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BIRD DIVERSITY IN SHENDI AREA, SUDAN

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ABSTRACT

The present study was conducted from July to December 2015 and found that the Shendi area, River Nile State, Sudan, Africa, hosts considerable bird diversity with 35 species being observed belonging to 22 families; of which Columbidae, Meropidae and Nectariniidae were the most frequently observed species.

Keywords:
Bird; Diversity; Shendi; Sudan.

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1. INTRODUCTION

Birds are among the best known parts of the Earth's biodiversity (Pomeroy, 1992; Bibby et al., 1998). They have long served humans for game, food, and feathers, as well as in their predatory capacity as destroyers of insects and rodents (Collins, 1981). In addition, they are considered as good indicators of the degree of human disturbance in the various ecosystems worldwide. Their population abundance has been found to change considerably due to anthropogenic activities (Askins et al., 1990; Bock et al., 2001).

In Sudan, studies of the avifauna and its seasonal variation have been carried out by many ornithologists in various locations, including Dinder National Park, Sunut Forest and Tuti Island (Hamad, 1998). The avifauna of Sudan numbers more than 630 species, of which the majority is resident and some are regular seasonal migrants (Dowsett et al., 2016).

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The objective of the present study was to provide a baseline of information on the biodiversity of birds within the area of Shendi, a city located in the northern part of Sudan.

2. MATERIALS AND METHODS

2.1.STUDY AREA

The present study was conducted in Shendi, a city situated on the east bank of the River Nile, in northern Sudan, its geo-coordinates being 16°40'52"N and 33°25'7"E. This area has a semi arid climate with a short rainy period between August and September with a mean precipitation of 29.3mm, and an annual temperature ranging from 28–41°C. The flora of the Shendi area is poor and sparse in the desert zones, and is virtually absent except along the banks of the River Nile, where there are agricultural lands used for fruits, vegetables and other crops. The inhabitants of the area have diverse occupations ranging from farming and fishing to trading activities.

2.2.BIRD OBSERVATION

The Birds were observed and recorded at different locations from July to December 2015 within Shendi city and its adjacent areas, including the River Nile bank opposite the study area. The bird observation and sighting was conducted weekly, in the morning and evening for two to three hours, using field binoculars (Comet, 8x42). The taxonomy and nomenclature of the birds observed were performed following Stevenson and Fanshawe, 2002 and their status information was tabulated according to Dowsett et al., 2016 and the IUCN Red List of Threatened Species, (2015). The numbers of individuals observed were counted when numbers were limited or estimated when numbers were huge. Birds were photographed using a digital camera (Samsung, 13 Mega pixels) whenever that was possible.

3. RESULTS

Thirty-five bird species with various abundances were observed in the present study belonging to 22 families (Table 1). The highest number of birds observed was in September (Table 1). While the families observed with the maximum numbers of different species were Columbidae, Meropidae and Nectariniidae (Tables 1 and 2).

The monthly number of birds observed during the study period was as shown in table (1) and their species status is shown in table (2). Photographs of some of the birds observed appear as figures 1-18. Out of the 35 species observed, 22 (62.9%) are residents in the country as confirmed by breeding records and six (17.1%) are migrants which are known to breed in the area, including those in passage across the country as also confirmed by breeding records. Two (5.7%) species breed in the Palearctic and winter in the area, one (2.9%) is a species with both a resident breeding population and a wintering population, one (2.9%) has both a migrant breeding population and a wintering population, one (2.9%) breeds in the Palearctic but is not recorded previously as wintering in the area, and one (2.9%) species is resident although there is no record of it breeding in the area (Table 2).

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Table 1: List of bird species and numbers observed from July to December 2015, Shendi area, Sudan.

