

CHAPTER ONE

Introduction

Seasonal movements of migratory birds in Africa are well documented (Hamed,1982). They have, for example, been described in Morocco by (Nisbet,et al 1961), in Nigeria by(EL good, et al 1966), at lake Chad by (Fry et al 1970), in Kenya by Pearson and Back Hurst (1976), and in the Serengeti National park by Sinclair (1978). Tramer, (1969) has proposed that changes in diversity may be mediated by changes in one or the other component and that these changes reflect alternative environmental conditions.The causes of such changes are often difficult to determine because patterns of variation in abundance and distribution differ among species (Hogstad 1993, Blake et al 1994, Mac Nally 1996, U.L 1997, Holmes & Sherry 2001).

Change in species composition occur because resident and migrant species contribute in varying proportion in different periods of the year (Avery & Van, Ribber, 1989). Some resident African birds also migrate from one part of the continent to another. The large number of African birds have regular seasonal movements within the continent always coinciding with the rainy season (Hamed, 1982).

Sudan is a large country with different habitats including rivers, plains, valleys, plateaux and Mountains, all are of importance to birds. And also Sudan is considered one of the richest African countries in wild life. Sudan geographically is

located on the main routes used by migratory birds from three continents (Europe, Asia, and Africa). Sudan is a place for migratory birds in providing food, water and resting sites after a long and arduous journey (Hamed, 1994).

There are over 10,000 species of birds in the world. In Sudan there are more than 972 species (Nicklaus, 1987). The names and classification of bird species sometimes change as new information about their biology becomes available. In addition, most birds have different common names in different parts of the world, and different authorities use different classifications.

Objective of the study :

- The aim of the study focuses mainly on the identification of the bird fauna
- To determine changes in bird species

CHAPTER TWO

Literature Review

Khartoum is considered a transitional zone between the extreme Desert to the north and the Dry wood Savannah to the south. Therefore, representatives of birds of both Desert and savannah species are found there (U.L, 1967).

Khartoum is Located on the great migration route of most of the summer bird visitors from Europe and the rest of the palearctic region. It is also considered as an important centre of some African migrant birds which spend their summer, especially the rainy season in the northern part of their range returning south during October after the breeding season.

Sudanese birds have been classified into three groups: resident birds, resident locally migrating birds, and Palearctic migratory birds.

According to Ahmed (2006) the migration of birds probably attracted the attention and aroused the migration of man since early history. Recorded observation started at the time of Aristotle (Able, K.P.1970)

Aristotle, a naturalist and philosopher of ancient Greece, was one of the first observers whose writing is known to discuss the subject of bird migration. He noted that pelicans, Geese, Rails, Doves and many other birds like- widers passed to warmer region to spend the winter (Able, 1970 as quoted by Ahmed, 2006).

Gabal Awlia dam was built in 1937 to augment the storage of water for summer irrigation in Egypt. It is a yearly storage dam with a regime similar to that of Sinnar. It worth mentioning that it is only dam in the Sudan with a fish passage way and a

navigation lock . Monkov (1968) made a survey 1500km of the white Nile and emphasized the impact of gabal awlia dam on the ecology of the river. It is of interest to mention that whereas that the maximum biomass of zooplankton was close to the dam.

