

## Prevalence of Ectoparasites in Local Breed of Chickens in Gombe Local Government Area, Gombe State, Nigeria

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### Abstract

The study was carried out in Gombe L.G.A between the months of March- June 2013. A total of 783 chickens comprising 410 (52.4%) males and 373(47.6%) females were examined for ectoparasites from three different markets, Gombe main market 521(66.5%), Pantami market 165(21.1%) and Kasuwan mata 97(12.4%). The ectoparasites were collected by displaying the feathers of the chickens against their anatomical direction of alignment. Ticks were removed with forceps, Lice and Fleas were collected by brushing the base of the feathers with a fine soft brush and mites were collected by scraping the skin surface with the edge of a slide. All collected samples were placed in to a Petri dishes containing 70% alcohol and each petri dish was numbered and labelled with the sex of the chicken. The result revealed that 552(70.5%) were infested with four different species of ectoparasite; Mite, Ticks, Lice and Fleas, where 175(31.7%), 155(28.1%) and 222(40.2%) had double, triple and quadruplet infestation respectively. Kasuwan mata recorded the highest prevalence of 74(85.1%). In relation to gender, females had highest prevalence of 281(75.3%) as compared to 271(66.1%) in males. Statistically there was significant difference between the sexes ( $X^2=7.54$ ,  $P<0.05$ ,  $df=1$ ). Further research should be carried out to assess the impact of the parasite on biological activities and parameters of the chickens.

Keywords: Ectoparasite, Local breed, Prevalence, Infestation and Gombe

### Background to the Study

Poultry is a category of domesticated birds kept by humans for the purpose of collecting their eggs, or killing for their meat and or feathers. These most typically are members of the super order Gallanserae (fowl), especially the order Galliformes (which includes chickens, quails and turkeys). They also include other birds, which are killed for their meat, such as pigeons or doves. Poultry is the second most widely eaten meat in the world, accounting for about 30% of meat production worldwide, after pork 38% (Raloff, 2003). In Nigeria, the population of poultry is estimated to be about 140 million with backyard poultry constituting about 60%, thus, the most important form of poultry production (Ikpi and Akiniwumi, 1981). Flock sizes range from 5-50. Main utilities include home consumption (meat and eggs), and other social obligations (Nnadi and George, 2010).

The poultry industry occupies an important position in the provision of animal protein (meat and egg) to man and generally plays a vital role in the national economy as a revenue provider. Poultry is one of the most intensively reared of the domesticated species and one of the most

developed and profitable animal production enterprises (Obiora, 1992). Its importance in national economy of developing countries and its role in improving the nutritional status and income of many small farmers and those with small land holdings as well as landless has been recognized by various scholars and rural development agencies in the last two decades (F.A.O 1987).

Poultry production is distinctively divided into commercialized and village enterprise subsector, each with its peculiarities. The former comprises of strains specifically developed based on primary products into parent stocks, layers, and broilers each with its specialized equipment and management approach. The latter however, consists of indigenous domestic fowls (*Gallus domesticus*) variously referred to as local or rural chickens, backyard poultry or village chickens, and or free-range chickens. These refer to breeds/strains/ecotypes with no improvement history (Njue *et al.*, 2001) and chickens indigenous to the particular locality where they are found. These constitute a rich genetic resource base for any future genetic improvement and production of strains adaptable to the tropics (Horst, 1988). Free-range production system is characterized by low input and low output, with minimal management interventions, feed supplementation, housing and disease control. The system is also characterized by high mortality caused by factors such as disease, predators, and poor management, which makes the chickens more vulnerable to Ectoparasites.