No.	Family	Species scientific name	Species English name	Numbers observed in 2015						Total No.
				Jul.	Aug	Sep.	Oct.	Nov	Dec.	
1	Columbidae	*Streptopelia roseogrisea*	African Collared-dove	06	18	22	04	45	19	114
		Streptopelia senegalensis	Laughing Dove	43	36	20	40	37	40	216
		Oena capensis	Namaqua Dove	10	05	10	06	00	02	33
2	Meropidae	*Merops orientalis*	Little Green Bee-eater	09	15	11	16	02	07	60
		Merops albicollis	White-throated Bee-eater	00	01	05	00	02	02	10
		Merops pusillus	Little Bee-eater	00	00	07	00	00	00	07
3	Nectariniidae	*Cinnyris pulchellus*	Beautiful Sunbird	00	03	00	00	00	00	03
		Hedydipna platura	Pygmy Sunbird	00	02	00	00	00	00	02
		Hedydipna metallica	Nile Valley Sunbird	00	00	02	00	00	00	02
4	Ploceidae	*Ploceus cucullatus*	Village Weaver	01	01	08	00	00	00	10
		Euplectes franciscanus	Northern Red Bishop	00	00	05	00	00	00	05
5	Ciconiidae	*Ciconia abdimii*	Abdim's Stork	21	06	08	00	00	00	35
		Anastomus lamelligerus	African Openbill	00	00	00	00	02	00	02
6	Muscicapidae	*Cercotrichas podobe*	Black Scrub-robin	00	00	06	00	00	00	06
		Erythropygia galactotes	Rufous-tailed Scrub-robin	00	00	03	00	00	00	03
7	Alaudidae	*Eremopterix nigriceps*	Black-crowned Sparrow-lark	00	00	13	00	00	00	13
		Melanocorypha bimaculata	Bimaculated Lark	00	00	01	02	00	00	03
8	Charadriidae	*Vanellus spinosus*	Spur-winged lapwing	13	12	02	00	00	04	31
		Charadrius dubius	Little Ringed Plover	00	00	00	00	03	00	03
9	Viduidae	*Vidua chalybeate*	Village Indigobird	00	00	01	00	02	00	03
		Vidua macroura	Pin-tailed Whydah	00	00	04	00	00	00	04
10	Estrildidae	*Lagonosticta senegala*	Red-billed Firefinch	02	00	01	00	06	02	11
		Lonchura cantans	African Silverbill	05	02	00	00	00	00	07
11	Upupidae	*Upupa epops*	Common Hoopoe	01	00	03	00	00	00	04
12	Accipitridae	*Milvus migrans*	Black Kite	04	09	03	01	02	32	51
13	Passeridae	*Passer domesticus*	House Sparrow	240	142	220	123	108	267	1100
14	Apodidae	*Cypsiurus parvus*	African Palm-swift	00	23	48	03	28	13	115
15	Ardeidae	*Bubulcus ibis*	Cattle Egret	21	02	06	01	0	07	37
16	Threskiornithidae	*Threskiornis aethiopicus*	African Sacred Ibises	00	00	130	30	00	00	160
17	Coliidae	*Urocolius macrourus*	Blue-naped Mousebird	30	23	29	02	05	00	89
18	Falconidae	*Falco naumanni*	Lesser Kestrel	01	00	00	00	01	00	02
19	Motacillidae	*Motacilla aguimp*	African Pied Wagtail	00	00	00	00	20	00	20
20	Pycnonotidae	*Pycnonotus barbatus*	Common Bulbul	14	15	18	03	04	02	56
21	Cerylidae	*Ceryle rudis*	Pied Kingfisher	00	00	00	00	00	01	01
22	Pluvianidae	*Pluvianus aegyptius*	Egyptian Plover	00	00	00	00	02	03	05
Total number observed				**421**	**315**	**586**	**231**	**269**	**401**	**2223**

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Table 2: Bird species and their general status observed in Shendi area, Sudan, from July to December 2015.

No.	Family	Species total number	Species scientific name	Status	IUCN red list	Population trend	Total number observed
1	Columbidae	3	*Streptopelia roseogrisea*	RB	LC	Stable	114
			Streptopelia senegalensis	RB	LC	Stable	216
			Oena capensis	MB	LC	Increasing	33
2	Meropidae	3	*Merops orientalis*	RB	LC	Increasing	60
			Merops albicollis	MB	LC	Stable	10
			Merops pusillus	RB	LC	Decreasing	7
3	Nectariniidae	3	*Cinnyris pulchellus*	RB	§	§	3
			Hedydipna platura	RB	§	§	2
			Hedydipna metallica	RB	§	§	2
4	Ploceidae	2	*Ploceus cucullatus*	RB	LC	Stable	10
			Euplectes franciscanus	RB	LC	Stable	5
5	Ciconiidae	2	*Ciconia abdimii*	MB	LC	Decreasing	35
			Anastomus lamelligerus	MB	LC	Decreasing	2
6	Muscicapidae	2	*Cercotrichas podobe*	RB	LC	Stable	6
			Erythropygia galactotes	RB	LC	Stable	3
7	Alaudidae	2	*Eremopterix nigriceps*	RB	LC	Increasing	13
			Melanocorypha bimaculata	PW	LC	Stable	3
8	Charadriidae	2	*Vanellus spinosus*	RB	LC	Increasing	31
			Charadrius dubius	PW	LC	Stable	3
9	Viduidae	2	*Vidua chalybeate*	RB	§	§	3
			Vidua macroura	RB	LC	Stable	4
10	Estrildidae	2	*Lagonosticta senegala*	RB	LC	Stable	11
			Lonchura cantans	RB	LC	Stable	7
11	Upupidae	1	*Upupa epops*	RB/PW	LC	Decreasing	4
12	Accipitridae	1	*Milvus migrans*	MB/PW	LC	Unknown	51
13	Passeridae	1	*Passer domesticus*	RB	LC	Decreasing	1100
14	Apodidae	1	*Cypsiurus parvus*	RB	LC	Increasing	115
15	Ardeidae	1	*Bubulcus ibis*	MB/P	LC	Increasing	37
16	Threskiornithidae	1	*Threskiornis aethiopicus*	MB	LC	Decreasing	160
17	Coliidae	1	*Urocolius macrourus*	RB	LC	Decreasing	89
18	Falconidae	1	*Falco naumanni*	P	LC	Stable	2
19	Motacillidae	1	*Motacilla aguimp*	R	LC	Stable	20
20	Pycnonotidae	1	*Pycnonotus barbatus*	RB	LC	Increasing	56
21	Cerylidae	1	*Ceryle rudis*	RB	LC	Unknown	1
22	Pluvianidae	1	*Pluvianus aegyptius*	MB	LC	Decreasing	5
Total number observed							**2223**

