

# Some Bird Species Breeding in Wetland Sites at Zalingei, Sudan

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**Abstract:** This study was carried out on breeding bird species at Zalingei area, Sudan. The objective of this study is to document the bird species breeding at Zalingei area. The Direct observation and road count were used to data collection between April to November 2013 and April to November 2014. The study area was patrolled by car and on foot from 7:00am to 7:00pm, Field binoculars (Samsung HD, Tianzhufeng, 8×40, 168ft) and Digital camera Samsung model (DV150F/DV151F/DV155F) were used for observation of birds. Identification of birds was made using East and Central African birds guide (Williams, 1991 and Sinclair and Peter, 2010). Coordinates of wetlands were done using Global Positioning System (GPS). Total of 37 species, out of 121 species were recorded breeding during the study period. They were distributed in the four sites, in Zalingei 32 species were recorded breeding. 28 species were recorded breeding in Terij and W. Azoom (23 species). But the lower breeding species were seen; (14 species) in Shawa.

**Keywords:** Breeding Species, Korssi, Zalingei, and Wadi Azoom

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## 1. Introduction

The avifauna of Sudan includes 938 species [10]. In (2000) the Higher Council for Environment and Natural Resources (HCENR), recorded 931 species of birds in the Sudan. On the other hand, the number of species of birds of registered for Sudan following the WICE criteria is 952 [16]. A few records were made in the Darfur. [13] make survey on the birds of North and Central Darfur. [10] studied the Morphometric, wing loading and food of Western Darfur Birds. [11] made the corvidae in the Sudan Republic with special reference to Darfur. [12] pointed that the Environmental changes in Western Darfur over half a century and their effects on the selection bird species. [6] mentioned that the Faunal composition and biogeography of the *clanoid copepods* of West- Darfur, Sudan, with the description of *Tropodiptomus asimi*. *Hydrobiologia*. According to [7] one hundred and fifty-two (152) species of birds were recorded in Zalingei District.

## 2. Materials and Methods

### 2.1. Study Area

Zalingei area lies in the west of Jebel Marra in the poor savanna zone between latitudes 12° 30' and 13° 30' North, and longitudes 22° 20' and 23° 45' East according [15]. The area includes some wetlands site, these wetlands, can take many forms as Wadis (Streams), water Pools (Permanent and temporary) and small lakes. Four Seasonal streams were identified and measured as: Wadi Azoom, Wadi Areebou, Wadi Glabat and Wadi Dhab-Sharow, these were preformat the main Wetlands of the Zalingei area. Eight water pools and two small lakes were established in the dry season, these pools are: Adam-gola, Fawzei, Hamidia, Saa4, Tarei, Gugoldonga, Rejl-aldafa, and Sarei-olmaly. The lakes are: Zour and Dodei. These wetlands are important habitats for migratory and resident birds, especially water birds, for drinking, nesting, resting and feeding [8].

## 2.2. Tools and Methods

The study areas were reached and patrolled by a Land Rover car and sometimes patrolled on foot.

Bird species were identified, quantified and presence of nests were recorded. Direct observation and discussions with local people were used to determine avifauna species and their numbers, breeding activities, breeding habitats and feeding location. The survey period covered two years from April to November 2013 (first season) – April to November 2014 (second season). Observations started at 7:00 am and ended at 7:00 pm. However, many visits were carried out in earlier hours and extended to later hours for monitoring some nocturnal species. At every 30 minute intervals, number of birds for each species sighted, were recorded be it perching on trees, flying overhead and for a session of three hours [3, 9].

A field binocular (Samsung lens HD, Tianzhufeng, 8\*40, 168ft, 100 yds, coated optics) and an 1 Zoom Digital camera Samsung model (DV150F/DV151F/DV155F) were used for identification and recording of avifauna. Examination of dead bird species or their parts; their eggs and sighting identification of birds' sound and tracks were also used to supplement the direct field observations. Many hunters and local people in the area provided some information on birds

species (dead) during the survey. Road counts were carried out for identifying bird species. Following methods were used [1-5, 14-15].

## 3. Results

Total of 37 species, out of 121 specie were recorded breeding during the study period. They were distributed in the four sites. In Zalingei 32 species were recorded breeding. 28 species were recorded breeding in Terij. But the low breeding species were seen; in W. Azoom (23 species), and (14 species) in Shawa (Tables 1 and 2). The diversity index showed that the study areas had diverted breeding individual. 2013 was more variation in the number of breeding individual different number of species than 2014 (tables 1 and 2). Red-billed Quelea was scored the highest numbers of breeding species 36.40% followed by Cattle Egret (20.67%) in first season most of them were bred in Zalingei site, while in second season were scored 26.48% Red-billed Quelea and 27.58% Cattle Egret. The Ground hornbill and Pied Crow scored the lowest numbers of breeding species (0.01). Only one pair of each two species was found in Zalingei site, while not found in other three sites.

