



International Journal of Fauna and Biological Studies

Available online at www.faunajournal.com

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International
Journal of
Fauna And
Biological
Studies

ISSN 2347-2677

IJFBS 2013; 1 (2): 1-3

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Received: 15-10-2013

Accepted: 06-11-2013

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Ectoparasitosis and Endoparasites in Local Goats (*Capra hircus*) In Onitsha, Anambra State, Nigeria

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ABSTRACT

Local goats (*Capra hircus*) in two farms in Onitsha were assessed for ectoparasitosis and endoparasites. 100 goats were sampled randomly with the permission of their owners for the study. Goat rearing is one of the major occupations of the rural settlers. Though the goats are semi-scavenging in habit, they co-habit with their owners. In parasite examination, ectoparasites were investigated on the furs, beneath the skin with the help of brush, scalpel and handlens. The parasites recovered were; *Damalinia limbata* (14.0%), *Ixodes ricinus* (11.5%), *Demodex bovis* (25.8%), *Culiseta longiareolata* (39.3%), and *Ctenocephalides canis* (9.4%). For endoparasites, 5 gm of fresh faecal matter of each sampled goat was examined following direct wet mount technique. The parasites observed were as follows; *Haemonchus contortus* (10.1%), *Teladorsagia circumcincta* (11.7%), *Trichuris spp* (19.7%), *Moniezia spp* (24.3%) and *Nematodirus* (34.2%). In age related infection, older goats (>7months) were highly infested with 20–30% ectoparasites and 38.8–46.1% endoparasites. Predilection sites for ectoparasite infestations were mostly the abdominal sections, chest, limbs and back with 74 ectoparasite infestation on average. The findings in this work suggest that the study area has high parasite infestation for livestock. This demands for public awareness to the goat farmers on the dangers of parasitaemia and to guard human health which is also at risk.

Keywords: Ectoparasitosis, Endoparasites, Local goat, Onitsha, Parasites, Predilection sites.

1. Introduction

Goats are the oldest domesticated animals by man^[1]. The Nigerian dwarf goats are miniature dairy goat breeds of West African ancestry. They are popular as hobby goats due to their easy maintenance and small stature. In rearing them, they do not require as much space as the larger dairy goat counterparts. Their gentle and friendly natures make them good companion pets^[2]. Goats are important to man in different areas of living. They provide milk which is more easily digestible than cow's milk^[3]. Their milk is also used in industries in the production of cheese. The rearing of goat provides employment and income to rural farmers^[5].

Goat production/rearing is challenged by many parasites such as flies which are primarily a source of nuisance especially under confinement conditions that can result to reduced foraging leading to production losses^[6]. Other parasites include mites, ticks and lice which inflict levels of harm due to their intense irritation coupled with the animal scratching and chewing, creating skin lesions for secondary infection. Apart from ectoparasites, there are lots of worms (endoparasites) which are voracious blood feeders^[7]. They inflict such pathological conditions as anaemia, bottle jaw^[8], hypoproteinaemia, rough hair coat, anorexia^[9], to mention but a few. This study tends to investigate the ectoparasites and endoparasites of local goats in Onitsha as they affect the production and health of goats.

2. Materials and Methods

2.1 Study area

This study was carried out in Onitsha, Anambra State, Nigeria from June–August 2012. Onitsha is a commercial, educational, religious centre and river port on the Eastern bank of River Niger in Anambra, South Eastern Nigeria^[10]. Onitsha has an estimated population of 5,11,000 as at 2001 and a metropolitan population of 2003,000. It is currently one of the

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fastest growing cities in the world. The city is located on the latitude of 6.10°N and longitude of 6.47°E. It lies at a major East-West crossing point of the Niger regularly navigable by large vessels.

2.2 Collection of samples

The availability of goat and their easy access were taken into considerations in selection of farms. Onitsha people rear goats in semi-scavenging system with the aim of having kids and meat as source of income. One hundred (100) semi-scavenging goats from two farms were selected. The age of the goats were between 0–5 years, made up of 50 males and 50 females.

2.3 Examination of goats for parasites

In ectoparasite examination, the skin was observed thoroughly at different body parts with the help of hand lens for active parasites, and for lesions, ulcerations and cysts. The furs were later combed out with small plastic comb onto a white background. The parasites observed were sorted out into vials with unique identification numbers and basic information (age, sex and locations) for further studies. In endoparasite examination, 5 gm of each fresh faecal samples of each goat was collected, smashed with glass rod. Using direct wet mount, a drop of normal saline was placed at the centre of a clean slide, with a pipette dispenser. With an applicator stick, a small quantity of the smashed faecal matter was mixed with a drop of normal saline to form smear. This was covered with cover slip and viewed under the microscope with x40 objective lens. The parasites observed were isolated into vials for further identification.

3. Results

The results obtained in the study are summarized below;

Table 1: The level of Ectoparasitosis and Endoparasites among local goats examined in Onitsha (n= 100)

Parasite Infestation	No of parasites	% Infection	Mean infestation
Ectoparasitosis	601	53.5	6.01
Endoparasites	523	46.5	5.23
Total	1124	100	11.24

From the result, the parasite infestation was much, 53.5% for ectoparasites and 46.5% for endoparasites, and a mean range of 5.23–6.01 for each selected goat.

