Conservation of the Avifauna of Dudwa National Park, India

SALIM JAVED AND ASAD R. RAHMANI

Records of birds in and around Dudwa National Park were maintained from 1991 to 1994. The study involved intensive data collection on the bird community structure. Records from previous studies and surveys have been incorporated in this paper also. A total of 330 species were recorded from the park, of which 112 species breed in the area. The impact of the annual grassland burning and other management practices are discussed vis a vis conservation of some of the endangered bird species of the area.

INTRODUCTION

Dudwa National Park in Uttar Pradesh, India contains one of the best protected areas of subtropical tall grassland, locally called *terai* grassland. The terai region is a flat alluvial stretch of land lying between the Himalayan foothills and the Gangetic plain. It extends through the Indian states of Uttar Pradesh, parts of Bihar, north-west Bengal and Assam, and is also found in south-west Nepal. The moist deciduous vegetation of this region is dominated by extensive patches of Sal *Shorea robusta* forest, interspersed with grasslands dominated by *Saccharum*, *Narenga*, *Sclerostachya* and *Typha* species.

Until the early 1950s, the whole *terai* region was very thinly populated, except for the local tribals, called Tharus, who inhabited the area. Unimaginative land reform policy on the part of the Indian government resulted in the leasing out of large tracts of highly important terai habitat, primarily grasslands, for human settlements and cultivation. As a result, extensive patches of good terai grasslands were converted into arable croplands. This loss of terai habitat adversely affected the terai fauna. Species such as Swamp Deer Cervus duvaucelii, Swamp Francolin Francolinus gularis, Hispid Hare Caprolagus hispidus and Bengal Florican Houbaropsis bengalensis showed a decline in population and increased localization to small isolated fragments. Fragmentation has made these species vulnerable to extinction due to random natural events.

STUDY AREA

Dudwa National Park is situated on the Indo-Nepal border in Nigahasan tehsil of Lakhimpur-Kheri district in Uttar Pradesh. The area falls under the Terai-Bhabar biogeographic subdivision of the Upper Gangetic Plain (7A) biogeographic classification of Rodgers and Panwar (1988).

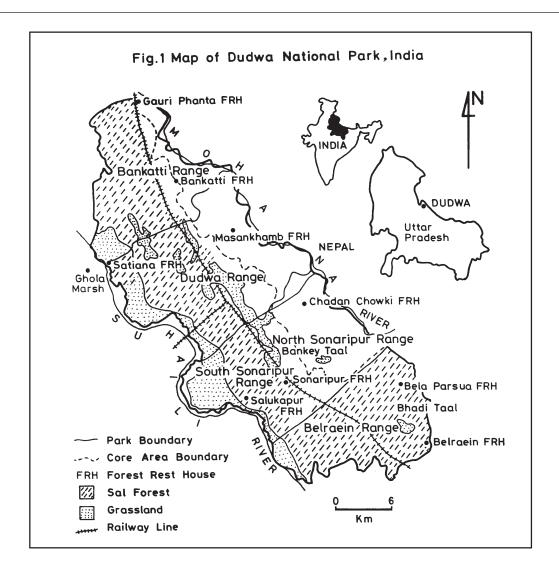
The park lies between 28°18' and 28°42'N and 80° 28' and 80°27'E. The Himalayan foothills lie about 30 km to the north of the park. The Suheli River on the southern side and the Mohana River on the north side form the natural boundaries of the park. The topography is flat, with a maximum elevation of 182 m above MSL. To protect the relict population of Swamp Deer, in

particular, an area of 212 km² was declared a sanctuary. In 1977 the area was declared a national park with a core zone of 490 km² and a buffer zone of 124 km² (Fig.1). The buffer zone in Dudwa National Park (DNP) is located to the north of the core zone and still includes tribal Tharu villages. About 30,000 people continue to live in a band c. 5 km wide in and around the park (Singh 1982). They are partly dependent on forest for thatch, fodder and fuel wood, thus creating an important management issue.

METHODS

From 1991 to 1994, during monitoring, by the first author, of permanent transects to study the avian community structure, a bird list was compiled by careful recording of all the birds encountered. This list was supplemented by casual opportunistic observations during the same study period (under the Grassland Ecology Project). Systematic records of all the birds seen from 1985 to 1989 under the Endangered Species Project on Bengal Florican were also maintained and are included in this list. The two main seasons, winter and summer were covered for three years. For each species we assigned its status, i.e. whether resident, breeding resident, winter migrant, summer migrant, etc. This was based on our observations, and also on information gathered from serious birdwatchers and researchers. We also identified the main habitats of each species. If a species was found in many habitats, then all were included (Appendix) but listed in order of importance. We also categorized each species as common (C), occasional (O), or uncommon (U), based on our records.

To study the proportion of threatened species in each habitat category only the main habitat was considered. For instance, many species were found in the pure grassland (GL) and also in the wooded grassland (WGL). For analysis, only the GL has been considered as the relevant habitat. Similarly, many birds were seen in the Sal forest (SF) and mixed forest (MF), but they have been included only in the habitat where they were seen most often. Wetland and marshland species were clumped together because of the practical difficulty in delineating the habitat boundaries for certain species. The criteria for level of threat (LT) is based on *Birds to*



watch 2 (Collar et al. 1994). Although we have included White-rumped Vulture Gyps bengalensis and Long-billed Vulture G. indicus as near threatened (NT), we do not agree with this categorization because both species are abundant in India. Nationally threatened species are indicated, based on the schedules of the Wildlife (Protection) Act 1972.

RESULTS AND DISCUSSION

Distribution patterns of birds

A total of 330 species of birds (Appendix) have been recorded during the three years of intensive studies, supplemented by the previous surveys. Javed (1996) observed 319 species from 1991 to 1994. There have been few previous accounts of the birds of Dudwa: Singh and Singh (1985), Anon. (1990), Sankaran and Rahmani (1990), Javed and Rahmani (1993) and Javed (1996). Singh and Singh (1985) listed 337 species recorded in the park, including 66 not on this list. These 66 species, many of which seem unlikely to have occurred in the park, have been omitted from the list in the Appendix, pending confirmation that they occur. We have been extremely careful in recording bird species and have tried not to include those species which were doubtful or not clearly identified in the field.

