FINAL REPORT

DISTRIBUTION AND ABUNDANCE OF WETLAND BIRDS IN YANKARI GAME RESERVE, BAUCHI, NORTHERN NIGERIA

By

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Introduction

A wetland according to Webster's new encyclopedic dictionary (1985) is, 'a land containing much soil moisture': swampy or boggy land. Wetland birds therefore are birds that congregate around any body of water, swampy or boggy land; and most of their activities- feeding, breeding, roosting etc. revolve around such a place. This work sought to establish the distribution and abundance of the wetland birds found within the Yankari Game Reserve (The Reserve) and to generate a checklist of these wetland birds. Since birds are sensitive to changes in their environment, continuous monitoring of their distribution and abundance, i.e. status, can serve as an indicator of environmental changes in The Reserve. By tracing the factors behind these changes we can advise the reserve managers on the necessary measures that need to be taken to avoid losing the natural habitat and biodiversity with time.

The Reserve is located 100 km south east of Bauchi town in Bauchi state. The Reserve lies in the Sudan Savanna zone (Geerling 1973) of Nigeria with a vegetation made up of swampy flood plain bordered by patches of forest, gallery forest and riparian forest, woodland Savanna (Crick and Marshall 1981) and human occupation zone (farmland and villages) Green (1988). Yankari Game Reserve lies between 9°50'N and 10°30'E, covering an area of 2,244 kilometers square. The reserve records an average rainfall of about 1000 mm per year which occurs between April and October (Crick and Marshall 1981). Among the variety of birds found within the reserve are; kingfishers, herons, raptors, storks, vultures and bee-eaters, just to mention a few.

The Reserve has within it several springs of different sizes; the Wikki, Gwana, Dimil, Tunga Maliki and Mawulgo warm spring. These springs empty into the River Gaji that runs, throughout the year, through the central parts of The Reserve from north to south. Along the River Gaji and its adjacent wetlands and small tributaries can you find a flora and fauna that benefit from the special natural resources that water gives.

Methodology

This survey was carried out within a period of one calendar year, Dec 2006 – Nov 2007. Though it was intended to be executed within the raining and dry seasons of the year in order to compare abundance between the seasons; it was not possible for the survey to be conducted during the peak of rains as the tracts became over flooded and impassable.

During this period monthly observations were carried out with the aid of a pair of binoculars (8 x 42) and a telescope between the hours of 06:30-10:00 and 15:00-18:30. Sufficient time was spent at every site visited to ensure that all birds were observed and recorded. Each site was visited at least twice in a month and the maximum number of each bird species observed was used to analyze the data. All wildlife fauna found to utilize the wetland were recorded. Variables such as bird or animal species seen, number seen, activity, size of spring, water condition as well as time and pH were recorded. The pH of the water was recorded using a pH meter. Site characteristics were also noted.

The survey work was carried out together with the management of The Reserve and with Savanna Conservation Nigeria as the main facilitator. Some of the rangers were trained to participate in this survey work so as to be able to carry this forward on yearly basis after this survey period.

Results

During the survey a total 5020 individuals, 275 species were recorded from the various demarcated sites. These individuals are comprised of 2,409 individuals classified as wetland birds whereas 2611 individuals are raptors and other birds that come to utilize the wetland e.g. to forage or drink.

The number of wetland birds observed varied between months (Fig. 1); with the largest number of birds recorded in November, while October had the least number of birds observed.

