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Full Length Research Paper

Checklist of bird species at the Dadin Kowa Dam, Gombe, Gombe State, Nigeria

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A study to generate a checklist of bird species at the Dad in Kowa dam, Gombe, Gombe State, Nigeria, was conducted between April – July 2011. Four line transects measuring 1000 m were each placed on the different habitat types and each surveyed four times within the study period. Thus, a total transect length of 4000 m was surveyed. Sixty bird species from 27 families were recorded during the survey. Four of the 60 bird species recorded were endemic to Africa, which were the Senegal Parrot *Poicephalussenegalus*, Bearded Barbet *Lybiusdubius*, Vieillot's Barbet *Lybiusvieilloti*, and Bronze Mannikin *Spermestescucullata.* The results of this study showed that the bird species found at the Dadin Kowa Dam are either Residents like the Cinnamon-breasted rock Bunting, White-rumped Swift, African grey hornbill, Cattle Egret, Black-headed Heron, Vinaceous Dove, Grey-headed Kingfisher; Intra-African migrants like the African Golden Oriole, Northern caramine Bee-eater; Vagrants like the Squacco Heron, Black-crowned Night Heron and Palearctic Migrants like the White Stork. All the bird species identified were of Least Concern 3.1 IUCN status. The checklist produced was the first in the area, thus providing baseline information for further research.

Keywords: Checklist, Bird species, Dadin Kowa dam, Gombe, Nigeria

INTRODUCTION

Birds are vertebrates characterized by the possession of feathers and have the ability to fly. Birds are widely distributed and can be seen everywhere, even in areas with high anthropogenic activities, occupying a wide range of habitats, from aquatic to terrestrial (Ezealor, 2002). About ten thousand species of birds are known to man globally, in 181 families. Birds are useful indicators of the state of the environment and are also key species for education and public awareness (Bibby, 1999). As indicators, birds show trends that reflect the health status of the environment. When used in association with data from other taxonomic groups, birds have been shown to be a very effective means of identifying priority areas for conservation action and mitigation measures (Brooks and Thompson, 2001). Monitoring schemes in Europe and North America, have shown how wild bird indicators can be successfully used to enhance and improve management of natural resources, and inform environmental decision-making (Diamond and Devlin, 2003). These schemes show how bird populations reflect wider scale changes in nature and biodiversity, and are therefore, useful for sustainable life styles (Senyatso *et al.,* 2008). Many countries in Europe, America and Australia have national schemes for monitoring common bird populations, using changes in bird abundance as indicators of environmental changes.

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The Dadin Kowa dam comprises of aquatic and terrestrial environments which provide critical habitats to a wide variety of bird species.

Literature review suggests paucity of information, with little or no work done within the study area as it pertains to bird species richness and diversity. It is with this realization that the need to undertake the study became very expedient.

The aim of the study was thus, to provide information on the avifauna of the Dadin Kowa dam, by providing a checklist of bird species in the area.

MATERIALS AND METHODS

Study area

The Dadin Kowa dam is located about 35 kilometers to the east of Gombe town, with coordinates of 10^0 19' 19''N, $11^0$28'54"E The dam is the major source of water supply to Gombe metropolis and if properly harnessed, could supply water to the entire northeastern states of Nigeria. The dam was completed by the Federal Government in 1984, with the goal of providing irrigation and electricity for the planned Gongola sugar plantation project. The reservoir has a capacity of 800 million cubic meters of water and a surface area of 300 square kilometres, and has potentials for fishing. About twenty six thousand people were displaced by the construction of the dam, with some compensation for resettlement.

Determination of bird species richness and generation of checklist

Line transect method described by Bibby *et al*. (2000), was used in determining bird species richness and generating a checklist of birds for the area. This method involved walking along a designated route, identifying and counting all the birds detected on either side of the route. Four transects of 1000 m each were placed across each plot and each transect was divided into sections of 100 m. Transects were progressively distant from the river banks with an increasing distance of 50m using a GPS and the stop watch for timing. A Walk was made slowly along each transect and all birds seen, heard or in flight, were observed with the help of a pair of binoculars and identified using a field guide manual by Borrow and Demey (2008). Visits were made to the study area in the morning 7:00-10:00 a.m. and in the evening 3:30-6:30 p.m. Data were collected from the period of April to July 2011. Bird species diversity was determined through a checklist generated from the total number of bird species identified and recorded within the study area.

Data analysis

Data was analyzed using Statistical Packages for Social Sciences (SPSS), (2010) version 17.0. The species effort curve for the whole data was plotted to determine if most of the species in the study area were recorded. Total number of bird species was calculated (birds seen, heard, or in flight).

RESULTS

Bird species richness and checklist

A total of 60 bird species in 27 families was recorded during this study, between April to July 2011 (Table 1).
The overall species effort curve (Figure 2), shows the cumulative number of bird species per transect section. The curve shows that new species were added more quickly at the beginning of transects, but as transects lengthened, the number of species added decreased. The curve reached a clear plateau at some point and continued in that trend and finally leveled off. No new species were added during the last two visits, which indicate that most of the species at the Dad in Kowa dam site were recorded.