Several species of flies, lice, mites and soft ticks are important ectoparasites that infest poultry (Winter and Funk, 1996). They cause discomfort, irritation, loss of plumage, stunted growth, decrease egg production in layers and anaemia (Edgar *et al.*, 1958). Ectoparasites lives on the body surface of the host organism to the detriment of the host, thus, negatively affects the productivity potential of the Chickens since, they either compete for feed or cause distress to the birds. These Parasites are common in rural areas practicing free-range poultry systems since there is inappropriate housing and lack of appreciable pest control efforts (Mungube *et al.*, 2006). Ectoparasites may constitute a clinical problem; transmit a number of infectious diseases and can act as an intermediate hosts of wide range of helminthes parasites. In environments with high parasite pressure, hosts invest more in anti-parasite defence, which may limit their investment in other life history components, such as survival and production. Therefore, the study was aimed at investigating the prevalence of the ectoparasites in local breed of chicken in some selected some selected markets of Gombe Local Government Area, Gombe State.

#### Statement of the Problem

What is the distribution of ectoparasites in local breed of chickens in some selected markets of Gombe Local Government? Chickens are good source of protein (meat and egg). However, in most cases, the productivity of these chickens is truly affected by the presence of Ectoparasites, which may impose serious adverse effects on the chickens and in some cases lead to death.

#### Justification

Free-range or local breed of chickens move about freely with very limited restrictions. As such, they may be exposed to Ectoparasites and other pathogens. In Gombe Local Government, little or none is known about the prevalence of ectoparasites in the Local Government.

### Aim of the study

The aim of the study was to investigate the occurrence of Ectoparasites of local breed of chickens in Gombe Local Government.

### Objectives

The objectives of the study are to:

- i. Determine the Prevalence of ectoparasites among local breed of chickens in Gombe Local Government Area.
- ii. Compare the prevalence of Ectoparasites between males and females chickens in Gombe Local Government.

### Materials and Method

#### Study Area

The research work was carried out in Gombe Local Government Area Gombe State, where three markets were selected for the study; these are Gombe Main Market, Kasuwan Mata and Pantami Market. Gombe town lies between latitude 10°8'N and 11°24'N, longitude 11°02'E and 11°18'E. It experiences two seasons, the wet or rainy season that is between April to October and dry season, which is between Novembers to March. The annual Rainfall ranges between 850mm-100mm with average daily temperature of 34°C in April and 27°C in August. The relative humidity ranges between 70-80% in August and drops to between 15-20% in December. The vegetation of Gombe is typically that of Sudan Savannah and is composed of shrubs, herbs, grasses and sparsely distribution trees. These provide enough free-range land for local breed rearing.

#### Methodology

##### Samples Collection

A total of 783 chickens comprising of 410 male and 373 female were used for the study. The chickens were visited in the morning. Ectoparasites were collected from the chickens by displaying their feathers horizontally against their anatomical direction of alignment to expose them.

Ticks were removed with the aid of forceps, lice and fleas were collected from the hosts by parting their hairs or feathers gently brushing the base of the feathers with a fine soft brush in order to prevent the chickens from been injured.

Mites were collected by scraping the skin surface with the edge of slide. The entire sample collected were counted and placed in a sampling Petri dish containing 70% alcohol. Each sample collected was assigned a serial number on the sample Petri dish and label with the sex of the chickens for easy identification.

#### Identification of Ectoparasites

The identification of the Ectoparasites was established using identification guide by walker (1994) and the work of Harwood and James (1979) and Chandler and Read (1961).

### Results

A total of 783 chickens were examined from three selected markets, Gombe Main Market, Kasuwan Mata and Pantami Market in Gombe Local Government Area. Of the 783 chickens examined 231(29.5%) were not infested and 552 (70.5%) were found to be infested with lice, mite, ticks and fleas as shown in figure 1. 175 (22.3%) had double infestation and 155 (19.8%), 222 (28.4%) had triple and quadruplet infestation respectively as shown in figure 2 below. In relation to markets, the result revealed that Kasuwan Mata recorded the highest prevalence with 74 (85.1%), Pantami Market with 127(70.0%) and Gombe Main Market recorded the least prevalence with 346 (66.4%) as shown in Figure 3.

In relation to gender, the result showed that female chickens had the highest prevalence of 281 (75.3%) while male recorded 271(66.1%) as shown in figure 4. Statistically there was significant difference between the two sexes. ( $X^2 = 7.54, P < 0.05, df = 1$ ).

