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## **Ectoparasitic Infestation on Poultry Birds Raised in Gwagwalada Area Council, FCT-Abuja**

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### **Abstract:**

*A study on the prevalence of ectoparasites on poultry birds raised in Gwagwalada Area Council was conducted between May to July 2015. A total of 300 birds were examined based on their age, sex, and breed and management system. Ectoparasites were collected from different parts of the body of birds and identified under a dissection microscope. An overall prevalence of 81.33% was recorded and seven species of ectoparasites under three orders were identified. The prevalence of lice infestation was higher 216 (88.52%), followed by fleas 19 (7.79%) and then by mites which had the lowest rate of 9 (3.69%) infestation. Prevalence of the ectoparasites infestation was higher in females 88.34% than males 61.03%, Adults 93.63% than young 47.5%, local 91.99% than exotic 65.85 breed and extensive 93.82% than intensive 28.07% management. Therefore, the need for a better management system for bird in both the local and exotic breeds of chicken is recommended as it will help reduce ectoparasitic load as well as increase the productivity of the poultry birds in the area.*

**Keywords:** Gwagwalada, prevalence, poultry bird, ectoparasite, infestations

### **1. Introduction**

Poultry bird is one of the most reared animal in many part of the world because of their productivity and most of these birds in developing countries are kept under free range system (Aini, 1990; Pandey *et al.*, 1992), exposing them to so many parasitic infections. Permin and Bisgaard, (1999) observed that, mismanagement, predation, thefts, lack of supplementary feeding and parasite infestations are factors that affect the free range system in Africa, as they cause 80-90% mortality in local free range chickens.

Ectoparasites are parasite found at external part of the chickens and other animals. This parasite has been noted to be responsible for restlessness, skin damage, restricted growth, loss of weights in chickens, as a result of their bites (Fabiya, 2008). Most of these parasites are Lice, fleas, ticks and mites as reported by many researchers such as Bala *et al.* (2011). These parasites show morphological and physiological adaptations to enhance their living and existence on their host. They have on their piercing and sucking mouth parts, characteristics stylets enclosed in a sac beneath the head, as found in lice, their mouth parts are also armed with barbs which may not allow their forceful withdrawal from their host flesh as found in ticks. Lice also possess longer jaw constructed for biting and fleas are laterally compressed, possessing comb that helps to retain them amongst the fur of their host (Ikeme, 2002). Most ectoparasites also possess claws at tips of their leg that enable them to hold grip on their hosts hairs and feathers. The shape and size of ectoparasites are also modified. They are mostly small, some so small that they require microscopic observation like mites. Others can however, be seen with naked eyes since they are large enough like ticks and lice Agbede (2010). The growing demand for poultry and their by-products has led to so many poultry farms and low management practices. This present study is aim to determine the prevalence of ectoparasites on poultry bird raised in Gwagwalada Area Council, FCT, Abuja.

### **2. Materials and Methods**

#### *2.1. Study Area*

The study was carried out in Gwagwalada Area Council of Federal Capital Territory Abuja, Nigeria. Gwagwalada is one of the six Local Government Area Councils of the Federal Capital Territory of Nigeria, together with Abaji, Kuje, Bwari, Kwali and the Abuja Municipal Area Council (AMAC). Gwagwalada is also the name of the main town in the Local Government Area, which has an area of 1,043 km<sup>2</sup> and a population of 157,770 according to 2006 census. The town is situated along Abuja – Lokoja road, about 55km

Southwest of the Abuja City Centre, between Latitudes 8° 55' N to 9° 77' N and Longitude 7° 04' E to 12° 07' E. The annual temperature is between 19°C – 38°C and a mean total annual rainfall of approximately 1,650mm with raining season starting fully from May to October while dry season starts from November to April (Ishaya and Grace, 2007). The settlements found within the study area are Gwagwalada town, Kutunku, Dobi, Tunga Gayan, Gwako, Dukwa, Dagiri, Paso, Ibwo, Wumi, Zuba, Tunga Maje, Giyabiri, Kwaita, Gurfata, Ashara, Ledi, Giri, Kaida, Kuturu and few others. For the purpose this study Giyabiri, Ledi, Gurfata, Dobi, Tunga Gayan and Tunga Maje were the selected randomly.