DISCUSSION

The species effort curve is an indication that most of or all the bird species in the study area were recorded. The identification of 60 bird species in 27 families out of 181 families of birds known to man globally at the Dadin Kowa dam, shows that the area is rich in avifauna, which is an indication of richness in biodiversity. This is higher than the 37 bird species in 25 families, identified by Nsor and Adang (2012), for Gombe State University. The checklist produced is the first in the area, thus providing baseline information for future/further research. All the bird species identified were of Least Concern 3.1 IUCN status.

Four of the 60 bird species recorded are said to be endemic to Africa, which are the Senegal Parrot *Poicephalussenegalus*, Bearded Barbet *Lybiusdubius*, Vieillot's Barbet *Lybiusvieilloti*, and Bronze Mannikin *Spermestescucullata* (Birdlife International, 2000).This calls for conservation interest and the basis for further research. The low occurrence of birds like the African Golden Oriole, White Stock and Northern Carmine Bee-eater, occurring not more than twice during the study, could be as a result of their migratory status.

The results of this study show that the bird species found at the Dadin Kowa Dam are either Residents like the Cinnamon-breasted rock Bunting, White-rumped Swift,

Table 1. Checklist of bird species at the Dadin Kowa dam, Gombe, Gombe State, Nigeria

Family	Common Name	Scientific Name
Ardeidae	Cattle Egret	*Bubulcus ibis/Ardeola ibis*
	Little Egret	*Egrettagarzetta*
	Squacco Heron	*Ardeolaralloides*
	Black-headed Heron	*Ardeamelanocephala*
	Black-crowned night Heron	*Nycticoraxnycticorax*
	White-backed night Heron	*Gorsachiusleuconotus /Nycticoraxleuconotus*
Phasianidae	Stone Partridges	*Ptilopachuspetrosus*
Columbidae	Speckled Pigeon	*Columba guinea*
	Laughing Dove	*Streptopeliasenegalensis /Stigmatopeliasenegalensis*
	Namaqua Dove	*Oenacapensis*
	Vinaceous Dove	*Streptopeliavinacea*
Psittacidae	Senegal Parrot	*Poicephalussenegalus*
Musophagidae	Western grey Plantain-eater	*Criniferpiscator*
Cuculidae	Senegal Coucal	*Centopussenegalensis*
Apodidae	White-rumped Swift	*Apuscaffer/Micropuscaffer*
	African palm Swift	*Cypsiurusparvus*
	Little Swift	*Apusaffinis/Colletopteraaffinis*
Alcedinidae	African Pygmy Kingfisher	*Ceyxpictus/Ceyxpicta/Ispidinapicta*
	Striped Kingfisher	*Halcyon chelicuti*
	Pied Kingfisher	*Cerylerudis*
	Grey headed Kingfisher	*Halcyon leucocephala*
Meropidae	Little Bee-eater	*Meropspusillus/Melittophaguspusillus*
	Red-throated Bee-eater	*Meropsbulocki/Melittophagusbulocki*
	Northern carmine Bee-eater	*Meropsnubicus*
Phoeniculidae	Green wood-Hoopoe	*Phoeniculuspurpureus*
Bucerotidae	African grey Horn bill	*Torkusnasutus/Lophocerosnasutus*
Capitonidae	Vieillot's Barbet	*Lybiusvieilloti*
	Bearded Barbet	*Lybiusdubius/Pogonornisdubius*
Pycnonotidae	Common Bulbul	*Pygnonortusbarbatus*
Turdidae	African Thrush	*Turduspelios/Turduslibonyanus*
	Familiar Chat	*Cercomelafamiliaris*
	Snowy-crowned Robin chat	*Cossyphaniveicapilla*
Sylvildae	Grey-backed Camaroptera	*Cameropterabrachyura / Cameropterabrevicaudata*
	Singing Cisticola	*Cisticolacantans*
	Whistling Cisticola	*Cisticolalateralis*
	Red-winged Warbler	*Helioliaserythropterus /Helioliaserythroptera /Priniaerythroptera*
Nectariniidae	Scarlet-chested Sunbird	*Chalcomitrasenegalensis /Neectariniasenegalensis*
	Pygmy Sunbird	*Hedydipnaplatura/Anthreptesplatura*
	Copper Sunbird	*Cinnyriscupreus/Neectariniacuprea*
	Variable Sunbird	*Cinnyrisvenustus/Neectariniavenusta*
Malaconolidae	Black-crowned Tchagra	*Tchagrasenegalus/ Tchagrasenegala*