Of the 330 species recorded from this area, 112 (34%) species are resident breeding birds, including important species such as the Bengal Florican and Swamp Francolin. Another 31 (9%) are resident, but breeding in Dudwa has not been confirmed. Winter migrants constitute at least 90 (26%) of the total species. The majority of these are waterfowl and there are also several species of leaf warblers *Phylloscopus*. Seven species are summer migrants and 5 (4.9%) show local movements. There are just three species, the Black Redstart Phoenicurus ochruros, Blue Rock Thrush Monticola solitarius and Blue Whistling Thrush Myophonus caeruleus which pass through the area, remaining for one or two days. For about 82 species (25%) we could not ascertain their status. We suspect that many of these species could be breeding in Dudwa, but we have not seen nests or young birds.

Among the habitat types, wetland/marshland (WL/ML) have the highest number of species (105). These two habitats also accounted for the highest number of threatened species (16 or 15% of the birds recorded in Dudwa) (Fig. 2). The grassland/wooded grassland (GL/WGL) habitats consist of 63 species, out of which 5 (8%) are threatened. Rufous-rumped Grassbird Graminicola bengalensis, a characteristic species of terai grasslands, has no published records from Uttar Pradesh but was observed in Dudwa by C. and T. Inskipp in

1982 (T. Inskipp pers. comm. 1997). The Sal forest (SF) has 53 bird species, which do not include any globally threatened species; however, the Pompadour Green Pigeon *Treron pompadora* was seen during this study and constitutes the first record for Uttar Pradesh. The Greybellied Tesia *Tesia cyaniventer* is an elusive species characteristic of the Sal forest undergrowth and infrequently seen in the park - it is otherwise recorded only by Singh and Singh (1985). The Striped Tit Babbler *Macronous gularis* is another species with no previous published records for Uttar Pradesh, although it was noted by C. and T. Inskipp in 1982 and is included in Singh and Singh (1985).

The remaining habitats, i.e. mixed forest (MF) and riverine forest (RF) do not have any globally threatened species (Fig. 2). Most of the species frequenting such habitats are widespread and mostly generalists; they do not require special conservation attention.

Of the 330 bird species recorded in Dudwa, 22 (7%) are globally threatened or near threatened. Dudwa has significant populations of only two: the Bengal Florican and the Swamp Francolin. The remaining species, including Spot-billed Pelican *Pelecanus philippensis*, Black-headed Ibis *Threskiornis melanocephalus*, Marbled Duck *Marmaronetta angustirostris*, Ferruginous Pochard *Aythya nyroca*, Red-necked Falcon *Falco chicquera*, do not occur in Dudwa in large numbers. The 22 threatened species included 73% which are wetland birds, 23% characteristic of grassland and the remainder are associated with Sal forest.

Threatened and important bird species

The Bengal Florican, the Lesser Florican *Sypheotides indica* and the Swamp Francolin are confined to the grasslands of the terai. In addition, the Pied Harrier *Circus melanoleucos* is a nationally threatened species.

SWAMP FRANCOLIN Francolinus gularis

Endemic to the Indian subcontinent, it is distributed along the Himalayan foothills in tall wet grasslands of the *terai* as well as the floodplains. Swamp Francolins were present at 20 different localities within the Park. It was also frequently found at the park-agricultural interface in good numbers. Ghola *tal* (waterbody), outside the Sathiana region, has probably the best Swamp Francolin population. The populations of Gajrola and Tiger Haven are also reasonably good. A comprehensive study on the Swamp Francolin was started in 1993, and the data are now being analyzed.

BENGAL FLORICAN Houbaropsis bengalensis

Distributed in the subcontinent in Assam, Bangladesh, Bhutan, Nepal, West Bengal and the *terai* of Bihar and Uttar Pradesh (Ali and Ripley 1987), it is now considered one of the most endangered bustards of the world. It is believed that its population has declined sharply in recent years and it is now extinct in Bangladesh (Karim 1985, Khan 1982). In 1982, about 35-50 Bengal Floricans were seen in Nepal and two were located in Dudwa National Park (Inskipp 1983). Twenty seven were seen in a 1985 survey in Uttar Pradesh and Assam (Rahmani *et al.* 1991). A further survey in 1992 and 1993 in the *terai* added one more site, i.e. Kishanpur Sanctuary, 30 km south of Dudwa. Three displaying males were seen in 1992 and one in 1993. It is estimated

that the total number occurring in Dudwa and Kishanpur is 40-60 birds. It is also possibly present in Katerniaghat Sanctuary. Apparently the Bengal Florican populations are stable and well-protected but the critical factor for their long term survival is the presence of optimal habitat. The patches of short grasses throughout the *terai* need to be managed very carefully. Undue alteration in habitat by wrong management practices without proper scientific input may weaken the chances of its long term survival. Prescribed burning and harrowing should be done well before the birds start displaying.

LESSER FLORICAN Sypheotides indica

Perhaps the most threatened member of the bustard family, the Lesser Florican may be found all over India in suitable grasslands in the non-breeding season. It has been reported from the terai region (Anon. 1877, 1905) and has been specifically recorded from Dudwa: in 1981, Balram Singh saw one in the park (Inskipp and Inskipp 1983). A hen florican was sighted twice, on 8 and 17 June 1988, in Navalkhad grassland in the Sathiana region (Rahmani *et al.* 1988), but none was seen from 1991-1994.

PIED HARRIER Circus melanoleucos

The Pied Harrier is a winter visitor to the eastern parts of the Indian subcontinent. Between 1991 and 1995, in Dudwa National Park, a few birds were regularly seen in the Madrayya region, and in areas near to Dudwa, such as Kishanpur, Katerniaghat and Pilibhit. Although it breeds extralimitally, it occasionally breeds in Assam (Dibrugarh district - Kaziranga). Narayan and Lima (1991) reported it breeding at Manas wildlife sanctuary and suspected at least three breeding pairs. They also believed that a few of these birds bred regularly in the alluvial grasslands south of the Himalayas and north of the Brahmaputra in lower Assam, and that it also possibly bred on islands and on the southern bank of the river in Laokhova Wildlife Sanctuary, Burachapuri and Kochmara reserves, Kaziranga National Park and Majuli islands.

It requires vast, flat, treeless and often swampy grasslands for breeding, so it is possible that there is hardly any such habitat left in the region between Assam and Myanmar and the main breeding areas in Russia, Mongolia and China (Narayan and Lima 1991).

