Birds of Alsalam and Abyei–Muglad Principalities West Kordofan State, Sudan
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Abstract

The avifauna of West Kordofan received very little attention. The present study aimed to contribute to birds species recorded for the area and Sudan. Observations were made during May 2011, September 2014, October 2016 and 2019 and facilitated by using a binocular. Documentation was made by a Nikon digital camera. The avifauna of western Kordofan included 78 out of the 653 species recorded for Sudan. The non-passerines species were 55 and the passerines were 23. The order Passeriformes was the largest including 9 families and 23 species. Most Accipitridae, except Milvius migrans, were categorized as endangered or critically endangered; The Secretary Bird (Sagittarius serpentarius) as vagrant; and the Arabian Bustard (Ardeotis arabs), Curlew Sandpiper (Calidris ferruginea) and the African Skimmer (Himantopus flavirostris) as near threatened. The abundance scale adopted in this study ranked these bird species as uncommon. The study concluded that more attention to be paid for studying birds of Sudan especially in conflict and oil fields areas.

Keywords: Birds, Status, Abundance, West Kordofan, Sudan.

INTRODUCTION

Bowen [1,2] catalogue of Sudan birds, in the Sudan Government Museum is of historical value unlike the bird guide of the Sudan by [3] and the distribution atlas with locality records for most of the Sudan’s birds by [4]. Some locality records of birds were published. Of these are bird fauna of Um Bbadr by [5], Hantub [6], Dinder National Park [7], Khartoum [8], El Ga’ab depression [9], Shendi area [10] and Jabel El Dayer National Park [11]. Electronic list of birds of Sudan, some with images, are available at: [12-15]. In this study birds El Salam and Abyei–Muglad principalities western Kordofan were recorded.

MATERIAL AND METHODS

The study area, in dotted lines, lies in the southern part of Western Kordofan State (11 to 20ºN and 30º27' to 32º22'E) Map 1. The birds were observed during May 2011, September 2014, October 2015 and 2019, and facilitated by using an 8x42, 123m/1000m Back4prism COMET binocular. Documentation was made by a Nikon digital camera of the type DX (AF-SNIKKOR 18-55mm 1:3.5-5.6G and a 55-200mm 1:4-5.6G ED zoom) in addition to SAMUNG DUOS a smart phone. Identification followed [15-17].

The study considered a species as abundant (A) when over 20 specimens were seen each day in more than one location; common (C) when 10-19 specimens were seen each day in more than one location; fairly common (F) when 5-9 specimens were seen each day in more than one location and uncommon (U) when 1-4 specimens were seen in one location each day or from one location only throughout the study.

Classification and valid species name followed [18] (Table 1). In this study the number of bird species encountered in each family was given as a percentage of species recorded by https://en.wikipedia.org[12].
RESULTS

The bird species recorded in western Kordofan were given in Table (1). Their status information followed [19] and their categorization was based on [20]. A total of 78 species, 39 families and 16 orders of birds were recorded from the area (Table I). It is apparent from Table 1 that out of 55 non-passerines species, 19 were abundant mostly Columbidae and 19 were uncommon. Of the 23 Passerines species, 15 were abundant and none was uncommon. The avifauna of western Kordofan included 78 out of the 653 and 631 species recorded for Sudan by [18, 19], respectively. In this study some bird species might have been missed in view of traipe security restrictions in the oil fields, hiding of some species and irregular visits to the study sites.

