

ECTOPARASITES OF GUINEA FOWL (*NUMIDA MELEAGRIS GALEATA* Pallas) AND LOCAL DOMESTIC CHICKEN (*GALLUS GALLUS*) IN SOUTHERN GUINEA SAVANNA, NIGERIA

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ABSTRACT

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The ectoparasites of poultry in a southern guinea savanna zone were investigated by the examination of guinea fowl and local domestic chickens in the range and guinea fowl under intensive management. The prevalent ectoparasites of range guinea fowl and local chickens include seven species of lice *Menacanthus stramineus*, *Menopon gallinae*, *Goniodes gigas*, *Goniocotes gallinae*, *Lipeurus caponis*, *Numidilipeurus tropicalis*, *Damalinia bovis*; three mites *Bdellonyssus bursa*, *Megninia cubitalis*, *Dermanyssus gallinae*; two fleas *Echidnophaga gallinacea*, *Ctenocephalides felis* and two ticks *Argas persicus* and *Amblyomma variegatum*. Under intensive management, infestation by *G. gigas*, *L. caponis* and *M. gallinae* led to clinical signs, feather damage, reduced food intake and death.

INTRODUCTION

Helmeted guinea fowl, *Numida meleagris galeata* (Pallas), are widely distributed in the savanna region of Nigeria (Ayeni, 1980). There are two major types, the domestic variety kept under free range conditions and free wild guinea fowl. Both types are in contact in the range because of visits and abduction by wild guinea fowls.

In Nigeria, Fabiyi (1980) investigated the prevalence of arthropod parasites of semi-wild guinea fowl and domestic chickens in the plateau region, in the northern guinea savanna zone, and recorded eight species of mites, three ticks, nine lice and one flea. Adene and Dipeolu (1977) found three species of lice and a mite in domestic chickens at Ibadan, in the rain forest zone.

The ectoparasites of guinea fowl have so far received little attention as economic pests of veterinary importance. This study was undertaken to assess the prevalence of ectoparasites on wild and semi-wild guinea fowl and on local domestic chickens under free range conditions. The problems presented by ectoparasites of guinea fowl under intensive management were also investigated.

MATERIALS AND METHODS

From August 1978 to January 1984 all semi-wild guinea fowl which had been kept under free range conditions and wild guinea fowl *Numida meleagris galeata* (Pallas), obtained for a domestication project by the Guinea Fowl Production Unit of Kainji Lake Research Institute, were examined for ectoparasites. The birds were bought from local markets at Yelwa, Kontagora and villages near New Bussa, in the southern guinea savanna vegetation zone of Nigeria. The examinations were made by two trained

Table I. Ectoparasites found in guinea fowls and local chickens under free range conditions.

Number of parasites	Types of birds and number infested percentage in parenthesis		
	Local domestic chicken 253	Semi-wild Guinea fowl 234	Wild guinea fowl 87
IXODIDES (Ticks):			
<i>Argas persicus</i>	9 (3.6)	7 (3.0)	0
<i>Amblyomma variegatum</i>	0	0	3 (3.4)
MALLOPHAGA (Lice):			
Amblycera:			
<i>Menacanthus stramineus</i>	136 (53.8)	30 (12.8)	0
<i>Menopon gallinae</i>	56 (25.7)	13 (6.5)	0
Ischnocera:			
<i>Goniodes gigas</i>	0	25 (10.7)	0
<i>Lipeurus caponis</i>	19 (7.5)	39 (16.7)	0
<i>Goniocotes gallinae</i>	94 (37.2)	49 (20.9)	0
<i>Numidilipeurus tropicalis</i>	0	18 (7.7)	55 (63.3)
<i>Damalinia bovis</i>	0	0	1 (1.1)
MESOSTIGMATA (Mites):			
<i>Bdellonyssus bursa</i>	15 (5.9)	0	0
<i>Magninia cubitalis</i>	9 (3.6)	5 (2.1)	0
<i>Dermanyssus gallinae</i>	17 (6.7)	0	0
SIPHONAPTERA (Flea):			
<i>Echidnophaga gallinacea</i>	0		5 (5.7)
<i>Ctenocephalides felis</i>	0	2 (.9)	0

assistants who carefully examined the head, the entire body and the wings of each guinea fowl. Each area was brushed off with a hard brush into a transparent polythene bag. The legs and featherless areas of body with any seborrhea or crustations were scraped for microscopic examination. Parasites were transferred to 10% formalin or 50% alcohol for later identification. Eighty-seven wild and 234 semi-wild guinea fowl were examined; 253 local chickens from local markets were similarly examined.

In another experiment 37 wild guinea fowl, 40 semi-wild and 53 of an improved variety (Polastral) imported from France, all of which were intensively managed, were examined during an outbreak of ectoparasitic infestation in the flock. They were then treated with 1% DDT powder by dusting the back of the body and the undersides of the wings. At the same time the poultry house equipment and crevices were also dusted with the DDT powder. The DDT treatment was repeated following appearance of nymphal stages. As a control and to observe any clinical changes 12 birds comprising 2 wild, 6 semi-wild and 4 improved were left untreated for one year. The frequency of the ectoparasites infesting each bird was recorded once monthly during the period of observation. Three deaths which occurred during this study were also investigated.