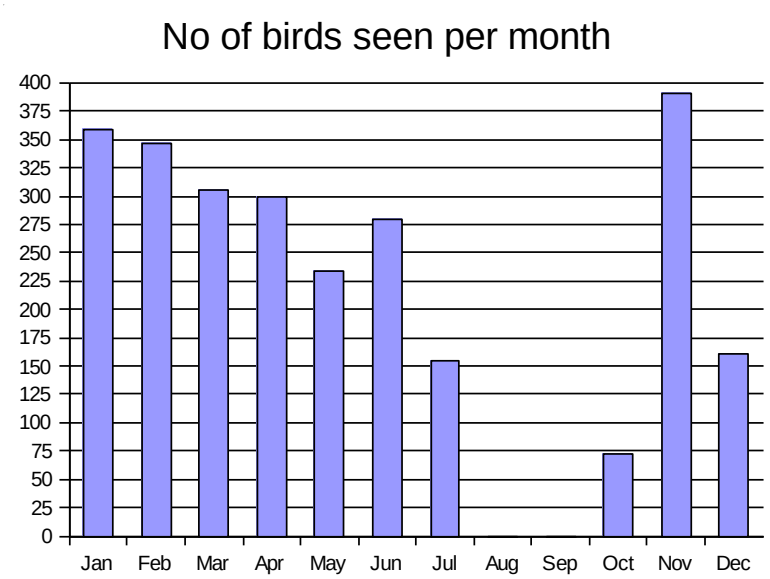

Figure 1. Number of birds observed per month.

More species were recorded in the month of January; although this variation did not differ much between other months (Fig. 2).

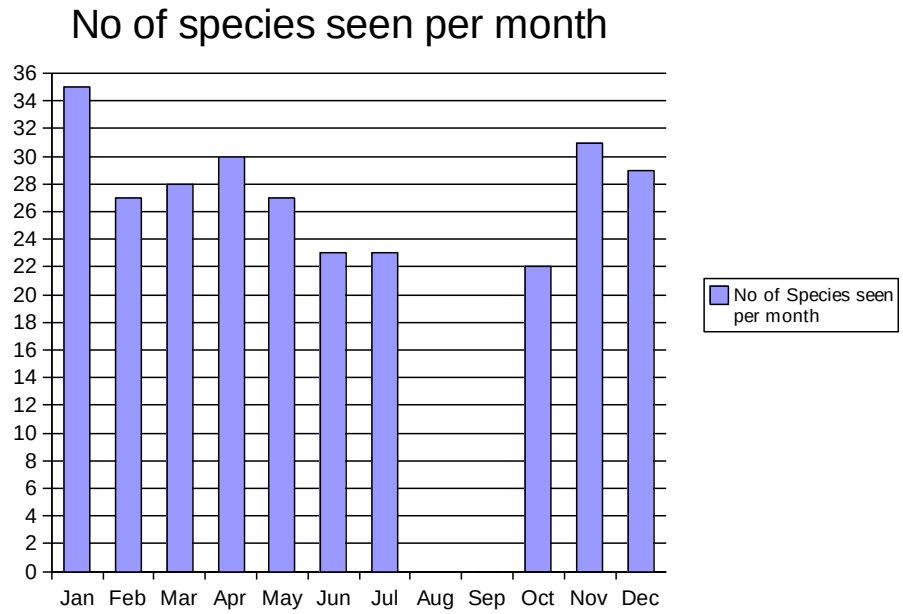

Figure 2. Number of species observed per month.

Some of the wetland species such as the African Jacana (Actophilornis africana), Hadada Ibis (*Bostrychia hagedash*) and Spur-winged Lapwing (*Vanellus spinosus*) were observed to occur more frequently than others during this observation (Fig. 3).