Conservation Perspectives: Management Activities

Management activities in Dudwa are largely aimed at improvement of habitat for endangered species. As grasslands are preclimax they are maintained by annual burning, grazing and floods. Grasslands in Dudwa are managed by the annual prescribed burning at the beginning of the dry season and this is the most important and crucial management activity. However, burning may be harmful to grassland birds, especially if it is carried out too frequently or too intensively. The removal of understory and thinning of Sal forest are done on an irregular basis and hence do not significantly influence the distribution and abundance patterns of birds. Control and management of accidental fires in the forest, during early summer has some adverse affect on the forest dwelling species such as Red Junglefowl

Gallus gallus. One such fire, in 1992, burnt a good part of the understory in the Bhadraula block of Sathiana and was possibly responsible for the low recruitment of the Red Junglefowl, due to nest destruction or chick mortality.

Most of the grassland birds in Dudwa commence their breeding in March, after the grassland burning is over, and complete their breeding before the onset of the monsoon in June, when most of the low-lying grasslands get inundated.

The time, extant and periodicity of burning of the grassland have a great influence on the grassland bird species, particularly those species which have specialized habitat requirements. Most of the burning in Dudwa is done for the management of the endangered Swamp Deer and other ungulates. These activities are often illtimed as they coincide with the breeding season of grassland birds, on which they have an adverse affect. Burning late in the season in florican territories can cause abandonment of territories, either due to direct disturbance and fire, or because of the condition of the habitat following fire (the grass cover being too sparse to provide them enough protection). In 1993, the Forest Department started harrowing late in the season (middle of February) when the floricans had already started displaying. As a result of this disturbance one of the displaying males abandoned its territory and the latter remained unoccupied till 1994.

Other smaller grassland birds, such as Chestnutcapped Babbler Timalia pileata, Yellow-eyed Babbler Chrysomma sinense, Zitting Cisticola Cisticola juncidis and Bright-headed Cisticola Cisticola exilis, Rufous-rumped Grassbird and prinias Prinia breed during summer and any management activity during this period will impact the breeding either by nest destruction or by chick mortality. There are a few areas in the park which are still disturbed by human activities. For example, grasslands adjoining to Gajrola village in Sathiana region have serious overgrazing problems. Villagers let their cattle graze in the area and, as there is no guard posted in the area, they resort to grass-cutting and burning to generate a new flush of green grass for cattle. Following grass-cutting and burning two Zitting Cisticola nests were abandoned in 1993.

Conservation of grassland birds in Dudwa is primarily a function of the management activities. The timing, rotation and extent of burning will determine the breeding success and abundance of birds. We recommend, based on our studies on the grassland communities, that all management activities in grassland should cease by mid February. Similarly, protection of forest birds, particularly ground nesters is affected by accidental fires. The late summer fires are not very frequent, but intentional burning by locals, and also the discarding of burning matchsticks by tourists along the two metalled roads, pose potential threats to the sal forests and have often been responsible for the spread of fire. The closure of these roads to regular traffic through Dudwa, the institution of a series of fire lines, and provision of an adequate number of alert firewatchers, could provide effective control of such incidents.

We greatly appreciate the US Fish & Wildlife Service for providing funds for the "Grassland Ecology Project" and in particular to Mr David Ferguson, SFC coordinator and Prof. Mark Behan, consultant to our project, for their help. We also thank Prof. A. H. Musavi and Dr Jay Samant for their encouragement and the institutional support from the Centre of Wildlife & Ornithology, Aligarh Muslim University, Aligarh and from the Bombay Natural History Society. We also thank Dr V. Natarajan and Farah Ishtiaq for going through the species list and changing it according to the revised nomenclature. We also thank Tim and Carol Inskipp for their comments and information on Dudwa birds.

REFERENCES

- Anon. (1877) District Gazetteer, Province of Oudh. Vol II, H to M. Allahabad: published by authority N. W. Provinces and Oudh Govt. Press.
- Anon. (1905) District Gazetteer, United province of Agra and Oudh. Vol XLII. Allahabad: Govt. Press.
- Anon. (1990) List of birds recorded from Dudwa National Park. Pp. 147-149 in Anon. Status and ecology of Lesser and Bengal Floricans with reports on Jerdon's Courser and Mountain Quail. Bombay: Bombay Natural History Society.
- Ali, S. and Ripley, S. D. (1987) Compact handbook of the birds of India and Pakistan. New Delhi: Oxford University Press.
- Collar, N. J., Crosby, M. J. and Stattersfield, A. J. (1994) Birds to watch 2: the world list of threatened birds. Cambridge, U.K.: BirdLife International (Conservation Series no. 4).
- Inskipp, C. and Inskipp, T. (1983) Report on a survey of Bengal Floricans Houbaropsis bengalensis in Nepal and India, 1982. Cambridge, U.K.: International Council for Bird Preservation (Study report no. 2).
- Inskipp, C. and Inskipp, T. (1991) A guide to the birds of Nepal. London: Christopher Helm.
- Javed, S. (1996) Structure of the bird communities of the terai forest in Dudwa National Park. Ph.D Thesis. Aligarh Muslim University, Aligarh. Unpublished.
- Javed, S. and Rahmani, A. R. (1993) Ecology of the grasslands of Indian plains with special reference to their fauna. Annual Report, Bombay Natural History Society.
- Karim, F. (1985) A note on the disappearance of the Bengal Florican from Bangladesh. *Bustard Studies* 3: 161-162.
- Khan, M. A. R (1982) Wildlife of Bangladesh: a checklist. Dhaka: University of Dhaka.
- Narayan, G. and Rosalind, L. (1991) New record of the Pied Harrier Circus melanoleucos (Pennant) breeding in Assam duars, with a brief review of its distribution. J. Bombay Nat. Hist. Soc. 88: 30-34.
- Rahmani, A. R (1988) Grassland birds of the Indian subcontinent: a review. Pp. 187-204 in P. Goriup, ed. *Ecology and conservation of grassland birds*. Cambridge, U.K.: International Council for Bird Preservation (Technical publication No. 7).
- Rahmani, A. R., Narayan, G., Rosalind, L., Sankaran, R. and Ganguli-Lachungpa, U. (1991) Status of the Bengal Florican in India. J. Bombay Nat. Hist. Soc. 88: 349-375.
- Rahmani, A. R., Narayan, G., Sankaran, R. and Rosalind, L. (1988) The Bengal Florican: status and ecology. Annual Report 1986-87. Bombay: Bombay Natural History Society.
- Rodgers, W. A. and Panwar, H. S. (1988) *Planning a protected area network in India*. Volume 1 the report. Dehradun: Wildlife Institute of India.
- Sankaran, R and Rahmani, A. R. (1990) The Bengal Florican in Dudwa National Park. Pp. 45-54 in Anon. Status and ecology of Lesser and Bengal Floricans with reports on Jerdon's Courser and Mountain Quail.. Bombay: Bombay Natural History Society.
- Singh, A. N. and Singh, A. (1985) A checklist of birds of Dudwa National Park, U.P.
- Singh, R. L. (1982) Management plan of Dudwa National Park for 1982-83 to 1991-92. Unpublished.