RESULTS

The ectoparasites observed are listed in Table I. The most prevalent are *Menacanthus stramineus*, *Menopon gallinae*, and *Goniocotes gallinae* in local chickens, *G. gallinae* and *Lipeurus caponis* in semi-wild guinea fowl and *Numidilipeurus tropicalis* in

wild guinea fowl. The semi-wild guinea fowls had several more species than the wild guinea fowls.

The intensively managed guinea fowls had only three ectoparasites, *M. gallinae*, *Goniodes gigas* and *L. caponis*. There were no significant differences ($p > 0.05$) between the number and species infesting semi-wild, wild and Polastral guinea fowls under intensive management conditions (Table II). Mean ectoparasite counts per bird based on 33 randomly selected birds were: *G. gigas* 8, 26, 6 for Polastral, semi-wild and wild guinea fowls respectively. Counts per bird for *L. caponis*, were 6, 11, 10 and for *M. gallinae* 12, 23, and 23. The level of infestation of *G. gigas* in semi-wild guinea fowl was significantly higher ($X_1 = 0.42$; $X_2 = 1.42$, $p < 0.05$) than in the wild and Polastral guinea fowls. Lousiness was effectively controlled by dusting DDT on the guinea fowl, poultry house equipment and into crevices. A repeat treatment 3 weeks after larvae and nymphal stages were found on the guinea fowl resulted in complete elimination of the lice. Lice infestations persisted throughout the year in an untreated flock kept in a separate poultry house. The infestation ranged from 58.3–100% (Table III) and was unrelated to seasonality.

Clinical signs observed in infested birds under intensive management include ruffled feathers, self pecking and weight loss.

Three deaths were recorded in the untreated flock. These guinea fowl had mean ectoparasite counts per bird of *M. gallinae*, 123; *G. gigas*, 137 and *L. caponis*, 37.

Table II. Ectoparasites of guinea fowl under intensive management during an outbreak

Type of guinea fowl	No. examined	No. infected	% infestation	Mean count/bird and range of infesting ectoparasite		
				<i>G. gigas</i>	<i>L. caponis</i>	<i>M. gallinae</i>
Polastral	53	38	71.7	7.7 (1–58)	6.1 (1–102)	11.5 (3–73)
Semi-wild	40	37	92.5	26.3 (2–157)	10.8 (2–37)	23.1 (2–115)
Wild	37	36	97.3	6.2 (3–45)	9.8 (3–102)	23.1 (3–121)

Table III. Occurrence of *Goniodes gigas* (A), *Lipeurus caponis* B and *Menopon gallinae* (C) in 12 untreated guinea fowl under intensive conditions from January to December 1981.

Type of Parasites and combinations	Month of the year and % infestation											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
A = <i>G. gigas</i>	25	8.3	8.3	16.6	16.6				8.3	25	25	25
B = <i>L. caponis</i>			16.6			8.3	16.6			8.3	8.3	8.3
C = <i>M. gallinae</i>			16.6	8.3	33.3	8.3		8.3	8.3	16.6		8.3
AB		16.6	8.3	8.3	8.3	16.6	2.5	8.3	8.3		2.5	8.3
AC		8.3				2.5	2.5	8.3			8.3	
BC		8.3	8.3		16.6	16.6		8.3				
ABC	25	8.3	25	50	8.3	25	33.3	66.7	41.7	25	16.6	41.7
No parasite found	41.7	41.7	16.6	16.6	16.6	0	0	0	33.3	25	16.6	8.3
Total % infestation	58.3	58.3	83.4	83.4	83.4	100	100	100	66.7	75	83.4	91.7

Clinical and post-mortem examinations revealed the early signs of recumbency at onset of high infestation, poor feather condition, feather breaking and loss, and increased self pecking. This led to starvation, emaciation, lethargy, anaemia and death.

DISCUSSION

In this study only one mite, *M. cubitalis* was found on semi-wild guinea fowl as compared to the eight species earlier reported for the plateau region of Nigeria by Fabiyi (1980), indicating that mites may be a lesser problem in guinea fowl in the southern guinea savanna. The prevalence of several species of ectoparasites on semi-wild guinea fowl seem due to contact between semi-wild guinea fowl and local chickens. *M. cubitalis*, *L. caponis*, *M. stramineus*, *M. gallinae*, *G. gallinae* and *Argas persicus* were recovered from both local chickens and semi-wild guinea fowl. Cross infestation is therefore a constant risk.

The guinea fowl under range conditions were not apparently affected by ectoparasite infestation, although they harboured many more species than those kept intensively. This may be associated with the behavioural activities of range guinea fowl which are absent when they are kept intensively. These include communal pecking of each other to remove foreign bodies including ectoparasites, ritual sexual dancing behaviour, play and sand bathing. Each of these activities might dislodge the parasite, so reducing the build up that results in the clinical signs observed in guinea fowl kept under intensive management. The recovery of ectoparasites associated with mammalian hosts such as *Damalinea bovis*, *Amblyomma variegatum*, and *Ctenocephalides felis* is an indication of the complex contamination to which free ranging birds are exposed.

The use of DDT is effective in controlling ectoparasites of guinea fowls under intensive management. If ectoparasites persist there can be a loss of vitality and reduced productivity leading to starvation and death.

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