Table 1: Birds of El Salam and Abyei–Muglad Principalities Western Kordofan State, with their abundance (AB), status and IUCN red list Categorization (RLC)

| English name       | Scientific name        | AB | Status | RLC |
|--------------------|------------------------|----|--------|-----|
| Order: Pelecaniformes Family: Ardeidae (17) 29% were encountered | | | | |
| Grey Heron         | Ardea cinerea          | F  | RBP    | LC  |
| Great White Egret  | Ardea alba             | F  | P      | LC  |
| Little Egret       | Egretta garzetta       | F  | RBP    | LC  |
| Squacco Heron      | 1.1. Ardeola ralloides | 1.2. U RBP | LC  |
| Cattle Egret       | Bubulcus ibis          | A  | MBP    | LC  |
| Order: Scopidae    | Scopus umbretta        | F  | RB     | LC  |
| Order: Ciconiiformes Family: Ciconiidae (6) 17% were encountered | | | | |
| Sacred ibis        | Threskiornis aethiopicus | A  | RBP    | LC  |
| Order: Anseriformes Family: Anatidae (23) 13% were encountered | | | | |
| Egyptian Goose     | Alopochen aegyptiaca   | U  | MB     | LC  |
| Spur-winged Goose  | Plectropterus gambensis | U  | MB     | LC  |
| Pintail            | Anas acuta             | U  | PW     | LC  |
| Order: Accipitriformes Family: Accipitridae (52) 12% were encountered | | | | |
| Black Kite         | Milvus migrans        | A  | MBPW   | LC  |
| Hooded Vulture     | Necrosyrtes monachus   | F  | RB     | CE  |
| Bird Name                        | Scientific Name                  | IUCN Status | Conservation Status |
|----------------------------------|-----------------------------------|-------------|---------------------|
| **Egyptian Vulture**             | Neophron percnopterus             | U           | EN                  |
| **White-backed Vulture**         | Gyps africanus                    | C           | CE                  |
| **Lappet-faced Vulture**         | Torgos tracheliotus               | A           | RB                  |
| **White-headed Vulture**         | Trigonocetes occipitalis          | F           | RB                  |
| **Order: Accipitriformes**       | **Family: Sagittariidae**         | (1) 100%    | encountered         |
| **Secretary Bird**               | Sagittarius serpentarius         | U           | RB                  |
| **Order: Falconiformes**         | **Family: Falconidae**            | (16) 6%     | encountered         |
| **Peregrine Falcon**             | Falco peregrines                 | U           | RB/P                |
| **Order: Galliformes**           | **Family: Phasianidae**           | (6) 33%     | encountered         |
| **Clapperton’s Francolin**       | Francolinus clappertoni          | U           | RB                  |
| **Quail**                        | Coturnix coturnix                | U           | PW                  |
| **Order: Galliformes**           | **Family: Numididae**             | (1) 100%    | encountered         |
| **Secretary Bird**               | Pluvianus aegyptius               | A           | MB                  |
| **Order: Charadriiformes**       | **Family: Recurvirostridae**      | (20) 10%    | encountered         |
| **Curlew Sandpiper**             | Calidris ferruginea               | U           | PW                  |
| **Order: Charadriiformes**       | **Family: Charadriidae**          | (2) 50%     | encountered         |
| **Spur-winged Plover**           | Vanellus spinosus                 | A           | RB                  |
| **Order: Charadriiformes**       | **Family: Scolopacidae**          | (27) 4%     | encountered         |
| **Namaqua Dove**                 | Oena capensis                     | A           | MB                  |
| **Order: Columbiformes**         | **Family: Columbidae**            | (12) 58%    | encountered         |
| **Rock Pigeon**                  | Columba livia                     | A           | RB                  |
| **Speckled Pigeon**              | Columba guinea                    | U           | RB                  |
| **Turtle Dove**                  | Streptopelia turtur              | A           | RB                  |
| **Mourning Dove**                | Streptopelia decipiens           | A           | RB                  |
| **Order: Caprimulgiformes**      | **Family: Caprimulgidae**         | (10) 10%    | encountered         |
| **Order: Apodiformes**           | **Family: Apodidae**              | (8) 13%     | encountered         |
| **Common Swift**                 | Apus apus                        | A           | P                   |
| **Order: Columbiformes**         | **Family: Columbidae**            | (12) 58%    | encountered         |
| **Nightjar**                     | Caprimulgus sp.                  | U           | ?                   |
| **Order: Apodiformes**           | **Family: Apodidae**              | (8) 13%     | encountered         |
| **Order: Coraciiformes**         | **Family: Alcedinidae**           | (10) 20%    | encountered         |
| **Blue-naped Mousebird**         | Urococlis macrourus               | C           | RB                  |
| **Order: Coraciiformes**         | **Family: Meropidae**             | (9) 22%     | encountered         |
| **Order: Meropidae**             | **Family: Meropidae**             | (9) 22%     | encountered         |
| **Order: Caprimulgiformes**      | **Family: Upupidae**              | (1) 100%    | encountered         |
| **Giant Kingfisher**             | Megaceryle maximus                | F           | RB                  |
| **Pied Kingfisher**              | Ceryle rudis                     | F           | RB                  |
| **Order: Coraciiformes**         | **Family: Bucerotidae**           | (5) 40%     | encountered         |
| **Red-billed Hornbill**          | Tockus erythrocephalus            | F           | RB                  |
| **Grey Hornbill**                | Tockus nasutus                   | F           | RB                  |