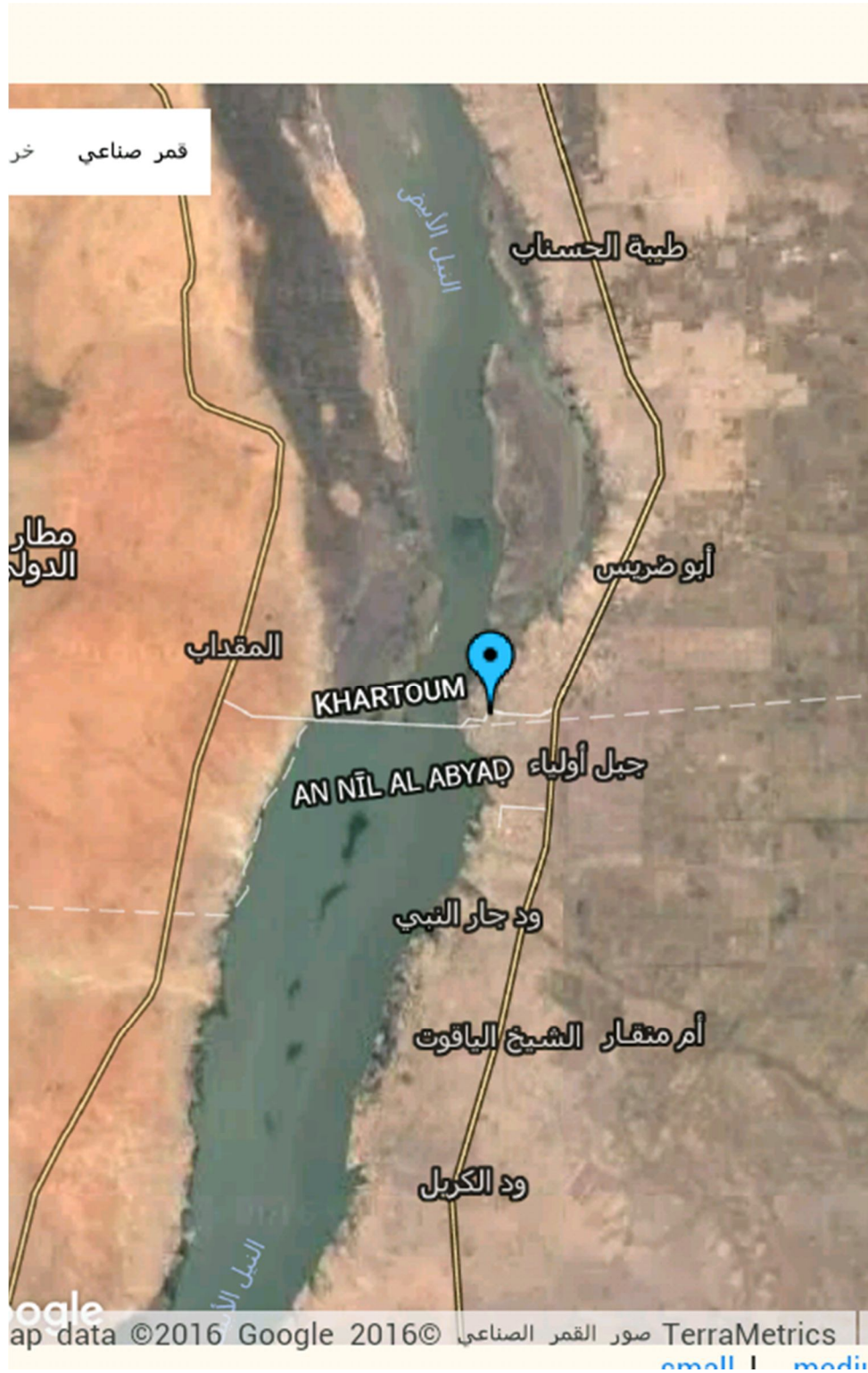
Some birds roost in groups for at least part of the year, although the habit of roosting communally has been described for many species of birds such as the white, vented Bulbul *pycnonotus barbatus arsine*, House Sparrow *passer domesticus arboreus* and Laughing Dove *streptopelia senegalensis*. The habit of aggregating in this way is not completely understood. Lack (1968) suggested that protection from predators is the primary reason but an alternative suggestion by Ward (1965) is that communal roosting functions primarily as "information centers" where information on the location of food is made available to fellow roosters. Evidence for this interesting hypothesis is however limited (Ward and Zahavi, 1979as quoted by Lado1994)

CHAPTER THREE

MATERIALS AND METHODS

Study Area

The study area was composed of two part (the forest area and the area of khazzan jabal awliya). The geographical coordinates are 15° 14' 28" North 32° 29' 59" east. It About 50km south of khartaum built in 1937 to augment the storage of water for summer irrigation. The tree species covered the study area is Acacia sp Acacia nilotica Acacia mellifera and Acacia Acacia tortilis it is noteworthy , because it has several roles to play in the site. Acacia is nitrogen support and good habitat for birds ;they like to nest at the branches of this tree species



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Climate: (Rainfall & Temperature)

The climate of Khartoum is tropical desert .There are three seasons per year cool winter,dry summer and a rainy season (wet summer). Highest temperatures(45°C or more)are recorded in summer months (May –June)while lowest temperature (22°C or less) are recorded during winter months (December –January). The rain fall is about 150mm per annum. The forest which is nearest to khazzan flooded during the rainy season (july –October). Later, during winter and early summer. The forest become totally dry (Eltayeb &Hamed, 2003).

Investigate of bird diversity

Asurvey of Jabal awlia birds was carried out between dry summer(may-June) and wet summer (July-september). Assessment of aviafauna was based on bird watching. Every time the site was completely surveyed during each visit_. Atleast two visit was conducted per each month observation was performed during the early morning and until the evening (7:0 am to 4:0 pm).

in different area in the study area . the study area was patrolled on foot and identification of birds species made by sight using binocular Crown (7×50).

Identification of birds was made using Stevenson et al (2001) and Zimmer man et al (1999).In the case of difficult to identify aspecies , adetailed description of the bird concernned was recorded and compared with specimens deposited in the Sudan Natural Museum. University of Khartoum

CHAPTER Three

RESULTS

Changes in the bird fauna

in the study area. seven species were recorded there in both dry and wet season and it likely therefore that they were permanent residents. The onset of rains resulted in a considerable influx of birds. Seven species including little egret, great egret, cattle egret, European roller, African stork, white fronted sparrow lark and Sudan golden sparrow were recorded for wet season. In dry season there were only four species recorded; great cormorant, long tailed cormorant, open bill stork, black stork. It can be seen that there were marked seasonal changes in bird inhabiting the study area.

species were classified into families as follow.