APPENDIX

List of bird species recorded in Dudwa National Park, India

English name	Scientific name	Status	Habitat	Occurrence	Threat	WLP Act
Black Francolin	Francolinus francolinus	RB	GL	С	S	
Grey Francolin	Francolinus pondicerianus	RB	AGR	0	S	+
SWAMP FRANCOLIN	Francolinus gularis	RB	GL	С	V	
COMMON QUAIL	Coturnix coturnix	RB	GL	С	S	
Jungle Bush Quail	Perdicula asiatica	RB	GL	С	S	
RED JUNGLEFOWL	Gallus gallus	RB	SF/MF	С	S	
Indian Peafowl	Pavo cristatus	RB	MF	С	S	
Fulvous Whistling-duck	Dendrocygna bicolor	WM	WL	U	S	+
Lesser Whistling-duck	Dendrocygna javanica	R	WL	С	S	
Greylag Goose	Anser anser	WM	WL	С	S	
Bar-headed Goose	Anser indicus	WM	WL	С	S	+
RUDDY SHELDUCK	Tadorna ferruginea	WM	WL	0	S	
Comb Duck	Sarkidiornis melanotos	R	WL	С	S	
COTTON PYGMY-GOOSE	Nettapus coromandelianus	UC	WL	С	S	
Gadwall	Anas strepera	WM	WL	С	S	+
FALCATED DUCK	Anas falcata	WM	WL	0	S	
Eurasian Wigeon*	Anas penelope	WM	WL	С	S	
Mallard	Anas platyrhynchos	WM	WL	С	S	
SPOT-BILLED DUCK	Anas poecilorhyncha	WM	WL	С	S	
Northern Shoveler	Anas clypeata	WM	WL	С	S	
Northern Pintail	Anas acuta	WM	WL	С	S	
GARGANEY	Anas querquedula	WM	WL	С	S	
COMMON TEAL	Anas crecca	WM	WL	С	S	
Marbled Duck	Marmaronetta angustirostris		WL	0	V	+
RED-CRESTED POCHARD	Rhodonessa rufina	WM	WL	С	S	
Common Pochard	Aythya ferina	WM	WL	С	S	
Ferruginous Pochard	Aythya nyroca	WM	WL	С	V	+
Tufted Duck	Aythya fuligula	WM	WL	0	S	
Eurasian Wryneck	Jynx torquilla	WM	SF/RF/MF	0	S	
Grey-capped Pygmy Woodpecker	Dendrocopos canicapillus	RB	RF/MF/SF/WGL		S	
Brown-capped Pygmy Woodpecker	•	RB	RF/MF/SF/WGL		S	
Fulvous-breasted Woodpecker*	Dendrocopos macei	R	SF	C	S	
YELLOW-CROWNED WOODPECKER	Dendrocopos mahrattensis	RB	MF/WGL	С	S	
Rufous Woodpecker	Celeus brachyurus	UC	SF/WGL	0	S	
Lesser Yellownape	Picus chlorolophus	UC	SF	С	S	
Greater Yellownape	Picus flavinucha	UC	SF	С	S	
STREAK-THROATED WOODPECKER	Picus xanthopygaeus	UC	SF/WGL	С	S	
Grey-headed Woodpecker	Picus canus	UC	SF	С	S	
Himalayan Flameback	Dinopium shorii	RB	SF/RF/MF/WGL		S	
BLACK-RUMPED FLAMEBACK	Dinopium benghalense	RB	SF/RF/MF/WGL		S	
Greater Flameback	Chrysocolaptes lucidus	UC	SF/WGL	С	S	
WHITE-NAPED WOODPECKER	Chrysocolaptes festivus	UC	SF/WGL	С	S	
Great Slaty Woodpecker	Mulleripicus pulverulentus	R	SF	0	S	
Brown-headed Barbet	Megalaima zeylanica	RB	SF/WGL	С	S	
BLUE-THROATED BARBET	Megalaima asiatica	UC	WGL	U	S	
COPPERSMITH BARBET	Megalaiama haemacephala	RB	SF/MF/WGL	С	S	
Indian Grey Hornbill	Ocyceros birostris	RB	SF/MF/GL	С	S	+
ORIENTAL PIED HORNBILL	Anthracoceros albirostris	RB	SF/MF/WGL	С	S	+
Great Hornbill	Buceros bicornis	RB	SF	С	S	
COMMON HOOPOE	Upupa epops	RB	GL/WGL/AGR	О	S	
Indian Roller	Coracias benghalensis	RB	MF/GL	0	S	
Common Kingfisher	Alcedo atthis	RB	WL	С	S	
STORK-BILLED KINGFISHER	Halcyon capensis	RB	WL/RF	С	S	
WHITE-THROATED KINGFISHER	Halcyon smyrnensis	RB	WL/RF/GL	С	S	
PIED KINGFISHER	Ceryle rudis	RB	WL	С	S	
Blue-bearded Bee-eater	Nyctyornis athertoni	RB	MF/GL	О	S	
Green Bee-eater	Merops orientalis	RB	MF/GL/WGL	С	S	
Blue-tailed Bee-eater	Merops philippinus	RB	MF/GL/WGL	С	S	