Key to status information:
B – Breeding record confirmed; M – Migrant including on passage through Sudan;
P – Breeds in Palearctic; R – Resident; W – Winters in Sudan (non-breeding season);
RB – Resident in Sudan as confirmed by breeding record; PW – Breeds in the Palearctic and winters in Sudan; AM – Intra African Migrant;
RB/PW – There is both a resident breeding population and a wintering population;
LC – Least Concern; § – Not yet assessed for the IUCN Red List.

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Figure 1: African Collared Dove, *Streptopelia roseogrisea*

Figure 2: Laughing Dove, *Streptopelia senegalensis*

Figure 3: Little Green Bee-eater, *Merops orientalis*

Figure 4: White-throated Bee-eater, *Merops albicollis*

Figure 5: Beautiful Sunbird, *Cinnyris pulchellus*

Figure 6: Nile Valley Sunbird, *Hedydipna metallica*

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Figure 7: Village Weaver, *Ploceus cucullatus*

Figure 8: House Sparrow, *Passer domesticus*

Figure 9: Black Scrub-robin, *Cercotrichas podobe*

Figure 10: Pin-tailed Whydah, *Vidua macroura*

Figure 11: Red-billed Firefinch, *Lagonosticta senegala*

Figure 12: Blue-naped Mousebird, *Urocolius macrourus*

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Figure 13: Common Bulbul, *Pycnonotus barbatus*

Figure 14: African Pied Wagtail, *Motacilla aguimp*

Figure 15: Spur-winged lapwing, *Vanellus spinosus*

Figure 16: Egyptian Plover, *Pluvianus aegyptius*

Figure 17: Abdim's Stork, *Ciconia abdimii*

Figure 18: Black Kite, *Milvus migrans*

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4. DISCUSSION

In the present study, 35 species of bird were observed. This result reflects the richness of the avifauna of the Shendi area, especially during the migration season in the autumn. This richness is probably due to the use of the area for gardens and orchards and hence the availability of food, as well as the flora of the River Nile banks, which is diverse and contains a wide range of different trees providing a wide range of microhabitats for different species of birds. It is well known that vegetation cover has a strong influence on the avifauna (Scott-Mills et al., 1989). The River Nile is an important flyway for migratory waterbirds moving between Africa, Europe and the Middle East. It provides a considerable amount of suitable habitats for feeding, nesting or resting sites for birds. Variations in the structure of the bird community noted during the study period could be attributed to bird migration, with some migrating birds arriving in the area for breeding or using it as a stopover site for food supply. Previous studies in Sudan have recorded more than 160 species of birds from the Dinder National Park, 24 species from Sunut Forest, 30 species from Tuti Island and 23 species from the El Ga'ab depression (Salah and Idris, 2013; Mahmoud et al., 2015).

The relatively high diversity of birds observed in the present study suggests that the habitat of the area is suitable for birds. However, increasing anthropogenic activities are a matter of great concern when considering the future existence of these species. Sudan has lost a number of wildlife species in the last two decades and this is mostly due to habitat destruction; several varieties of grasses and herbs have disappeared due to overgrazing, and repeated droughts and fires. In the Shendi area, the main threat that affects birds is the destruction of their habitat by tree cutting for agricultural use. This practice reflects low awareness and sensitivity to environmental issues among both the public and policy makers. Moreover, development and construction projects in the Shendi area may have a negative impact on bird habitats, for example, the construction of El Mack Nimer Bridge and the cutting of old large trees such as *Acacia* spp. and *Azadirachta* sp. or Neem trees near the main market to facilitate new buildings constructed for the purpose of investment has resulted in the destruction of the nests and resting sites of many bird species, including the Cattle Egret and Abdims Stork. Previous studies have concluded that urbanization, industrialization, the draining of wetlands and the widespread use of pesticides pose a threat to birds (Donald and Gregory, 2002; Liven-Schulman et al., 2004). Moreover, many wildlife species are endangered because of illegal hunting or over-hunting (Yom-Tov, 2003).

In conclusion, this study will provide a baseline of information for future studies concerning the birds of the Shendi area.

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