

# The Crop and Gizzard Food Contents of Purple Glossy Starling (*Lamprotornis purpureus*) in Jere and Konduga Local Government Areas of Borno State, Nigeria

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## ABSTRACT

Due to the increase in the population of Purple Glossy Starling (*Lamprotornis purpureus*), which was observed recently in Jere and Konduga Local Government Areas of Borno State, Nigeria, a study was designed to find out if they could cause any significant damage to cultivated crops in the area. This was done by assessing the food contents of the crop and gizzard of 56 of the birds, through dissection. The result showed that the crops and gizzards contained 43.5% arthropods, 41.0% neem fruits and only 15.5% cultivated grains. This indicates that the Purple Glossy Starling may not be a threat to cultivated crops in the area of study.

**Key Words:** Starling; Crop; Gizzard; Contents; Nigeria

## INTRODUCTION

Starlings, which belong to the avian family Sturnidae, have about 110 species distributed from across all the continents of the world. Being an omnivore, Starlings feed on a wide range of food items, such as insects, worms, wheat, maize and barley grains, as well as fruits (Dolbeer, *et. al.*, 1978; Feare & Wadsworth, 1981; Feare, 1985). As a result of their food habit and man's activities of growing low vegetation on cultivated lands, grazing ranges and air fields, some species of Starling such as the European Starling (*Sturnus vulgaris*) has become pest of man's cereal crops, fruits and even animal feed under the intensive animal husbandry farming system (Feare & McGinnity, 1986). Laboratory studies have shown that the Starling, as other bird species, is capable of transmitting diseases to farm animals and man (Pilchard, 1965; Fika, 1997; Aabo *et. al.*, 2000). Hence, it is zoonotic. It has also been reported that Starlings are adaptable birds (Feare, 1985) and good monitors of environmental changes (Greenwood *et al.*, 1993). One of the species of Starling commonly found in this part of the world is Purple Glossy Starling (*Lamprotornis purpureus*). However, its feeding habit has not been widely studied despite the increase in their population in Jere and Konduga Local Government Areas (LGAs) over the years. This species has been observed to associate with *Quelea* birds which are known to depredate cereal crops (BOSADP, 1993) in Borno State and North-Eastern part of Nigeria, leading to economic loss to farmers in the sub-region (Ozolua, 1986; GTZ, 1987). One would, therefore, be right to assume that the Purple Glossy Starlings contribute to the crop damages generally attributed to *Quelea* birds. This study, therefore, aims at finding out the food contents of the crop and gizzard of Purple Glossy Starling, so as to determine if it is a potential pest of cultivated crops during the dry season, in Jere and Konduga LGA<sup>s</sup> of Borno State.

## MATERIALS AND METHODS

Fifty six adult Purple Glossy Starlings (34 males and 22 females) were obtained from the wild in Jere and Konduga LGA<sup>s</sup> of Borno State between December 2001 and April, 2002; using some local trapping methods and catapult. Those that were caught by trapping were killed using chloroform, but those caught by catapulting died almost instantly. They were then transported to a Laboratory in the Department of Biological Sciences, University of Maiduguri, where they were dissected and the crop and gizzard of each bird removed.

A pair of scissors was used to cut open the crops and gizzards and the contents put into a fine sieve, washed with cold water and air-dried on Petri dishes. The crop and gizzard contents for each bird were separately put in small polythene bags and labelled. Although the initial idea was to study the contents of the crop only, the gizzard was also studied after discovering that most of the crops were empty.

The samples (contents) were then magnified using a hand lens and each food content identified with the help of some keys from GTZ (1987). The heads of the insect food components were taken as one whole individual insect because their heads were visibly undigested.

## RESULTS AND DISCUSSION

The results of this study showed that the Purple Glossy Starling in Jere and Konduga LGA<sup>s</sup> of Borno State, feed on neem (*Azadirachta indica*) fruits and the grains of millet (*Pennisetum glaucum*), rice (*Oryza sativa*), maize (*Zea mays*), groundnuts (*Arachis hypogea*) and assorted arthropods, mainly from the class insecta; during the period of study which corresponds to the peak of the dry season in this sub-region.

**Table I. Total number and percentage of each food type found in the crops and gizzards of the Starlings examined**

Food Type	No (%)		Total (100%)
	Crop	Gizzard	
Arthropods	2(1.5)	136 (98.5)	138
Neem Seeds	0(0.0)	130 (100)	130
Millet	6(21.4)	22(78.6)	28
Rice	10(100.0)	0(0.0)	10
Maize	4 (50.0)	4(50.0)	8
Groundnuts	0(0.0)	3(100)	3

**Table II. Number (%) of each food type found in the crops and gizzards of the Starlings examined**

Organs examined	Food type {No (%)}		Arthropods
	Cultivated	Uncultivated	
Crops	20(90.9)	0(0.0)	29(9.1)
Gizzards	29(9.8)	130(44.1)	136 (46.1)

A total of 317 food items were obtained from the crops and gizzards of the 56 birds studied. Out of this number of food items, there were 138(43.5%) arthropods, 130(41.0%) neem seeds, 28(8.8%), millet, 10(3.2%) rice, 8(2.5%) maize and 3(0.9%) groundnuts (Table I). This shows that only about 22(7.0%) of the food items were in the crop and 295(93.0%) in the gizzard. This may seem to be strange, but it may have to do with the time of the day when the birds were captured. The important thing about it however, is that the result shows a representative sample of the variety of food eaten by this species of birds.

Since the aim is to find out if this species significantly contributes to the depredation of man's cultivated cereal crops, the crop and gizzard contents were grouped into three categories, namely: cultivated (millet, rice, maize and groundnut), uncultivated (neem seeds) and arthropod (mainly insects) foods (Table II). Table II shows that 138 (43.5%) of the food items consumed were arthropods, 130 (41.0%) uncultivated food and only 49 (15.5%) cultivated food. The Starling has been reported to be a bird of grasslands, whose main food is a wide variety of invertebrates (Thomas *et. al.*, 1975; Feare, 1985). This agrees with Table I where the highest proportion of food eaten was arthropods (43.5%). So, one may therefore say that this species of bird is not harmful, but rather useful since it feeds on invertebrates, many of which are crop pests. However, because they are adaptable animals, they have resorted to exploiting a wide range of food including fruits, which have been made more available by man's farming activities. European Starlings for example, have been reported to be pests of fruits, such as cherries (Feare, 1985).

Table II reveals that the amount of cultivated crops eaten is significantly lower than either uncultivated or arthropod foods ( $P < 0.05$ ). The uncultivated category in Table II is composed of neem seeds only, and since neem fruit is not eaten by man just like the arthropods, one could put the two categories together so as to see a clearer difference between the cultivated and uncultivated. This

signifies that the Purple Glossy Starling is not a threat to man's cultivated crops in the two LGA's, at least during the period of study. In terms of sex, there were more males [34(60.7%)], which are generally reported to eat more food (Yusuf, *et. al.*) than females [22(39.3%)] in this study.

The study area does not have edible fruit crops of the size of cherries, which could be swallowed by the birds; otherwise one may be worried looking at the quantity of neem fruits eaten (Table II). One should also be cautious in concluding that an insignificant quantity of cultivated cereal crops is consumed by the birds, because these crops were actually out of season during the time of study. Therefore, the birds might have resorted to eating the neem fruits as a last resort for their survival due to its abundance during the period of study. It would, therefore, be interesting to see what would happen when such a study was carried out during the farming season of the cereal crops, between the months of July and October. Also, it may be interesting to find out if the neem seeds found in the gizzards are digestible or not.

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