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Abyssinian Ground Hornbill  *Bucorvus abyssinicus*  U RB LC

Order: Piciformes  Family: Picidae  (8) 13% were encountered

Nubian Woodpecker  *Campethera nubica*  U RB LC

Order: Passeriformes  Family: Alaudidae  (18) 17% were encountered

Kordofan Lark  *Mirafra cordofanica*  A R LC

Desert Lark  *Anmomanes deserti*  A RB LC

Crested Lark  *Galerida cristata*  A RB LC

Order: Passeriformes  Family: Motacillidae  (11) 18% were encountered

Yellow Wagtail  *Motacilla flava*  C PW LC

White Wagtail  *Motacilla alba*  A PW LC

Order: Passeriformes  Family: Pycnonotidae  (3) 33% were encountered

White-vented Bulbul  *Pycnonotus barbatus*  A RB LC

Order: Passeriformes  Family: Corvidae  (6) 50% were encountered

Pied Crow  *Corvus albus*  A RB LC

Fan-tailed Raven  *Corvus rhipidurus*  F RB LC

Piapiac  *Ptilostomus afer*  F RB LC

Order: Passeriformes  Family: Sturnidae  (11) 18% were encountered

Ruppell’s Starling  *Lamprotornis purpuropterus*  C RB LC

Long-tailed Glossy Starling  *Lamprotornis caudatus*  C RB LC

Order: Passeriformes  Family: Ploceidae  (20) 25% were encountered

Little weaver  *Ploceus luteolus*  F RB LC

Village Weaver  *Ploceus cucullatus*  A RB LC

Northern Masked Weaver  *Ploceus laeniopterus*  A RB LC

Red-billed Quelea  *Quelea quelea*  A MB LC

Northern Red Bishop  *Euplectes franciscanus*  F RB LC

Order: Passeriformes  Family: Estrildidae  (14) 14% were encountered

Red-billed Firefinch  *Lagonosticta senegala*  C RB LC

African Silverbill  *Euodice cantans*  A RB LC

Order: Passeriformes, Family: Viduidae  (5) 40%

Pin-tailed Whydah  *Vidua macroura*  A LC RB

Sudan Broad-tailed Whydah  *Vidua orientalis*  A LC RB

Order: Passeriformes Family: Passeridae  (11) 27% were encountered

House Sparrow  *Passer domesticus*  A RB LC

Kordofan Sparrow  *Passer cordofanicus*  A R LC

Sudan Golden Sparrow  *Passer luteus*  A RB LC

Key to status: B=Breeding record confirmed; M=Migrant including on passage through Sudan; P=Breeds in Palearctic; R=Resident; W=Winters in Sudan; V=Vagrant.