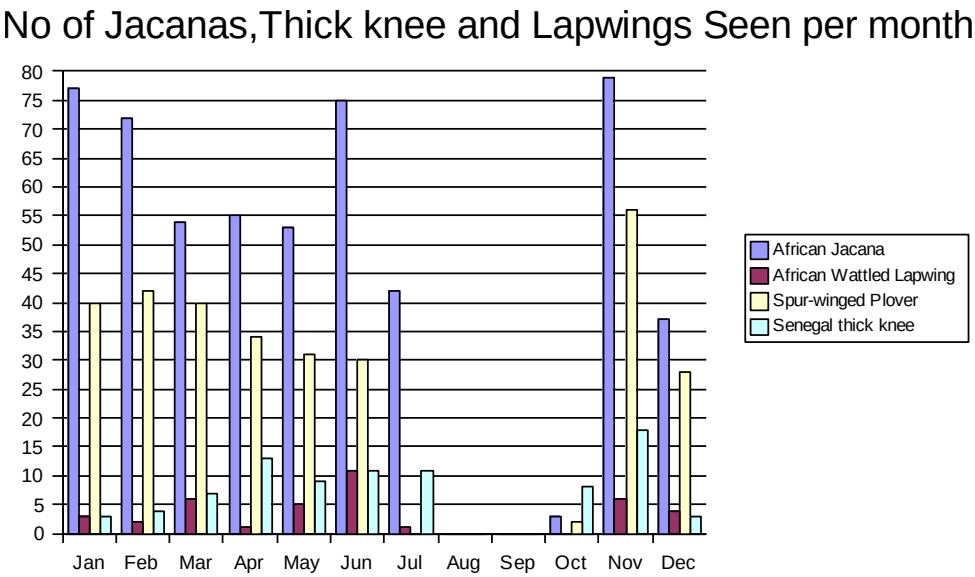

Figure 3. The numbers observed of some more common species.

Some species such as the Black-tailed Godwit (*Limosa limosa*), Whiskered Tern (*Chlidonias hybrida*) and African Openbill Stork (*Anastomus lamelligerus*) were encountered just once during the survey.

Among the stork species observed the Woolly-necked Stork (*Ciconia episcopus*) was the species most frequently encountered and they occurred mainly in the month of April. Almost at every monthly survey a single individual of the Saddle-billed Stork (*Ephipipiorhynchus senegalensis*) was observed, I fear that this is the last remaining individual of this species. Hadada Ibis (*Bostrychia hagedash*) was the most common species among the two ibis species recorded (Fig. 4)

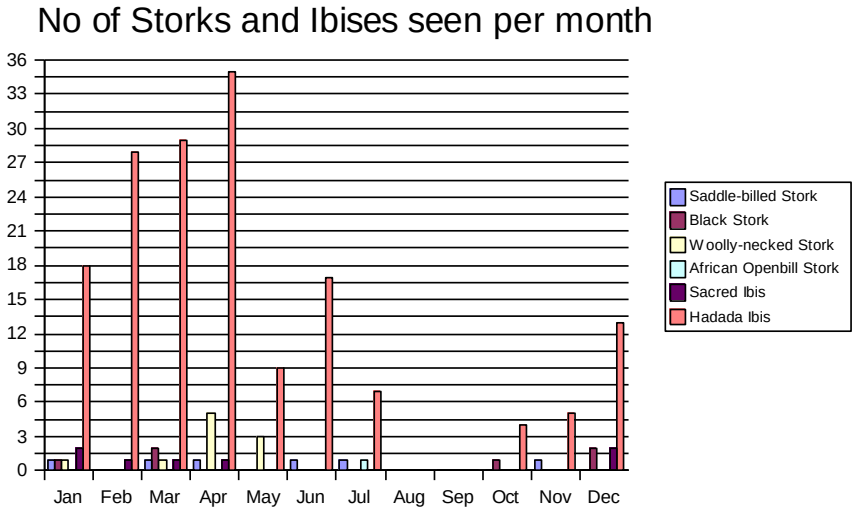

Figure 4. Number of different species of storks and ibises observed.

Among the Herons recorded during the study the Green-backed Heron (*Butorides striata*) was observed to be the most common, whereas the Goliath Heron (*Ardea goliath*) was recorded just once (Fig. 5).

