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The Food of Quelea Birds *(Quelea quelea)* During Dry Season in Borno State, Nigeria

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Abstract: The plant species that formed the food of Quelea birds in Borno State of Nigeria during the dry season was investigated, using 50 birds. The birds were caught from the wild using some local trapping techniques with a view to finding out if Quelea birds fed more on cultivated than uncultivated crops, therefore constituting a threat to man. Each bird was dissected using a scalpel blade on dorsal recumbency to remove the crop. The crop was then cut open and the contents removed and identified. The results revealed that the birds fed more on wild grass (uncultivated) seeds (*Triticum aestevum,* 49.3%; *Echinochloa colonum*, 3.5%; and *Oryza barthii,* 0.9%) than cultivated crops (*Pennisetum glaucum,* 44.8%; and *Sorghum vulgare,* 1.1%).

Key words: Food, quelea, crop, dry season, Nigeria

INTRODUCTION

Ward[1] reported that the *Quelea quelea* bird species is distributed in the West African sub-region. It is a granivore[2] that mainly feeds on a variety of the seeds of wild grasses and to a smaller proportion on arthropods[3]. The type of food eaten by these birds however varies with the changes in season and the stage in their reproductive cycle. The variability in the abundance of its wild sources of food, which depends on the seasons, is what attracts its attention to man's cultivated crops. Lack[4] discovered that it is when the small seeds of wild grasses become sparse in the latter part of the dry season that the Quelea turns to the larger seeds of man's crops. The bird also faces severe food scarcity at the beginning of the rainy season, due to massive wild seed germination and by that time the farm crops would have just been planted.

The species forms breeding colonies, with individual often numbering in the millions. Therefore, the consumption of cereal grains would be substantial whenever they attack a farm, due to their sheer number coupled with their flock feeding behavior. As a result, they constitute a serious pest of grain crops wherever they are found[5,6]. In a study by Peter Ward in North-eastern Nigeria (where Borno State is located), between 1960-1962, he found that the vegetable food of Quelea birds in the area constituted primarily of 10 species of grasses – 5 of small seed category (2 Echionochloa species, 1 panicum, 1 pennisetum and 1 Ischaemum) and five species of large seeds (2 wild sorghum species, 1 wild rice, 1 cultivated millet and 1 cultivated rice).

The aim of this paper is to find out the type of food that Quelea birds fed on during the dry season in Borno State, compared with the finding of Ward[1]. This will also tell us whether or not they constituted a threat to man's cultivated crops.

MATERIALS AND METHODS

Fifty adult quelea birds (*Quelea quelea*) were caught from the wild in Borno State, Nigeria using some local traps made from horsetail hair attached to tethers during the day time and a torchlight which immobilized the birds in the night. They were then transported to laboratories in the Department of Biological Sciences, University of Maiduguri, Nigeria and killed in a Dessicator. Each bird was dissected using a scalpel blade on dorsal recumbency to remove the crop. The crops were cut open with a pair of scissors and the contents expressed into clean petri dishes, washed with cold water, labelled and air-dried.

The crop contents were then identified with the help of a hand lens and keys provided by GTZ[3].

RESULTS AND DISCUSSION

The results of present study revealed that the food of Quelea birds during the period of study (November–December) in Borno State consisted of *Pennisetum glaucum* (cultivated millet), *Triticum aestevum* (Wild grass), *Echinochloa colonum* (Wild grass), *Sorghum vulgare* (cultivated sorghum), *Oryza barthii* (wild rice) and sand. When expressed as weighted percentages it was found that *T. aestevum* was eaten in higher quantity

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Table 1: Food types found in the crop of 50 Quelea birds examined

Food Type	Total No. (%) collected P=0.01
Uncultivated:	
Triticum aestevum	1020 (49.4)
Echinochloa colonum	72 (3.5)
Oryza barthii	18 (0.9)
Sand	9 (0.4)
Cultivated:	
Pennisetum glaucum	926 (44.8)
Sorghum vulgare	22 (1.0)

Percentage total and test statistics for uncultivated (n=1119; 54.1%) and cultivated (n=948; 45.9%); paired t-test, P<0.01.

than the other food types (1,020 grains; 49.3%). This was followed by 926 grains of *P. glaucum* (44.8%), 72 grains of *E. colonum* (3.5%), 22 grains of *S. vulgare* (1.1%), 18 grains of *O. barthii* (0.9%) and 9 grains of sand (0.4%) in that order (Table 1).