## 2.2. Sample Collection

Prior to sample collection consent and purpose of study was sought from farmers on the importance of the study and the effects of the parasite on their chicken as well as their welfare (rearers) in order to encourage their participation. The collection of samples was done on weekly basis. A thorough examination of the chickens was carried out and parasites were picked from the body of the host by parting the feathers and by blowing of same. Lice and fleas were collected using a soaked cotton wood in concentrated ethyl alcohol which help to anaesthetize the parasites – so as to make them immobile and also to facilitate the forceful withdrawal of their mouth parts from their host. Mites were collected through scrapping the skin around the feet using slide edge gently in order not to injure the bird. All the parasites collected were dropped in labeled based on sex, age, breed and management of their hosts and then transferred to Faculty of Veterinary Medicine, Department of Parasitology and Entomology Laboratory for processing. The specimens were warmed in 27% potassium hydroxide solution in a test tube for 2 minutes followed by rinsing with ionized water so as to clear the excess water in the tissues thereafter the specimens were dehydrated by passing them through graded series of ethanol 59%, 69%, 79%, 89%, 100% (Malann *et al.*, 2008). The processed specimens were identified directly with a dissecting microscope according to guidelines of William, (2001).

## 3. Statistical Analysis

The results obtained were analyzed using Chi-square at 0.05% while simple percentages were used to determine the prevalence rate of the ectoparasite.

## 4. Results

The results show that out of the 300 birds examined from different selected areas in Gwagwalada for ectoparasitic infestation. 244 (81.33%) were infected with different ectoparasite. 216 (88.52%) were infested with various species of lice (*Menacanthus stramineus*, *Goniocotes gigas*, *Lipeurus caponis*, and *Goniodes meleagridis*), 19 (7.79%) were infested with mites (*Knemidocopte smutans*) and 9 (3.69%) were infested with fleas (*Echidnophaga gallinacea*) (table 1).

The prevalence of ectoparasites in association to different hypothesized risk factors is shown on table 2. The infestation was higher in females (88.34%) than male (61.03%), Adult (93.63) than young (47.5), local (91.99%) than exotic breed (65.83%) chickens and extensive (93.82%) than intensive (23.07%) management system.

Table 3 revealed the different species of ectoparasites that were encountered in different predilection sites of the body of *Gallus domesticus* and their relative abundance. The key under the table give the level of abundance of the parasite found during the study and table 4 shows the detail of the number of parasite and the area found. 244 ectoparasites were recovered with Gwagwalada market having the highest (59) number of parasites while Dagiri farm had the least (36). *Menacanthus stramineus* was the most abundant (112) parasite while the least abundant species was *Goniocotes gigas* (9) parasite.

Type of Parasite	No. Infected	Prevalence Rate (%)
Lice	216	88.52
Mite	19	7.79
Fleas	9	3.69
<b>TOTAL</b>	<b>244</b>	<b>100</b>

Table 1: prevalence of ectoparasite base on the order of the parasite

Factors	Categories	No Examined	No Infected	Prevalence Rate
SEX	FEMALE	223	197	88.34%
	MALE	77	47	61.03%
AGE(WEEKS)	5-7	80	38	47.5%
	8-14	220	206	93.63%
BREED	LOCAL	180	165	91.99%
	EXOTIC	120	79	65.83%
MANAGEMENT	INTENSIVE	57	16	28.07%
	EXTENSIVE	243	228	93.82%
<b>TOTAL</b>		<b>300</b>	<b>244</b>	<b>81.33%</b>

Table 2: prevalence of chicken ectoparasites and its association with hypothesized risk factors