Figure 1: Prevalence of Ectoparasites among local breed of chickens in Gombe Local Government Area

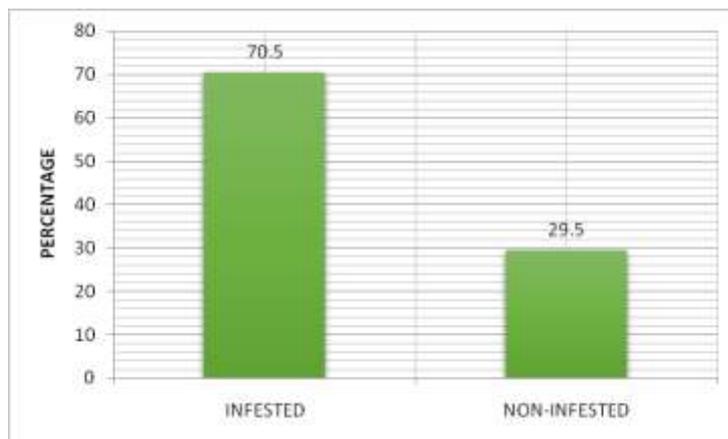


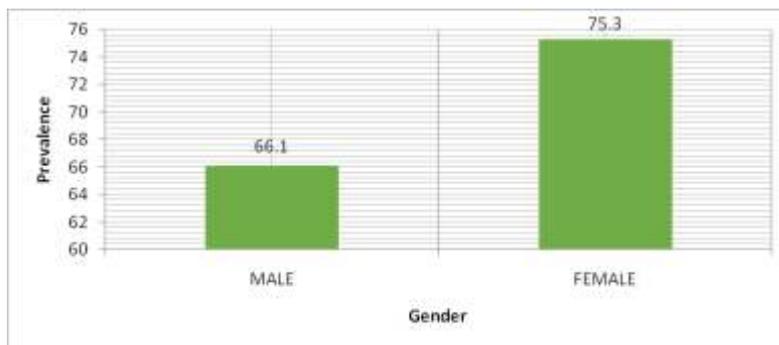
Figure 2: Prevalence of Ectoparasites according to the type of infestation in Gombe Local Government Area



Figure 3: Prevalence of Ectoparasites according to markets in Gombe Local Government Area



Figure 4: Prevalence of Ectoparasites in relation to sex of the chickens in Gombe Local Government Area



### Discussion

The present study revealed an overall prevalence of 70.5%. This result is similar to 73.8% recorded by Adang *et al.*, (2008) among domestic Pigeon in Zaria, Nigeria, but it's lower than 35.1% obtained by Yeshitila *et al.*, (2011) in Haramaya University Intensive Poultry Farm. This difference could be due to the difference in mode of growing, as the present study used free-range local breed of chickens. Four different parasites (mite, lice, tick and fleas) were recorded. This is similar to the findings of Adang *et al.*, (2008) who reported mite, tick, fleas and lice as the major Ectoparasites of Laughing Dove in Zaria. Of the 552 (70.5%) infested chickens, none was singly infested, this may be attributed to the fact that the chickens were brought from different places and caged in the same cage which could permit cross transmission of the Ectoparasites among the chickens. The infested chickens had either double, triple or quadruple infestation. The result shows that all chickens in the three markets were heavily infested, this could be attributed to the fact that all chickens used in the research were local breed, which were grown under free-range system. Females recorded the highest prevalence of 75.3%, this might be associated with the fact that most of the female chicken usually copulate with more than one infested male chicken, which could permit cross transmission of the parasite.

## Conclusion

Almost 71% of the chickens were infested with four species of ectoparasites and none was singly infested. Females had the highest prevalence as compared to males.

## Recommendations

Further research should be conducted in order to assess the impact of the parasites on the biological activities and parameters of the chickens. Chicken rearers should employ appropriate measures of growing chickens by providing good houses and feeds for the chickens and keep their environment always tidy to suppress the population of the parasites.

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