Table 5: Ectoparasite infestation and predilection on the examined goats

Parasites	Head	Eye lashes	Mouth/ Nose	Ears	Neck	Back	Abdomen	Limbs	Chest	Udder	Testis	Vulva	Total
Mites	16	6	5	15	15	21	30	16	20	-	-	11	155
Ticks	50	3	2	5	6	10	11	7	12	3	-	5	69
Fleas	6	3	4	3	5	8	7	5	7	3	-	6	57
Lice	5	6	8	2	6	6	10	15	12	4	5	5	84
Flies	26	18	15	14	17	21	24	29	25	35	-	12	236
Total	58	36	34	39	49	66	82	72	76	45	5	39	601

The level of ectoparasitosis by predilection sites showed lice occurred in all the major body parts, but flies and mites were more prevalent with (236) and (155) occurrence respectively. Abdomen was more susceptible to ectoparasite attachment, followed by chest, limbs, back. The testis had only lice infestation. In the endoparasite infection, *Nematodirus* spp had

Table 2: Age related ectoparasitosis in the examined goats

Age of goat	No. examined	No. of parasites	% Infestation
0–6 months	21	161	26.7
7–11 months	18	140	23.3
1–5 years	47	180	30.0
>5 years	14	120	120.0
Total	100	601	100.0

The ectoparasite infestation cut across the ages of the goats examined, with the highest infestation among 1–5 years (30.0%), followed by 0–6 months (26.7%) and the least among >5 years (20.0%).

Table 3: Age related endoparasite infection in the selected goats

Age of goat	No. examined	No. of parasites recovered	% Infection
0–6 months	21	29	5.5
7–11 months	18	293	38.8
1–5 years	47	241	46.1
>5 years	14	50	9.6
Total	100	523	100

The endoparasite infection though found in all the age groups but was more between 7–11 months and 1–5 years with 38.8% and 46.1% respectively. The least was 5.5% among 0–6 months.

Table 4: Ectoparasite species infestation on the sampled goats

Species of Ectoparasite	No. of goats infested	No. of parasites	Mean infestation	% Infestation
<i>Damalinia limbata</i>	14	84	6.0	14
<i>Ixodes ricinus</i>	18	69	3.8	11.5
<i>Demodex bovis</i>	15	155	10.3	25.8
<i>Culiseta longiareolata</i>	20	236	11.8	39.3
<i>Ctenocephalides canis</i>	33	57	1.7	9.4
Total	100	601		100.0

In the species infestation, flies (*Culiseta* spp) had the highest occurrence (39.3%), followed by mites (*Demodex bovis*) (25.8%), while lice (*Damalinia limbata*) and ticks (*Ixodes ricinus*) had 14.0% and 11.5% respectively. The least was fleas (*Ctenocephalides canis*) (9.4%).

highest infection rate of 34.2%, *Moniezia* spp (24.5%) and *Haemonchus contortus* (10.1%), was the least.

4. Discussion

The overall prevalence of endoparasites and ectoparasites in the present studies of local goats were 46.5% and 53.5% respectively.

Most of the goats were infested by more than one species of both ectoparasites and endoparasites. This is quite high and shows that the agro-ecological and geo-climatic conditions of the study area favour the growth and multiplication of these parasites. It could also be attributed to illiteracy on the side of the goat keepers and their avoidance tendency of preventive measures^[11].

Table 6: Species of endoparasite infection among the sampled goats

Endoparasite species	No. infected	No. of parasites	Mean infection	%Infection
<i>Haemonchus contortus</i>	15	53	3.5	10.1
<i>Teladorsagia circumcincta</i>	13	61	4.7	11.7
<i>Trichuris</i> spp	26	103	4.0	19.7
<i>Moniezia</i> spp	28	127	4.5	24.5
<i>Nematodirus</i> spp	18	179	9.9	34.2
Total	100	523	-	-

In the age related parasitaemia, the older goats (>7 months) were more infected than the younger ones. This might be due to their grazing habit in lowlands where grasses have accumulation of parasites^[12]. The infestation of the younger goats (0–6 months) by ectoparasites could be as a result of the unhygienic conditions of their pens where these parasites could hide within crevices and loads of wastes on the floor where they can thrive. The endoparasite infections were most of *Nematodirus* (34.2%), which are ubiquitous and can survive in the soil from where the infective stages encyst on pastures. Apart from these are, *Moniezia* spp (24.3%), *Trichuris* spp (19.7%) and *Haemonchus contortus* (10.1%), though fewer, but were found to be susceptible in goats^[8]. The predilection sites which were more of the abdominal region, chest, limbs and back, were probably because they have less fur covering and as such the skin was bare exposing the blood vessels for easy attachment by voracious blood feeders.

In conclusion, the endoparasite and ectoparasite load in local goats was quite high as found in the study. This however reveals poor performance in terms of production of the local goats and their revenue generation to the farmers. Human health is also at risk because the parasites found in goats are capable of infecting man. There should be therefore, public awareness by veterinarians on the dangers of parasitic infection of goats, in relation to human health since they live very close to man.

5. Acknowledgements

We are grateful to the farmers at Onitsha whose farms were used as source of goat samples for this work. We equally thank some of our colleagues who contributed in one way or the other for the success of this work.

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