ECTOPARASITES	PARTS OF BODY							
	HEAD	NECK	TRUNK	WINGS/UNDER FEATHER	THIGH	BODY	FEET	PERINEUM
<i>Menacanthus stramineus</i>	–	00	+++	+++	00	++++	–	++
<i>Lipeurus caponis</i>	–	–	–	00	–	0	–	–
<i>Gonoides gigas</i>	–	–	–	00	–	0	–	–
<i>Liparus caponis</i>	–	–	–	00	–	0	–	–
<i>Knemidocopte smutans</i>	–	–	–	–	–	–	++++	–
<i>Echidnophaga gallinacean</i>	–	–	–	0	–	–	–	–
<i>Gonoides meleagridis</i>	–	–	–	00	–	0	–	–

Table 3: localization and distribution of different ectoparasites on various parts of the body of gallus domesticus

Key: - Nil, 0 5-10%, 00 11-25%, ++ 26-35%, +++ 36-50% and ++++ 51-65%

LOCALITIES	<i>Menacanthus stramineus</i>	<i>Liparus caponis</i>	<i>Knemidocopte smutans</i>	<i>Echidnophaga gallinacean</i>	<i>Gonoides meleagridis</i>	<i>Goniocotes gigas</i>	<i>Lipeurus caponis</i>
KUJE FARM	28	4	2	2	2	10	4
PASSO FARM	21	7	3	–	–	12	6
DAGIRI FARM	20	6	5	–	5	–	–
AGWANDODO	18	3	10	11	–	6	–
GW AGWALADA MARKET	25	9	4	2	2	10	7
TOTAL	112	29	24	15	9	38	17

Table 4: Showing the number of chicken infested with ectoparasites from different location in Gwagwalada area council

## 5. Discussion

The effect of parasitic infections is a very important constraint in the poultry production which leads to several problems such as skin damage, restriction in growth, weights loss, anemia, loss of feathers or hairs and even dead in some cases. The present study reveals prevalence of 81.33% in the study area which is comparable with the result of Shanta *et al.* (2006) who reported 86.67% in Bangladesh but lower than the 100% prevalence rate reported by Bala *et al.* (2011) in Sokoto, Nigeria. The high prevalence observed may be as a result of poor management system where the chickens are being jam-packed in the same cage which may enable ectoparasite to move freely from one chicken to the other and in some cases the free ranging system exposes birds to various parasites including the ectoparasites.

The infestation of ectoparasites when associated with different hypothesized risk factors reveals higher infestation in female birds (88.34%) than male (61.03%), Adult (93.63%) than young (47.5%), local (91.99%) than exotic breed (65.83%) and extensive management (93.82%) than intensive (28.07%). This result shows consistency with the report of Mekuria and Gezahegn (2010) and Bala *et al.* (2011). Also Firaol *et al.* (2014) in Ethiopia reported high prevalence of ectoparasites in local than exotic and extensive management than semi-intensive.

However, the result of this study reveals a wide range of ectoparasitic infestation in the study area including mites (*Knemidocopte smutans*), fleas and lice. Lice have an outstanding prevalence of 88.53% in this study. The result is in agreement with earlier report in south east in Nigeria and Thailand (Ifeoma *et al.*, 2008; Tansak *et al.*, 2009). Mites (*Knemidocopte smutans*) had 7.79% and fleas with 3.69% which is different from others studies in different part of the country. This could probably be attributed to the fact that the species (lice) is highly adapted and abundant in hot and humid areas of Nigeria Fabiyi (1988). In contrast to earlier reports tick were not encountered this present study but many researchers have reported tick in different areas.

In conclusion, lice, fleas and mites were the most common encountered ectoparasites of both local and exotic poultry in the study area. Among the species of lice identified, *Menacanthus stramineus* was the most prevalent while *Knemidocopte smutans* and *Echidnophaga gallinacea* were the only specie of mites and fleas found respectively. Therefore, there is need for a better management system to be adopted by farmers in keeping both local and exotic breed of chicken intensively increase their productivity and generate more income and employment. This may help reduce the ectoparasitic load on chicken as well as increasing the productivity of the poultry birds in the area.

## 6. Acknowledgement

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