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Quelea Birds (*Quelea quelea*): A Correlation Study Between Their Feeding Habit and Gastro-intestinal Parasitism in Borno State, Nigeria

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ABSTRACT

A correlation study to investigate the feeding habit and gastro intestinal parasitism of Quelea birds (*Quelea quelea*) was carried out in Borno State, Nigeria. One hundred Quelea birds were caught using local traps, culled using chloroform, dissected and their crop contents and gastro-intestinal tracts examined. The study revealed that 33(33.0%) of the birds had infection with gastro-intestinal parasites viz: *Raillietina tetragona* 26(78.8%), *Hymenolepis* species 4(12.1%), *Amoebotaenia cuneata* 2(6.1%) and *Fimbriaria fasciolaris* 1(3.0%). Out of the 100 birds examined, 56 were males and 44 were females with a prevalence of infection of 15(26.8%) and 18(40.9%), respectively; which was statistically significant ($P<0.05$). Of the 26(78.8%) *Raillietina* cases, 14(53.9%) were infected male Quelea; while, the infected female Quelea were 12(46.2%). *Hymenolepis sp*. with 12.1% prevalence had 50.0% as male Quelea and 50.0% as female Quelea; *A. cuneata* with 6.1% prevalence had only the male Quelea 100% infected. Similarly, *Fimbriaria fasciolaris* with 3.0% prevalence had only the male Quelea 100% infected. Forty per cent of the Quelea birds examined were found with *Pennisetum glaucum* (951 grains), *Echinochloa colonum* (221 grains) and *Oryza barthii* (140 grains) in their crops with percentage weights of 72.5, 10.7 and 16.8%, respectively with a statistically significant difference ($P< 0.05$). Also out of the 40 birds 22(55%) were males; while, 18(45%) were females. Of the 22 males, those with *Pennisetum glaucum* were 22(100%) with 503(38.3%) grains, *Echinochloa colonum* 3(13.6%) with 154(11.7%) grains and *Oryza barthii* 3(13.6%) with 97(10.2%) grains. Also of the 18 females, those with *Pennisetum* glaucum were 14(77.8%), with 448(34.2%) grains, *Echinochloa colonum* 4(22.2%) with 67(5.1%) grains. These findings clearly underline the fact that Quelea birds in this semi-arid region feed predominantly on *P. glaucum* and have a low level gastro-intestinal parasitism.

Key Words: Quelea; Correlation; Food; Parasite; Nigeria

INTRODUCTION

Quelea birds are distributed all over Africa where cereal crops such as *Pennisetum glaucum* and other wild grasses are predominant, especially the semi arid regions south of the Sahara desert with seasonal wet lands, low rainfall areas, riverine and locustrine plains (Kranz *et al.*, 1978). However, birds generally are commonly afflicted by helminth parasites, which results in the loss of production (Biu *et al.*, 1999).

In Borno State, the Quelea birds have been reported to have very large population mostly causing a lot of damage to cereal crops annually (Bindra, 1978; GTZ, 1987) and fruits (Ozolua, 1986). A number of disease conditions have also been reported among domesticated animals, birds and humans (Baele *et. al.*, 2000; Misawa *et al.*, 2000;Takeuchi *et al.*, 2000), some of which could be zoonotic (Aabo *et al.*, 2002).

This paper describes the feeding habit and gastro intestinal parasitism of Quelea birds (*Quelea quelea*).

MATERIALS AND METHODS

A total of 100 Quelea birds were caught using locally set traps made of horsetail hair attached to tethers. They were then taken to the Parasitology Laboratory and dissected using a scalpel blade on dorsal recumbency. Their various gastro-intestinal tracts were then removed and also dissected to express both the intestinal and crop contents into clean Petri dishes.

The cereal content of the crop of each Quelea examined was then identified with the help of keys provided by GTZ (1987).