English name	Scientific name	Status	Habitat	Occurrence	Threat	WLP Act
CHESTNUT-HEADED BEE-EATER	Merops leschenaulti	UC	MF/GL/WGL	С	S	
PIED CUCKOO	Clamator jacobinus	SM	MF/WGL	0	S	
Common Hawk Cuckoo	Hierococcyx varius	R	MF/WGL	C	S	
Indian Cuckoo	Cuculus micropterus	UC	MF/SF	0	S	
Eurasian Cuckoo	Cuculus canorus	SM	MF/SF/GL	0	S	
BANDED BAY CUCKOO*	Cacomantis sonneratii	UC	MF	C	S	
Grey-bellied Cuckoo	Cacomantis passerinus	SM	GL/WGL	С	S	
Asian Emerald Cuckoo	Chrysococcyx maculatus	UC	MF/SF	U	S	
Drongo Cuckoo*	Surniculus lugubris	R	MF	U	S	
Asian Koel	Eudynamys scolopacea	UC	MF	С	S	
Green-billed Malkoha	Phaenicophaeus tristis	R	MF	O	S	
Sirkeer Malkoha	Phaenicophaeus leschenaultii	R	GL/WGL	С	S	
Greater Coucal	Centropus sinensis	RB	MF/WGL	С	S	
Lesser Coucal	Centropus bengalensis	RB	GL	С	S	+
Alexandrine Parakeet	Psittacula eupatria	RB	MF/WGL	С	S	
Rose-ringed Parakeet	Psittacula krameri	RB	MF/WGL	С	S	
Plum-headed Parakeet	Psittacula cyanocephala	RB	MF/WGL	C	S	
White-rumped Needletail*	Zoonavena sylvatica	UC	MF	О	S	
Crested Treeswift	Hemiprocne longipennis	RB	MF/WGL	0	S	
Barn Owl	Tyto alba	RB	GL/MF	O	S	
Grass Owl	Tyto capensis	UC	GL	O	S	
Collared Scops Owl	Otus bakkamoena	UC	MF/WGL	U	S	
Eurasian Eagle Owl	Bubo bubo	UC	SF/MF/GL	0	S	
Dusky Eagle Owl	Bubo coromandus	R	SF	U	S	
Brown Fish Owl	Ketupa zeylonensis	RB	WL/MF	C	S	
Brown Wood Owl	Strix leptogrammica	UC	SF/MF	0	S	
Asian Barred Owlet	Glaucidium cuculoides	RB	SF/MF/GL	C	S	
JUNGLE OWLET	Glaucidium radiatum	RB	SF/MF/GL	C	S	
SPOTTED OWLET	Athene brama	RB	WGL/MF	0	S	
Brown Hawk Owl*	Ninox scutulata	R	MF	0	S	
Grey Nightiar		UC	MF/SF	0	S	
*	Caprimulgus indicus		SF/WGL			
Large-tailed Nightjar	Caprimulgus macrurus	RB		C	S	
Indian Nightjar*	Caprimulgus asiaticus	UC	MF		S	
SAVANNA NIGHTJAR	Caprimulgus affinis	RB	MF/WGL	0	S	
ROCK PIGEON	Columba livia	RB	SF/MF	C	S	
ORIENTAL TURTLE DOVE	Streptopelia orientalis	WM	SF	0	S	
Laughing Dove	Streptopelia senegalensis	RB	MF/GL	С	S	
SPOTTED DOVE	Streptopelia chinensis	RB	SF/MF	С	S	
RED COLLARED DOVE	Streptopelia tranquebarica	RB	GL	С	S	
Eurasian Collared Dove	Streptopelia decaocto	RB	MF/SF/GL	С	S	
Emerald Dove	Chalcophaps indica	R	SF	С	S	
Orange-breasted Green Pigeon	Treron bicincta	RB	SF/MF	O	S	
Pompadour Green Pigeon	Treron pompadora	RB	SF/MF	O	S	
YELLOW-FOOTED GREEN PIGEON	Treron phoenicoptera	RB	SF/MF	С	S	
Pin-tailed Green Pigeon	Treron apicauda	RB	SF/MF	С	S	
Bengal Florican	Houbaropsis bengalensis	RB	GL	O	Е	+
Lesser florican	Sypheotides indica	SM	GL	С	E	+
Sarus Crane	Grus antigone	UC	WL	O	NT	+
Brown Crake	Amaurornis akool	RB	ML	С	S	
WHITE-BREASTED WATERHEN	Amaurornis phoenicurus	RB	ML	C	S	
RUDDY-BREASTED CRAKE	Porzana fusca	RB	ML	O	S	
Watercock	Gallicrex cinerea	RB	WL	O	S	
Purple Swamphen	Porphyrio porphyrio	RB	WL	C	S	
Common Moorhen	Gallinula chloropus	RB	ML	С	S	
Соммон Соот	Fulica atra	WM	WL	С	S	
COMMON SNIPE	Gallinago gallinago	WM	ML	С	S	
JACK SNIPE	Lymnocryptes minimus	WM	ML	C	S	
BLACK-TAILED GODWIT	Limosa limosa	WM	WL	С	S	
SPOTTED REDSHANK	Tringa erythropus	WM	WL	0	S	
Common Redshank	Tringa totanus	WM	WL	0	S	
MARSH SANDPIPER	Tringa stagnatilis	WM	WL	C	S	
Common Greenshank	Tringa stagnatus Tringa nebularia	WM	WL	C	S	
COMMON GREENSHANK	11 inga neomana	AA 1AT	W L	U	J	