Table 1. Continue

	Yellow-crowned Gonoleck	*Laniariusbarbarus /Laniariuserythrogaster*
Oriolidae	African golden Oriole	*Oriolusauratus*
Corvidae	Piapiac	*Ptilostomusafer*
	Pied Crow	*Corvusalbus*
Sturnidae	Purple glossy Starling	*Lamprotornispurpureus /Lamprocoliuspurpureus*
Ploceidae	Village Weaver	*Ploceuscucullatus /Plesiositagracucullatus*
	Little Weaver	*Ploceusluteolus/Sitagraluteola*
	Northern red Bishop	*Euplectesfranciscanus*
	Black-headed Weaver	*Ploceusmelanocephalus /Sitagramelanocephala /Sitagracapitalis*
Estrildidae	Lavender Waxbill	*Estrildacaerulescens*
	Red-billed fire Finch	*Longonostictasenegala*
	Red-checked Codon bleu	*Uraeginthusbengalus /Estrildabengala*
	Bronze Mannikin	*Lonchuracucullata /Spermestescucullatus*
	Black-rumped Wax bill	*Estrilda troglodytes*
Emberizidae	Cinnamon-breasted rock Bunting	*Emberizatahapisi /Fringillariatahapisi*
Charadriidae	Black-headed Lapwing	*Vanellustectus/Sarciophorustectus*
Ciconiidae	White Stork	*Ciconiaciconia*
Jacanidae	African Jacana	*Actophilornisafricana*
Passeridae	Northern grey-headed Sparrow	*Passer griseus*

Names are written following (Borrow and Demey, 2008)

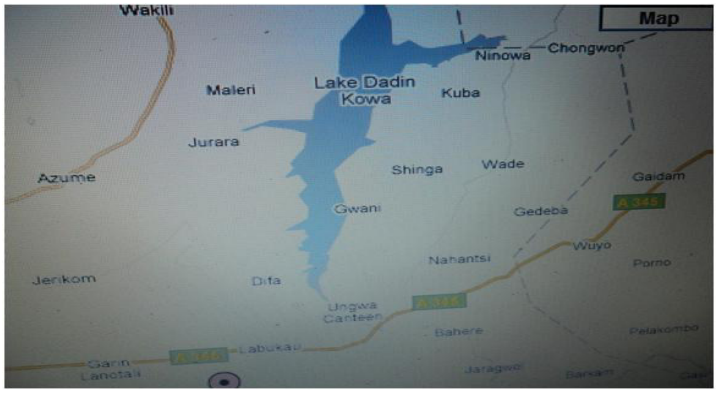

Figure 1. Map of Gombe showing the Dadin Kowa Dam

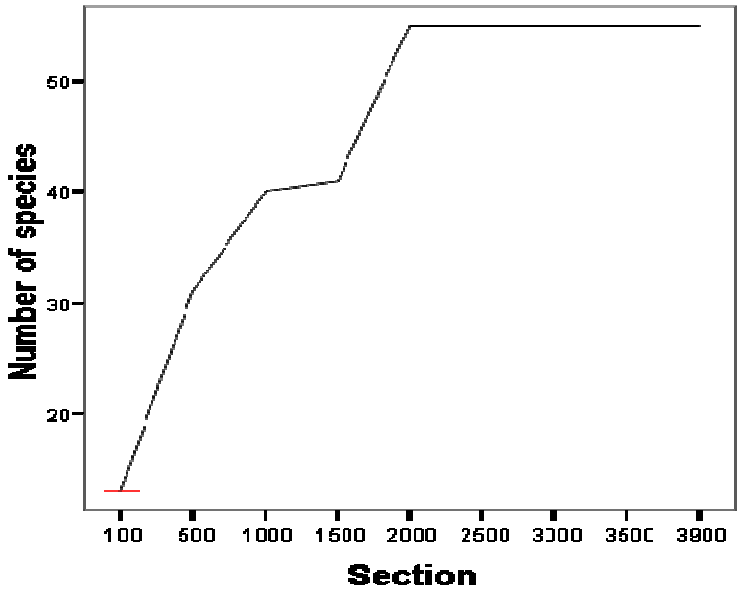

Figure 2. Overall species effort curve

African grey hornbill, Cattle Egret, Black-headed Heron, Vinaceous Dove, Grey-headed Kingfisher; Intra-African migrants like the African Golden Oriole, Northern caramine Bee-eater; Vagrant like the Squacco Heron, Black-crowned Night Heron and Palearctic Migrant like the White Stork.

The study concludes that the Dad in Kowa Dam is an ecologically rich site, which provides a critical habitat to a wide variety of both aquatic and terrestrial bird species. The area also holds a high species of both Afro-tropical residents and palearctic migrants, thus, the protection and conservation of the area, will not only help preserve what is left of the vegetation, but will ensure the persistence of biodiversity and future boost tourism.

The study recommends that bird species and vegetation monitoring should be a continuous process as long as the dam exists, and a long term survey of at least ten years on biodiversity may be useful, as a four-months study like the present may not have done justice to the topic.

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