The higher intake of *T. aestevum* may be because it was more palatable or more abundant than the other plant seeds. However, the relative abundance of the food types was not studied in this experiment. But the *T. aestevum* seeds are smaller in size than the other seeds and Quelea birds are known to have preference for smaller seeds[4].

The results in Table 1 represent one thing to be clear. And that is, that Quelea birds eat more than one species of plant seeds, just as was reported in the study by Peter Ward between 1960-1962. One difference with his study however, is that fewer plant species were found in the study. This may be attributable to the lower vegetation cover that exists in the study area today, than what obtained in the sixties. Desert encroachment which is as a result of increase in the felling of trees for fuelwood[7] may be the major reason for the lower vegetation cover. The birds have become more serious in terms of crop depredation, since suitable habitats have been created for them through removal of the vegetation cover. Some Agricultural activities that lead to, for example, the complete destruction of habitats and wild sources of bird food[8] is another factor that has made cultivated crops to be vulnerable to bird attack.

The consumption of uncultivated food type was highly significantly more than cultivated food type (paired t-test, n=2067, t=5.84, P<0.01), as may be seen from Table 1. This makes the result to be interesting because during the period of this study, cultivated crops such as *P. glaucum* were abundantly available to the birds since harvesting was still on, but that did not make the birds to consume more of it. This means that man's cultivated crops would be less vulnerable when uncultivated grass seeds are available.

According to Ozolua[5], granivorous birds generally prefer wild grass seeds and tend to go for man's cultivated crops when the former is in short supply. Wild grass seeds, the natural food of birds were still available

Table 2: Distribution of food type by sex of the Quelea birds (19 males and 31 females) examined

	No. (%) grains/sex		
Food type	Male	Female	Total
Uncultivated			
T. aestevum	429 (20.8)	591 (28.6)	1020 (49.4)
E. colonum	47 (2.3)	25 (1.2)	72 (3.5)
O. barthii	12 (0.6)	6 (0.3)	18 (0.9)
Sand	5 (0.2)	4 (0.2)	9 (0.4)
Cultivated			
P. glaucum	416 (20.0)	510 (24.7)	926 (44.8)
S. vulgare	14 (0.7)	8 (0.3)	22 (1.0)

at the time of the year when this study was carried out. But there is no doubt that human activities such as indiscriminate felling of trees for firewood, etc. deprived birds of their natural habitat and food. This is because such activities cause drought, which in turn put pressure on especially water retaining areas, such as wetlands by way of assemblage of large concentrations of birds and other wildlife[9]. According to the latter, Quelea is an important pest of cultivated crops such as rice, millet, sorghum and wheat in the Hadejia-Nguru Wetland in North-eastern Nigeria.

Table 2 shows that female birds consumed significantly more food (P<0.05) than males for both uncultivated and cultivated food types.

However, this difference may not necessarily mean that female quelea birds generally eat more food than their male counterparts, since the total number of the female birds in this experiment was more than that of male (31 against 19, respectively). In a previous similar study by the senior author where male quelea birds out-numbered females, the overall food consumption by the males significantly surpassed that of the females. Female birds are known to eat more animal food than males during pre-breeding, for egg-making and during breeding to withstand the stress of brooding and for feeding their nestlings.

Weaver birds have been reported to prefer wild grass seeds generally, because the grass seeds have a far greater protein content than cultivated seeds, since the latter have been selected and bred for high starch contents for several centuries[3]. The importance of food nutrients to birds have also been reported in other studies. Rao *et al.*[10] found that the poultry that were fed on high-protein diet showed lower susceptibility to disease than those on low – protein food. Jones *et al.*[11] also indicated that even vitamin C helped alleviate fear in Japanese Quail.

This study has therefore shown that Quelea birds will eat more wild grass seeds (uncultivated crops) than cultivated crops when available. It may therefore, be wrong to consider the bird as an all season pest. Instead,

one may rather classify it as an opportunistic pest. Hence, farmers should try and synchronize their farming activities and avoid out of season farming, so as to minimize bird damage to their cultivated crops.

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