English name	Scientific name	Status	Habitat	Occurrence	Threat	WLP Act
Green Sandpiper	Tringa ochropus	WM	WL	С	S	
Wood Sandpiper	Tringa glareola	WM	WL	С	S	
Common Sandpiper	Actitis hypoleucos	WM	WL	С	S	
LITTLE STINT	Calidris minuta	WM	WL	С	S	
TEMMINCK'S STINT	Calidris temminckii	WM	WL	0	S	
Ruff	Philomachus pugnax	WM	WL	C	S	
RED-NECKED PHALAROPE	Phalaropus lobatus	WM	WL	U	S	
Greater Painted-snipe	Rostratula benghalensis	RB	WL	С	S	
PHEASANT-TAILED JACANA	Hydrophasianus chirurgus	RB	WL	С	S	
Bronze-winged Jacana	Metopidius indicus	RB	WL	С	S	
Eurasian Thick-knee	Burhinus oedicnemus	UC	GL	C	S	
Great Thick-knee	Esacus recurvirostris	UC	GL	0	S	
BLACK-WINGED STILT	Himantopus himantopus	WM	WL	0	S	
LITTLE RINGED PLOVER	Charadrius dubius	WM	WL	C	S	
Grey-headed Lapwing	Vanellus cinereus	WM	WL	С	NT	+
RED-WATTLED LAPWING	Vanellus indicus	RB	WL/GL	С	S	
WHITE-TAILED LAPWING	Vanellus leucurus	WM	WL	С	S	
Black-headed Gull	Larus ridibundus	WM	WL	C	S	
River Tern	Sterna aurantia	WM	WL	С	S	
Black-bellied Tern	Sterna acuticauda	WM	WL	V	V	+
Whiskered Tern	Chlidonias hybridus	WM	WL	С	S	
Osprey	Pandion haliaetus	WM	WL	0	S	
Oriental Honey-buzzard	Pernis ptilorhyncus	R	MF	С	S	
Black-shouldered Kite	Elanus caeruleus	R	MF/WGL	С	S	
BLACK KITE	Milvus migrans	RB	MF/WGL	С	S	
Brahminy Kite	Haliastur indus	WM	WL	С	S	
Pallas's Fish Eagle	Haliaeetus leucoryphus	WM	WL	O	V	+
White-tailed Eagle	Haliaeetus albicilla	WM	WL	0	NT	
Lesser Fish Eagle	Icthyophaga humilis	R	WL	O	S	+
Grey-headed Fish Eagle	Icthyophaga ichthyaetus	R	WL	С	NT	+
Egyptian Vulture	Neophron percnopterus	RB	GL	С	S	
WHITE-RUMPED VULUTURE	Gyps bengalensis	RB	GL	С	NT	
Long-billed Vulture	Gyps indicus	LM	GL	U	NT	
RED-HEADED VULTURE	Sarcogyps calvus	R	GL	0	NT	
SHORT-TOED SNAKE EAGLE	Circaetus gallicus	UC	WGL	С	S	
Crested Serpent Eagle	Spilornis cheela	R	MF/WGL	С	S	
Eurasian Marsh Harrier	Circus aeruginosus	WM	WL/WGL	O	S	
Hen Harrier	Circus cyaneus	WM	GL	O	S	
PIED HARRIER	Circus melanoleucos	WM	GL	0	S	+
SHIKRA	Accipiter badius	R	MF	C	S	
Eurasian Sparrowhawk	Accipiter nisus	UC	MF	С	S	
WHITE-EYED BUZZARD	Butastur teesa	R	MF/GL	C	S	
Lesser Spotted Eagle	Aquila pomarina	WM	GL	С	S	+
Greater Spotted Eagle	Aquila clanga	WM	WL	0	V	+
STEPPE EAGLE*	Aquila nipalensis	UC	MF/WGL	0	S	
Bonelli's Eagle	Hieraaetus fasciatus	UC	MF	0	S	
CHANGEABLE HAWK EAGLE	Spizaetus cirrhatus	R	MF	0	S	
Common Kestrel	Falco tinnunculus	WM	GL	U	S	
RED-NECKED FALCON	Falco chicquera	UC	GL	0	NT	+
Little Grebe	Tachybaptus ruficollis	UC	WL	O	S	
DARTER	Anhinga melanogaster	UC	WL	C	NT	+
LITTLE CORMORANT	Phalacrocorax niger	UC	WL	C	S	
Indian Cormorant	Phalacrocorax fusicollis	UC	WL	C	S	
Great Cormorant	Phalacrocorax carbo	UC	WL	C	S	
LITTLE EGRET	Egretta garzetta	UC	WL	С	S	
Grey Heron	Ardea cinerea	R	WL	C	S	
Purple Heron	Ardea purpurea	RB	WL	С	S	
Great Egret	Casmerodius albus	UC	WL	С	S	
Intermediate Egret	Mesophoyx intermedia	UC	WL	С	S	
CATTLE EGRET	Bubulcus ibis	RB	WL	С	S	
Indian Pond Heron	Ardeola grayii	RB	WL	С	S	
BLACK-CROWNED NIGHT HERON	Nycticorax nycticorax	RB	WL	O	S	