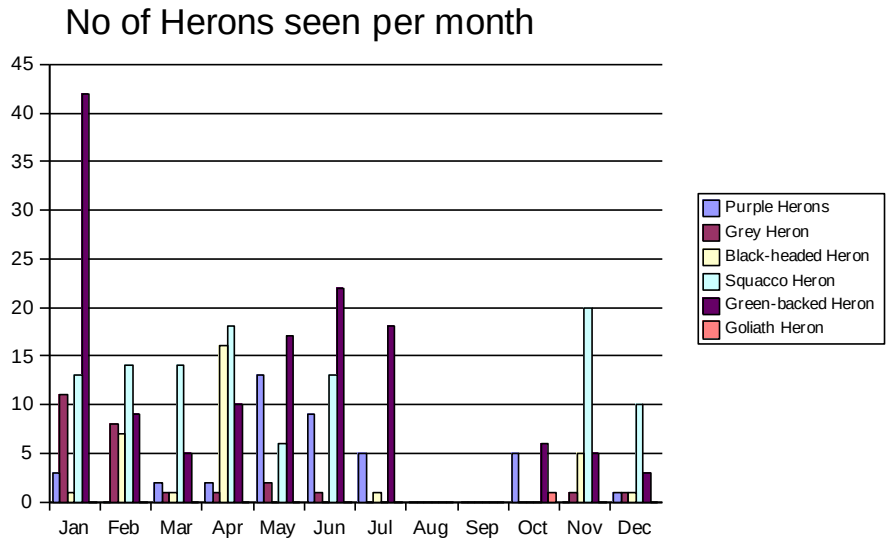

Figure 5. The number of different species of Herons observed.

Among the migrant waders the Yellow Wagtail (*Motacilla flava*) was the common species encountered and as for the waders they began to arrive The Reserve in October and then become most abundant in January (Fig. 6).

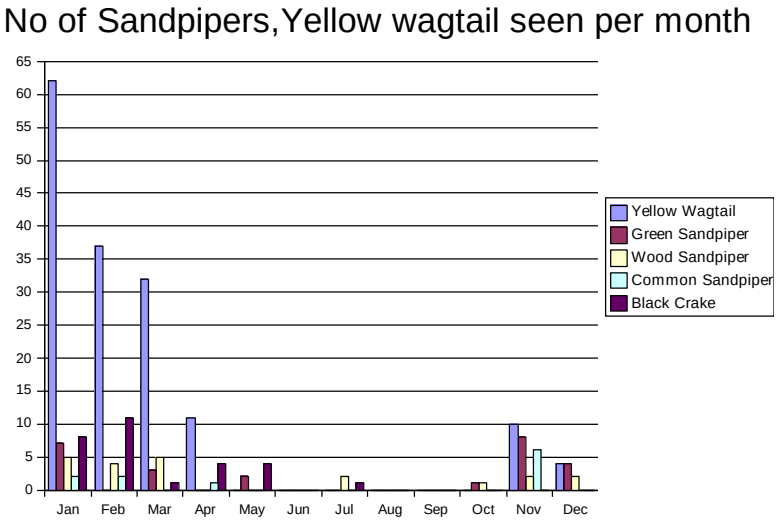

Figure 6. The Number of Palearctic migrants observed.

All the ten survey sites had a pH that ranged between 4 and 7.9 but this did not deter the birds from foraging or drinking from these sites at the period of this survey. One of the sites had a pH that is highly acidic (4.2) at the water source which is very close to a rock, but this pH became more diluted as the water flowed down stream having no effect still on bird presence.

The site size ranged between 0.5 hectares to 5 hectares. More birds were recorded in the big sites than in the 0.5 hectares.

The various survey sites were all characterized by floating vegetation, fringes of grass and trees and exposed areas of mudflats.

Most of these sites had slow flowing water at some points while at other points the water appeared stagnant. During the dry season the sites had more exposed mudflats.

Discussion and Conclusion

It was observed during the period of this survey that the highest number and the highest diversity of birds were made during the dry season between the months of November and March. This could be due to the fact that during this period the water level has receded; exposing the mud and making it easier for these waders to search the mud for food. Also, most other parts of The Reserve is dry during this period of time.

The bigger the site the more bird recorded, probably just because more space gives more room for birds and probably larger opportunities for foraging.

Although the various sites had varying pH, this did not seem to have any direct effect on bird presence. The only factor that determined the bird's abundance was the water level as bird numbers were observed to drop as the rain set in and persisted throughout the rainy season; between April- October in this part of the country (Fig. 1).