The intestinal parasites isolated were then transferred to a different clean Petri-dish, washed with clean water, dehydrated using different absolute alcoholic concentrations, strained with borax carmine, cleared in xylene and mounted on a clean glass slide using DPX mountant and examined under the light microscope and then identified using the methods and keys provided by Soulsby (1982).

RESULTS AND DISCUSSION

The results of the study have been presented in Tables I to IV. This study has revealed that the Quelea examined had a fairly low prevalence of gastro-intestinal parasitism (Table I) which conforms with the reports by Soulsby (1982), that majority of these parasites particularly

Raillietina species that have insects / invertebrates as their intermediate hosts and thus it is unlikely for grain and seed eating birds such as *Quelea quelea* (Bindra, 1978) to have severe infections.

The fact that more male birds were infected than females (Table II) may imply that males which tend to eat more quantity of grain food than females (Table IV) would consume more insect food (the intermediate host of the parasites), especially when their preferred food of cereal grain is out of season (Ozolua, 1986) hence are likely to be more infected. If this hypothesis is true, then one would encourage the situation whereby more infected insects are made available to the birds to serve as an environmentally friendly pest bird population control method.

However, though parasitism was low, *Raillietina tetragona* was more predominant and this tallies with the observations by Biu *et al.* (1999) that in the study area, they the most common parasites of birds. This cestode in addition to others has been reported to cause reduced egg production, pathological changes in the heart, lung, liver, intestine and pancreas; and rectal prolapse in domestic fowl (Soulsby, 1986). Therefore, may be another approach to reducing the population of Quelea birds.

The finding of crop contents like *P. glaucum*, *E. colonum* and *O. barthii* conforms with the reports by GTZ, (1987) that they are common grains in this semi-arid region, particularly the millet *(P. glaucum*) which is the most farmed cereal crop in this semi-arid area, and the Quelea are mostly populated where millet and wild grasses are available especially semi-arid regions south of the Sahara desert with seasonal wetlands and in low rainfall areas (GTZ, 1987).

As evident from Table IV, these birds are certainly more of grain eaters than insect eaters, hence the low incidence of parasites. Although Quelea birds prefer wild grass seeds (Ozolua, 1986), when they are in short supply, they go for man's cultivated cereal crops such as millet (*P. glaucum*) which is the most preferred among the cultivated cereal crops, as could clearly be seen in this study (Table IV).

Table I. Distribution/prevalence of GIT infections among the 100 Quelea birds examined

GIT parasites isolated	No (%) of Quelea P=0.05 infected.
Overall	33(33.0)
Hymenolepis spp.	4(12.1)
Raillietina tetragona	26(78.8) P<0.05
Amoebotaenia cuneata	2(6.1)
Fimbriaria fasciolaris	1(3.0)

Table II. Sexual distribution of G.I.T infection of the Quelea birds examined

	Total No. (%) infected	No (%) infected	
		Male	Female P=0.05
Overall	33(33.0%)	15(26.8)	18(40.9)
Raillietina tetragona	26(78.8)	14(53.9)	12(46.2) **P<0.05**
Hymenolepis sp	4(12.1)	2(50.0)	2(50.0)
Amoebotaenia cuneata	2(6.1)	2(100.0)	0(0)
Fimbriaria fasciolaris	1(3.0)	1(100.0)	0(0) **P>0.05**

Table III. Crop contents of the Quelea birds examined

Crop content	No (%) of crop content P=0.05
Pennisetum glaucum	951 (72.5)
Echinocloa colonum	221 (10.7) **P<0.05**
Oryza barthii	140 (16.8)

Table IV. Distribution of crop contents based on plant species in correlation to the sex of Quelea birds

Sex/ Plant Species	No (%)Quelea	No (%) Grains
Males		
P. glaucum	22(100.0)	503(38.3)
E. colonum	3(13.6)	154(11.7) **P<0.05**
O. barthii	3(13.6)	97(7.4)
Female		
P.glaucum	14(77.8)	448(34.2)
E. colonum	4(22.2)	67(5.1) **P<0.05**
O.barthii	4(22.2)	43(3.3).

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