English name	Scientific name	Status	Habitat	Occurrence	Threat	WLP Act
LITTLE BITTERN	Ixobrychus minutus	UC	WL/ML	U	S	
Yellow Bittern	Ixobrychus sinensis	UC	WL/ML	О	S	
CINNAMON BITTERN	Ixobrychus cinnamomeus	UC	WL/ML	С	S	
BLACK BITTERN	Dupetor flavicollis	R	WL/ML	С	S	
Black-headed Ibis	Threskiornis melanocephalus	LM	WL	O	NT	+
Black Ibis	Pseudibis papillosa	LM	WL	С	NT	
Eurasian Spoonbill	Platalea leucorodia	LM	WL	С	S	
Great White Pelican	Pelecanus onocrotalus	WM	WL	O	S	+
SPOT-BILLED PELICAN	Pelecanus philippensis	WM	WL	0	V	+
Painted Stork	Mycteria leucocephala	LM	WL	U	NT	
Asian Openbill	Anastomus oscitans	RB	WL	С	NT	
Woolly-necked Stork	Ciconia episcopus	R	WL	С	S	
WHITE STORK	Ciconia ciconia	WM	WL	U	S	+
Black-necked Stork	Ephippiorhynchus asiaticus	RB	WL	С	S	+
Lesser Adjutant	Leptoptilos javanicus	RB	WL	C	V	+
Indian Pitta	Pitta brachyura	SM	SF	C	S	
Golden-fronted Leafbird	Chloropsis aurifrons	UC	SF	С	S	
Orange-bellied Leafbird	Chloropsis hardwickii	UC	SF	O	S	
Bay-backed Shrike	Lanius vittatus	UC	WGL	U	S	
Long-tailed Shrike	Lanius schach	RB	WGL	С	S	
SOUTHERN GREY SHRIKE	Lanius meridionalis	UC	WGL	О	S	
Rufous Tree Pie	Dendrocitta vagabunda	RB	SF/MF/WGL	С	S	
House Crow	Corvus splendens	RB	MF/AGR	С	S	
Large-billed Crow	Corvus macrorhynchos	RB	SF/MF/GL	С	S	
Eurasian Golden Oriole	Oriolus oriolus	RB	MF/WGL	C	S	
Black-hooded Oriole	Oriolus xanthornus	RB	SF/RF/MF/WGL	C	S	
Large Cuckooshrike	Coracina macei	SM	SF/WGL	C	S	
Black-headed Cuckooshrike*	Coracina melanoptera	UC	MF	0	S	
SMALL MINIVET	Pericrocotus cinnamomeus	R	SF/MF/WGL	C	S	
Long-tailed Minivet	Pericrocotus ethologus	WM	SF/RF	C	S	
SHORT-BILLED MINIVET	Pericrocotus brevirostris	WM	SF	0	S	
SCARLET MINIVET	Pericrocotus flammeus	WM	SF	C	S	
BAR-WINGED FLYCATCHER-SHRIKE	Hemipus picatus	UC	SF/RF/MF/WGL		S	
YELLOW-BELLIED FANTAIL	Rhipidura hypoxantha	UC	SF/MF/FGL	C	S	
WHITE-THROATED FANTAIL	Rhipidura albicollis	UC	WGL/GL	C	S	
WHITE-BROWED FANTAIL	Rhipidura aureola	UC	SF/MF/WGL	C	S	
BLACK DRONGO	Dicrurus macrocercus	RB	SF/MF/WGL	C	S	
Ashy Drongo	Dicrurus leucophaeus	UC	SF SF	0	S	
	Dicrurus teucopnaeus Dicrurus caerulescens	RB	SF/MF/RF/WGL		S	
WHITE-BELLIED DRONGO		UC		0	S	
Crow-billed Drongo Lesser Racket-tailed Drongo	Dicrurus annectans		SF/MF/GL			
	Dicrurus remifer	UC	SF	O	S	
Spangled Drongo	Dicrurus hottentottus	UC	SF SE/ME	U	S	
Greater Racket-tailed Drongo	Dicrurus paradiseus	RB	SF/MF	С	S	
BLACK-NAPED MONARCH	Hypothymis azurea	WM	SF/RF	0	S	
Asian Paradise-flycatcher	Terpsiphone paradisi	SM	SF/RF/	С	S	
COMMON IORA	Aegithina tiphia	RB	SF/RF/MF/WGL		S	
Common Woodshrike	Tephrodornis pondicerianus	UC	GL/SF/WGL	C	S	
BLUE ROCK THRUSH	Monticola solitarius	P	WGL	U	S	
Blue Whistling Thrush	Myophonus caeruleus	P	SF	U	S	
Orange-headed Thrush	Zoothera citrina	R	SF/RF	C	S	
Grey-winged Blackbird	Turdus boulboul	WM	SF	U	S	
Dark-throated Thrush	Turdus ruficollis	WM	WGL	С	S	
Rufous-gorgeted Flycatcher	Ficedula strophiata	WM	RF	0	S	
Red-throated Flycatcher	Ficedula parva	WM	SF/MF/RF/WGL		S	
LITTLE PIED FLYCATCHER	Ficedula westermanni	WM	SF/FGL	С	S	
Ultramarine Flycatcher	Ficedula superciliaris	WM	SF/MF/DG	С	S	
Verditer Flycatcher	Eumyias thalassina	WM	SF/MF/FGL	O	S	
Tickell's Blue Flycatcher	Cyornis tickelliae	WM	SF/MF/FGL	С	S	
GREY-HEADED CANARY FLYCATCHER	Culicicapa ceylonensis	WM	SF/MF/FGL	С	S	
Siberian Rubythroat	Luscinia calliope	WM	GL/WL	С	S	
WHITE-TAILED RUBYTHROAT	Luscinia pectoralis	WM	GL	U	S	
BLUETHROAT	Luscinia svecica	WM	GL/WL	С	S	