During the onset of the rain the water level increased, thereby causing the water to flow a little bit faster; overflowing up most mudflats. It was experienced during the survey that as the rain intensified it made survey difficult and finally impossible between the months of July and September.

This is because the springs with the one main river Gaji became over-flooded and made tracks impassable. At the peak of rain, efforts were still made to reach some sites. During this time it was observed that only a few birds such as the African Jacana (*A. africana*) still persisted.

It was also observed during the survey that the wetland is not utilized by waders only as various animals like Dog-faced Babbons (*Papio anubis*), Lions (*Panthera leo*), African Elephants (*Loxodonta africana*), African Buffaloes (*Syncerus caffer*), Hippopotamus (*Hippopotamus amphibius*) were also encountered regularly foraging or drinking water. Thus it is very vital for these water bodies to be managed properly so as to continue to sustain these lives. It was also gathered from some of the rangers that participated in this survey that the water is gradually reducing in volume as a result of upland activities (farming) of the villagers; thus it will only be proper for the management of The Reserve to give these villagers alternative source of livelihood to reduce their effect on the water within The Reserve or it may be lost with time, thereby losing the flora and fauna that benefit from these sites.

Appendix 1. A Checklist of the waders recorded during the survey and their status

Common Name	Scientific Name	Status
Grey Heron	*Ardea cinerea*	U
Black-headed Heron	*Ardea melanocephala*	U
Purple Heron	*Ardea purpurea*	U
Goliath Heron	*Ardea goliath*	R
Black-crowned Night Heron	*Nycticorax*	R
White-backed Night Heron	*Gorsachius lecconotus*	R
Squacco Heron	*Ardeola ralloides*	C
Cattle Egret	*Bubulcus ibis*	C
Little Egret	*Egretta garzetta*	U
Intermediate Egret	*Egretta intermedia*	U
Great Egret	*Egretta alba*	U
Hamerkop	*Scopus umbretta*	C
Little Bittern	*Ixobrychus minutus*	U
Dwarf Bittern	*Ixobrychus sturmii*	U
Green-backed Heron	*Butorides striata*	C
African Openbill Stork	*Anastomus lamelligerus*	R
Black Stork	*Ciconia nigra*	WV
Woolly-necked Stork	*Ciconia episcopus*	U
Saddle-billed Stork	*Ephippiorhynchus senegalensi*	U
Hadada Ibis	*Bostrychia hagedash*	C
Sacred Ibis	*Threskornis aethiopica*	U
White-faced Whistling Duck	*Dendrocygna bicolor*	R
African Fish Eagle	*Haliaeetus vocifer*	C
Black Crake	*Amaurornis flavirostra*	U
Allen's Gallinule	*Porphyrio alleni*	R
African Jacana	*Actophilornis africana*	C
African Finfoot	*Podica senegalensis*	R
Common Snipe	*Gallinago*	R
Greater-painted Snipe	*Rostratula benghalensis*	R
Spur-winged Lapwing	*Vanellus spinosus*	C
African Wattled Lapwing	*Vanellus senegallus*	C
Black-tailed Godwit	*Limosa*	WV
Green Sandpiper	*Tringa ochropus*	WV
Wood Sandpiper	*Tringa glareola*	WV
Common Sandpiper	*Actitis hypoleucos*	WV
Whiskered Tern	*Chlidonias hybrida*	R
Malachite Kingfisher	*Alcedo cristata*	C

Pied Kingfisher	*Ceryle rudis*	C
Grey-headed Kingfisher	*Halcyon leucocephala*	C
Blue-breasted Kingfisher	*Halcyon malimbica*	C
Giant Kingfisher	*Megaceryle maxima*	U
Little Bee-eater	*Merops pusillus*	C
Yellow Wagtail	*Motacilla flava*	WV
Swamp Flycatcher	*Muscicapa aquatica*	C

Key to table: U=Uncommon (Observed 1-10 times) C=Common (Observed more than 10 times) R=Rare (Observed 1-2 times) WV=Winter Visitor, PM=Passage Migrant

References

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