGLE MYNA <i>Acridotheres fuscus</i>	VC	R	G	T
VELVET-FRONTED NUTHATCH <i>Sitta frontalis</i>	C	R	W	T
GREAT TIT <i>Parus major</i>	VC	R	W	T
BARN SWALLOW <i>Hirundo rustica</i>	VC	M	M	W
RED-WHISKERED BULBUL <i>Pycnonotus jocosus</i>	C	R	T	W
RED-VENTED BULBUL <i>Pycnonotus cafer</i>	VC	R	T	W
ZITTING CISTICOLA <i>Cisticola juncidis</i>	VC	R	G	T
YELLOW-BELLIED PRINIA <i>Prinia flaviventris</i>	R	R	G	T
PLAIN PRINIA <i>Prinia inornata</i>	R	R	G	T
ORIENTAL WHITE-EYE <i>Zosterops palpebrosus</i>	UC	R	W	T
BLYTH'S REED WARBLER <i>Acrocephalus dumetorum</i>	UC	M	T	G
CLAMOROUS REED WARBLER <i>Acrocephalus stentoreus</i>	R	M	T	G
COMMON TAILORBIRD <i>Orthotomus sutorius</i>	C	R	W	T
COMMON CHIFFCHAFF <i>Phylloscopus collybita</i>	UC	M	W	T
GREENISH WARBLER <i>Phylloscopus trochiloides</i>	UC	M	W	T
ABBOTT'S BABBLER <i>Malacocincla abbotti</i>	C	R	W	T
STRIPED TIT BABBLER <i>Macronous gularis</i>	C	R	W	T
YELLOW-EYED BABBLER <i>Chrysomma sinense</i>	R	R	T	G
STRIATED BABBLER <i>Turdoides earlei</i>	C	R	G	T
RUFIOUS-WINGED BUSHLARK <i>Mirafra assamica</i>	C	R	G	T
PALE-BILLED FLOWERPECKER <i>Dicaeum erythrorhynchos</i>	UC	R	W	T
RUBY-CHEEKED SUNBIRD <i>Anthreptes singalensis</i>	UC	RM	W	T
PURPLE-RUMPED SUNBIRD <i>Nectarinia zeylonica</i>	R	R	W	T
PURPLE SUNBIRD <i>Nectarinia asiatica</i>	VC	R	W	T
CRIMSON SUNBIRD <i>Aethopyga siparaja</i>	UC	R	W	T
FOREST WAGTAIL <i>Dendronanthus indicus</i>	C	M	W	T
WHITE WAGTAIL <i>Motacilla alba</i>	VC	M	M	G
WHITE-BROWED WAGTAIL <i>Motacilla maderaspatensis</i>	R	R	M	G
CITRINE WAGTAIL <i>Motacilla citreola</i>	UC	M	M	G
YELLOW WAGTAIL <i>Motacilla flava</i>	R	M	M	G
GREY WAGTAIL <i>Motacilla cinerea</i>	C	M	G	M
PADDYFIELD PIPIT <i>Anthus rufulus</i>	C	R	G	M
OLIVE-BACKED PIPIT <i>Anthus hodgsoni</i>	UC	M	T	M
BAYA WEAVER <i>Ploceus philippinus</i>	VC	R	T	G
SCALY-BREASTED MUNIA <i>Lonchura punctulata</i>	C	R	G	T

Key

Relative abundance: VC = very common; C = common; UC = uncommon; R = rare. Status: R = resident; RM = resident but local movements observed; M = migrant. Habitat: W = mangrove woodlands including creeks; G = grasslands; M = mudflats including beaches; T = transitional habitats.