Family Ciconidae

African openbill stork :

(Anastomus lamelligerus) I saw large flocks of it near the river bank in May

Black Stork :(Ciconia nigra) I saw it in pairs or small flocks near the rivers bank in July - September

Family Phalacrocoracidae

Long-tailed cormorant :(Microcarbo africanus) It saw in large number move the area in wet season Usually feeds in shallow water

Great cormorant :(Phalacrocorax carbo) It saw in single bird or small numbers . not recorded in wet season.

The species which seen in the top were recorded in dry summer.

Family Accipiteridea (Kites, Vultures, Eagles, Hawks, etc)

Black Kite :(*Milvus migrans*) I saw it in all visit , but the large flock of it seen in september

Family Hirundinidae (Swallow)

Ethiopian Swallow : (*Hirundo aethiopica*) Its a species of the bird in the family Hirundinidae. I saw it through the study area near the the rivers of the dam, and in three times away from the dam and the rivers of it

European Swallow : (*Hirundo rustica*) I saw it in few numbers(1-3) around the river of the dam in May and September

Family Columbidae

Laughing dove :(*Spilopelia senegalensis*) I saw it near the forest of the sunt

Namaqua dove :(*Oena capensis*) I saw it in the forest of the sunt

Family Sternidae

Whiskered tern :(*Chlidonias hybrid*) it was saw in small numbers in May

Family Charadriidae

Spur-winged lapwing :

(*Vanellus spinosus*) It saw in large numbers in the extention of river bank

The species which seen in the middle were rcordeed as permanent species

Family Emberizidae

White-frowned sparrow : (*Zonotrichia leucophrys*) It saw in small flock in the river bank in wetseason

Family Ardeidae (Hérons, Egrets)

Grey Heron : (*Ardea cinerea*) I saw it near the water bank in September and one nesting on *Acacia nilotic* in May

Cattle Egret :

(*Bubulcus ibis*)

Resident in few numbers in dry summer, and the large flocks of it which consist of hundred or more seen breeding in wet season I saw it breeds colonially, the nest of it a plat form built of sticks

Little Egret :

(Ardea alba) It will be seen in small numbers in dry summer but in wet summer the flock of it extended in the hall of the forest area

Family Ciconiidae (Stork)

Abdims Stork :(Ciconia abdimii) Very common summer visitor, May – October nests in large trees in Khartoum gardens and I saw a number of it on a acacia tree *Acacia nilotica*

The species which were recorded in the last seen during wet summer

Family Passeridae

Sudan golden sparrow :

(Passer luteus) It was also seen in flocks consist of large numbers around the extension of river bank

European roller :

(Coracias garrulous) It see only in wet season but in small numbers

CHAPTER FIVE

Discussions

There were marked changes in the bird fauna in the study area between April and September, 2016 and there is little doubt that these is associated with the climatic changes resulting from the onset of rains. It is probably to be expected that habitat, which show abig seasonal change in climatic will also have drastic change in their fauna

There was a big influx of species into the study area in the wet season . Partically the number of Ardeidae came the area for breed . presumably the area satisfies two basic requirement for these bird. There was a lot of insect, amphibian. S econd there were abundance of nesting site. Sinclair (1978) has already stressed the importance of such factors for birds breeding in the Serengeti.

The study highlights the great importance of the site for both Dry Summer and Wet Summer birds



Spur-winged lapwing (Wikipedia,encyclopedia)



African openbill (Wikipedia,encyclopedia)



Black stork (Wikipedia,encyclopedia)



Abdims stork (Wikipedia,encyclopedia)



European swallow (Wikipedia,encyclopedia)



Black kite (Wikipedia,encyclopedia)



Cattle egret (Wikipedia,encyclopedia)



Ethiopian swallow (Wikipedia,encyclopedia)



European roller (Wikipedia,encyclopedia)



Greay heron (Wikipedia,encyclopedia)



Little egret (wikipedia,encyclopedia)



Sudan golden sparrow (wikipedia,encyclopedia)



White fronted sparrow lark (Wikipedia,encyclopedia)



Great egret (Wikipedia,encyclopedia)



Great cormorant (Wikipedia,encyclopedia)



Whiskered tern (Wikipedia,encyclopedia)



Namaqua dove (Wikipedia,encyclopedia)



Long-tailed cormorant (Wikipedia,encyclopedia)



Laughing dove (Wikipedia,encyclopedia)



House sparrow (Wikipedia,encyclopedia)

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