### DISCUSSION

In western Kordofan the non-passerines species were 55 and the passerines species were 23. The order Passeriformes included 9 families and 19 species followed by Charadriiformes with 5 families and 6 species. Columbiformes included one family Columbidae with 7 species, while 6 orders were represented by one family each, with 1 species each (Table 1). All the 19 Passerines species were categorized as least concern. Out of the 27 Scolopacidae recorded for Sudan by [12] a single specimen of Curlew Sandpiper (*C. ferruginea*) was found in the study area. It was ranked as near threatened by [19].

Most accipitrids except *M. migrans*, are either as endangered or critically endangered [20]. Sagittarius was ranked as Vagrant and *A. Arabs, C. ferruginea* and *H. flavirostris* as near threatened.

According to [21] *U. epops* is the only species which have both a resident breeding population and a wintering population, and *M. migrans* have both a migrant breeding population and a wintering population. Forty seven out of recorded 78 species are resident breeding population. *Ardea alba* and *A. apus* breeds in Palearctic while 8 non-passerines and two passerines breeds in the Palearctic and winters in the country (PW) Table 1.

Table 1 recorded 12 non-passerines and 1 passerine migrants, and 9 non-passerines and 2 passerines Palearctic in the area. The migration strategies of Palearctic Passerines in Africa were critically analyzed by [19] and the Western Palearctic bird species migrating within Africa were listed by [22, 23].
Some birds in the study area perform an essential service to plants by dispersal of almost ready to germinate seeds over a wide area. In turn, plants provide goods (nectar, seeds and fruits for particular bird species) and services (nesting sites, nesting material and roosting sites) to a wide spectrum of birds.

Flocks of *L. crumeniferus* were seen seeking food in burrow pits and dumping areas used by the oil operating companies (Fig. 1). In open grass *C. abdimi* were dominant (Fig. 2).

Vanellus senegalensis and *B. ibis* are associated with open grass land where they seek arthropods. Water birds such as *Anas acuta* and *Scopus umbretta* are associated with depressions inundated during the wet season and dominated by floating and emergent vegetation. They wade in water in search of food. *Megaceryle maxima* (*C. rudis* and *H. flavirostris*) skims Wadi Al Galla water surface to catch small tilapias and clarids fish.

Some Accipiteridae aggregates at a distance around slaughtering areas waiting to snatch a piece of meat *M. migrans* or thrown away carrion e. g. *T. tracheliotus*, (Fig. 3). *Corvus albus* (Fig. 4) and *T. trachelotus* were seen in open grass and garbage sits seeking food.

*Quelea quelea* are associated with Poaceae (=Gramineae). *Passer luteus* was seen mostly in shrubs. *Streptopelia decipiens*, *S. senegalensis*, *O. capensis*; *G. cristata* are associated with bare grassy areas. *Euodice cantans* (Fig. 5) is often found perching in plants with broad leaves feeding on grass seeds picked from the inflorescences and/or the ground. *Tockus erythrohynchus* (Fig. 6) and Long-tailed Glossy Starling (*L. caudatus*) are usually seen in tall trees. *Acacia* spp., *Ziziphus spina-christi* and *Azadirachta indica* are preferable roosting and nesting site for a number of birds including Doves, *P. cucullatus* and Scared Ibis *Threskiornis aethiopicus* (Fig. 7) and roosting site for *A. cinerea*. *Adansonia digitata* is a nesting site forstorks. Machineries and tall instillation may be used Fig. 8.
Pigeons and Kordofan Sparrow are examples of Passerine and Nonpasserine resident species, respectively. One single pair of Speckled Pigeon (*Columba guinea*) was seen in the study area at a Reg in Sharif (Fig. 8). Rain pools are abundant offering drinking sites for birds (Fig. 9). No bird species of the study area were recorded as Vagrant.

**CONCLUSION**

Association between trees assemblage and bird assemblage in forests of West Kordofan and bird adaptability to overcome continuous stresses due to oil exploration and armed tribal conflicts are to be studied.

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