English name	Scientific name	Status	Habitat	Occurrence	Threat	WLP Act
ORIENTAL MAGPIE ROBIN	Copsychus saularis	RB	SF/MF/RF/WGL		S	
WHITE-RUMPED SHAMA	Copsychus malabaricus	UC	SF/MF	C	S	
Indian Robin	Saxicoloides fulicata	R	GL/WGL	0	S	
BLACK REDSTART	Phoenicurus ochruros	P	RF/WGL	0	S	
COMMON STONECHAT	Saxicola torquata	WM	GL	С	S	
WHITE-TAILED STONECHAT	Saxicola leucura	RB	GL	0	S	
PIED BUSHCHAT	Saxicola caprata	RB	GL	С	S	
GREY BUSHCHAT	Saxicola ferrea	WM	WGL	С	S	
Brown Rock-chat	Cercomela fusca	R	GL	С	S	
CHESTNUT-TAILED STARLING	Sturnus malabaricus	UC	WGL	0	S	
Brahminy Starling	Sturnus pagodarum	UC	MF/WGL	0	S	
Asian Pied Starling	Sturnus contra	RB	WGL	С	S	
Common Myna	Acridotheres tristis	RB	GL/WGL	С	S	
BANK MYNA	Acridotheres ginginianus	RB	GL/WGL	С	S	
JUNGLE MYNA	Acridotheres fuscus	UC	SF/WGL	С	S	
CHESTNUT-BELLIED NUTHATCH	Sitta castanea	RB	SF/MF	C	S	
Bar-tailed Treecreeper	Certhia himalayana	UC	SF	U	S	
FIRE-CAPPED TIT	Cephalopyrus flammiceps	WM	MF/RF	U	S	
Great Tit	Parus major	RB	SF/MF/RF/WGL		S	
SAND/PALE MARTIN	Riparia riparia/diluta	UC	WL/ML/WGL	C	S	
Plain Martin	Riparia paludicola	UC	WL/ML	С	S	
Barn Swallow	Hirundo rustica	WM	GL	С	S	
RED-RUMPED SWALLOW	Hirundo daurica	UC	GL/ML	С	S	
BLACK-CRESTED BULBUL	Pycnonotus melanicterus	UC	SF/MF	О	S	
Red-whiskered Bulbul	Pycnonotus jocosus	UC	SF/MF	С	S	
RED-VENTED BULBUL	Pycnonotus cafer	RB	SF/MF/WGL	С	S	
ZITTING CISTICOLA	Cisticola juncidis	RB	GL	С	S	
Bright-headed Cisticola	Cisticola exilis	RB	GL	С	S	
Grey-breasted Prinia	Prinia hodgsonii	RB	GL/WGL	С	S	
Jungle Prinia	Prinia sylvatica	R	GL	O	S	
YELLOW-BELLIED PRINIA	Prinia flaviventris	RB	GL	С	S	
Ashy Prinia	Prinia socialis	RB	GL/WGL	С	S	
Plain Prinia	Prinia inornata	RB	GL/WGL	С	S	
Oriental White-eye	Zosterops palpebrosus	R	SF/MF	С	S	
Grey-bellied Tesia	Tesia cyaniventer	UC	SF	U	S	
GREY-SIDED BUSH WARBLER	Cettia brunnifrons	UC	GL	U	S	
SPOTTED BUSH WARBLER	Bradypterus thoracicus	UC	GL	С	S	
Grasshopper Warbler	Locustella naevia	WM	ML	0	S	
Paddyfield Warbler	Acrocephalus agricola	UC	ML	0	S	
Blyth's Reed Warbler*	Acrocephalus dumetorum	WM	ML	С	S	
Common Tailorbird	Orthotomus sutorius	RB	SF/MF/WGL	С	S	
Common Chiffchaff	Phylloscopus collybita	WM	MF/WGL	С	S	
Dusky Warbler	Phylloscopus fuscatus	WM	GL	0	S	
Smoky Warbler	Phylloscopus fuligiventer	WM	WL	С	S	
Hume's Warbler	Phylloscopus humei	WM	MF/SF/RF/WGL		S	
GREENISH WARBLER	Phylloscopus trochiloides	WM	SF/RF/MF	С	S	
WESTERN CROWNED WARBLER	Phylloscopus occipitalis	WM	SF/MF/RF/WGL		S	
Striated Grassbird	Megalurus palustris	RB	ML	0	S	
Rufous-rumped Grassbird	Graminicola bengalensis	RB	GL	С	S	
TAWNY-BELLIED BABBLER	Dumetia hyperythra	UC	MF/WGL	С	S	
Striped Tit Babbler	Macronous gularis	RB	MF/WGL	С	S	
CHESTNUT-CAPPED BABBLER	Timalia pileata	RB	GL	С	S	
Yellow-eyed Babbler	Chrysomma sinense	RB	GL/WGL	С	S	
COMMON BABBLER	Turdoides caudatus	RB	MF	0	S	
Striated Babbler	Turdoides earlei	RB	ML	С	S	
Large Grey Babbler	Turdoides malcolmi	UC	MF/WGL	0	S	
Jungle Babbler	Turdoides striatus	RB	MF/WGL	С	S	
SINGING BUSHLARK	Mirafra cantillans	RB	GL	0	S	
Indian Bushlark	Mirafra erythroptera	RB	GL/AGR	С	S	
Bengal Bushlark+	Mirafra assamica	R	GL	С	S	
Oriental Skylark	Alauda gulgula	RB	GL/AGR	С	S	
THICK-BILLED FLOWERPECKER*	Dicaeum agile	UC	MF/SF	U	S	

English name	Scientific name	Status	Habitat	Occurrence	Threat	WLP Act
Pale-billed Flowerpecker	Dicaeum erythrorynchos	UC	SF/MF/RF	U	S	
Purple Sunbird	Nectarinia asiatica	RB	MF/WGL	С	S	
Crimson Sunbird	Aethopyga siparaja	R	SF/MF	С	S	
House Sparrow	Passer domesticus	RB	MF/WGL	С	S	
CHESTNUT-SHOULDERED PETRONIA	Petronia xanthocollis	RB	SF/MF/WGL	С	S	
WHITE WAGTAIL	Motacilla alba	WM	WL	С	S	
WHITE-BROWED WAGTAIL	Motacilla maderaspatensis	WM	WL/GL	С	S	
CITRINE WAGTAIL	Motacilla citreola	WM	SF/WGL	С	S	
YELLOW WAGTAIL	Motacilla flava	WM	SF/MF/WGL	С	S	
GREY WAGTAIL	Motacilla cinerea	WM	WL	С	S	
PADDYFIELD PIPIT	Anthus rufulus	UC	GL	С	S	
TAWNY PIPIT	Anthus campestris	UC	GL	O	S	
OLIVE-BACKED PIPIT	Anthus hodgsoni	WM	GL	С	S	
BLACK-BREASTED WEAVER	Ploceus benghalensis	UC	GL/WGL	O	S	
STREAKED WEAVER	Ploceus manyar	UC	GL/WGL	С	S	
Baya Weaver	Ploceus philippinus	RB	GL	С	S	
RED AVADAVAT	Amandava amandava	RB	GL	С	S	
SCALY-BREASTED MUNIA	Lonchura punctulata	RB	GL	С	S	
BLACK-HEADED MUNIA	Lonchura malacca	UC	GL	O	S	
Common Rosefinch	Carpodacus erythrinus	UC	MF/WGL	С	S	
Crested Bunting	Melophus lathami	UC	GL	С	S	
WHITE-CAPPED BUNTING	Emberiza stewarti	UC	GL	U	S	
CHESTNUT-EARED BUNTING	Emberiza fucata	UC	GL	U	S	
YELLOW-BREASTED BUNTING	Emberiza aureola	UC	GL/WGL	O	S	

^{*} Species recorded only by T. and C. Inskipp in 1980

Status

RB = Resident breeding

R = Resident (breeding not certain)

SM = Summer migrant
WM = Winter migrant
LM = Local migrant
UC = Uncertain
P = On passage

Threat

 $\begin{array}{lll} C & = & Critical \\ E & = & Endangered \\ V & = & Vulnerable \\ NT & = & Near threatened \end{array}$

S = Safe

Occurrence in Dudwa

C = common (seen frequently, more than 10 sightings)

O = occasional (less than 10 sightings)

U = Uncommon (less than 5 sightings, irregular)

Habitat

AGR = Agricultural crop fields

GL = Grassland
MF = Mixed Forest
ML = Marshland
RF = Riparian Forest
SF = Sal Forest

WGL = Wooded Grassland WL = Wetland

⁺ English name follows P. Alström (1998) Taxonomy of the Mirafra assamica complex. Forktail 13: 97-107