**Table 1.** Total Number of Breeding Species Recorded in Four Sites of Zalingei Area During (2013).

no	Species	First season				total	%
		Zalingei	Wadi-Azoom	Shawa	Terij		
1	Grey Heron	56	9	0	0	65	0.58
2	Black-headed Heron	379	11	0	73	463	4.12
3	Cattle Egret	1974	131	0	219	2324	20.67
4	Hammer Kop	2	2	0	1	5	0.04
5	Abdim's Stork	211	33	0	19	263	2.34
6	Marabou Stork	30	0	0	3	33	0.29
7	Sacred Ibis	744	118	0	19	881	7.84
8	Knob-billed Duck	4	7	0	1	12	0.11
9	Egyptian Goose	2	2	0	1	5	0.04
10	Secretary Bird	3	1	2	3	9	0.08
11	Helmeted Guinea fowl	9	1	15	10	35	0.31
12	Crowned Crane	0	0	0	5	5	0.04
13	Hubara Bustard	0	0	1	5	6	0.05
14	Black headed Plover	10	0	4	3	17	0.15
15	Four banded-bellied Sand-grouse	2	0	6	0	8	0.07
16	Grey parrot	12	4	4	22	42	0.37
17	Namaqua Dove	5	8	10	7	30	0.27
18	Mourning Dove	4	24	29	13	70	0.62
19	Red-eyed Dove	29	58	22	11	120	1.07
20	Laughing Dove	8	9	3	15	35	0.31
21	European bee-eater	69	9	20	0	98	0.87
22	Abyssinian Roller	20	22	0	7	49	0.44
23	African Hoopoe	3	0	0	2	5	0.04
24	Grey Hornbill	1	0	0	1	2	0.02
25	Ground Hornbill	1	0	0	0	1	0.01
26	Ethiopian Swallow	9	0	0	2	11	0.10
27	Cliff Chat	29	25	88	84	226	2.01
28	Fan-tailed Raven	0	0	0	3	3	0.03
29	Pied Crow	1	0	0	0	1	0.01
30	short-tailed Glossy Starling	4	1	0	0	5	0.04
31	Black-headed Weaver	192	331	232	94	849	7.55
32	Speke's Weaver	152	214	165	43	574	5.11
33	Holub's Golden Weaver	10	49	7	13	79	0.70
34	Red-billed Quelea	2221	0	0	1871	4092	36.40

no	Species	First season				total	%
		Zalingei	Wadi-Azoom	Shawa	Terij		
35	Cut-throat Finch	0	0	20	0	20	0.18
36	Broad-tailed Paradise Whydah	1	0	1	0	2	0.02
37	House Sparrow	73	519	0	204	796	7.08
Total		6270	1588	629	2754	11241	100

**Table 2.** Total Number of Breeding Species Recorded in Four Sites of Zalingei Area During(2014).

no	Species	Second season				Total	%
		Zalingei	Wadi-Azoom	Shawa	Terij		
1	Grey Heron	49	18	0	2	69	0.63
2	Black-headed Heron	522	7	0	12	541	4.93
3	Cattle Egret	2376	189	0	338	2903	26.45
4	Hammer Kop	9	0	0	5	14	0.13
5	Abdim's Stork	187	90	0	10	287	2.62
6	Marabou Stork	23	0	0	1	24	0.22
7	Sacred Ibis	923	177	0	40	1140	10.39
8	Knob-billed Duck	4	6	0	3	13	0.12
9	Egyptian Goose	9	2	0	1	12	0.12
10	Secretary Bird	1	1	9	1	12	0.11
11	Helmeted Guinea fowl	3	11	5	16	35	0.32
12	Crowned Crane	0	0	0	3	3	0.03
13	Hubara Bustard	0	0	2	4	6	0.05
14	Black headed Plover	2	0	11	9	22	0.20
15	Four banded-bellied Sand-grouse	0	0	1	0	1	0.01
16	Grey parrot	28	2	2	21	53	0.48
17	Namaqua Dove	1	5	19	9	34	0.31
18	Mourning Dove	6	16	20	23	65	0.59
19	Red-eyed Dove	36	37	17	22	112	1.02
20	Laughing Dove	2	2	3	5	12	0.11
21	European bee-eater	67	13	30	0	110	1.00
22	Abyssinian Roller	17	21	0	8	46	0.42
23	African Hoopoe	9	0	0	1	10	0.09
24	Grey Hornbill	3	0	0	1	4	0.04
25	Ground Hornbill	3	0	0	0	3	0.03
26	Ethiopian Swallow	7	0	0	2	9	0.08
27	Cliff Chat	8	16	71	60	155	1.41
28	Fan-tailed Raven	1	0	0	2	3	0.03
29	Pied Crow	4	0	0	0	4	0.04
30	short-tailed Glossy Starling	4	3	0	0	7	0.06
31	Black-headed Weaver	201	301	185	70	757	6.90
32	Speke's Weaver	166	289	100	60	615	5.60
33	Holub's Golden Weaver	10	30	13	20	73	0.67
34	Red-billed Quelea	2730	0	0	297	3.27	27.58
35	Cut-throat Finch	0	0	27	0	27	0.25
36	Broad-tailed Paradise Whydah	0	0	1	0	1	0.01
37	House Sparrow	0	540	0	226	766	6.98
Total		7411	1776	516	1272	10975	100

## 4. Discussion

32 species out of 37 species recorded in study sites were in Zalingei site, these numbering 6270 breeding pairs in 2013 and 7411 breeding pairs in 2014. This may be due to the fact that this area is rich in food and breeding sites compare to the all three sites. Terij are showed the highest breeding pairs in both seasons (11.241 in 2013 and 10,975 in 2014) and 28 out of 37 species breed in it. Both Zalingei and Terij sites presumably provided and abundant foods, breeding sites and protection from predators these agreed with [8]. Shawa site showed the least number of breeding pairs (14) and also the least breeding pairs in both seasons, this may be due to carrying capacities (food and breeding sites).

## 5. Conclusions

Zalingei area is very important habitats for waterbirds due to availability of water and food and presence of twenty-nine waterbirds; 12 of them were recorded bred and 43 species were Palearctic migrants.

Terij site are showed the highest breeding pairs in study area, 28 out of 37 species breed in Terij site while 14pair were showed breeding in Shawa site.

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