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Ectoparasites of domestic animals in Northern Nigeria

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Key words
Seasonal distribution, ectoparasites, domestic animals, Northern Nigeria

1 SUMMARY

This study was carried out with the aim of updating the fauna of ectoparasites infesting domestic animals in Northern Nigeria. The study covered a period of 15 years (1990 to 2005) and utilised the record of samples brought to the Veterinary Entomology Laboratory of Ahmadu Bello University, Zaria, by clients from different parts of Northern Nigeria. Total parasite samples submitted were 931, negative samples were 407 (43.72%), positive samples were 524 (56.28%) with the following pests: lice, 104 (11.28%); ticks, 146 (15.68%); mites, 221 (23.74%), flea 36 (3.90%) and myiatic larvae, 17 (1.82%). Seasonal distribution revealed the peak periods for the majority of the parasites to be at the onset and the end of the rainy season. The most abundant from each of the groups the ectoparasites included *Amblyomma variegatum* (tick), *Manecanthus stramineus* (lice), *Demodex canis* (mite), *Ctenocephalides felis* (flea) and *Oestrus ovis* (myiatic larvae). The high fauna of ectoparasites all year round suggests the need for strategic control measures in order to ensure good health of domestic animals in this region.

2 INTRODUCTION

Ectoparasitism is a serious threat to both animals and humans all over the world. The painful bites of parasites could be a great nuisance, leading to loss of large amount of blood (Walker, 1996; Natala, 1997). Ticks alone transmit several important protozoal, rickettsial, bacterial and viral diseases to animals, thereby causing great economic losses (Agbede, 1981; du plessis *et al.*, 1994). Lice and mites usually cause dermatitis, which is characterized by alopecia and necrotic foci. There is also intense pruritus (especially with mange) which leads to biting and vigorous scratching of affected parts (Lapage, 1968; Yeruham, 1985; Taylor *et al.*, 2007).

Available records of ectoparasitic fauna in Northern part of Nigeria are not comprehensive, vis-à-vis the groups and species of ectoparasites captured. Moreover, the available records have not been updated for long. The records discussed the seasonal patterns of ectoparasites of poultry (Natala *et al.*, 2003) and louse and mite infesting domestic animals in Northern Nigeria (George *et al.*, 1992). In the Southern part of the country, however, there appears to be no information on these parasites. This study aimed at updating the records of ectoparasites in northern Nigeria, thereby; determine the need to re-strategize the control methods.

3 MATERIALS AND METHODS

Laboratory data were obtained from clinical records of animals brought to the Department of Veterinary Parasitology and Entomology, Ahmadu Bello University, Zaria. These records covered the period

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from January 1990 to December, 2005. The parasite samples were obtained from suspected or apparent clinical cases of ecto-parasitism from Zaria and other parts of Northern Nigeria. Ticks were carefully removed with the aid of forceps; lice and fleas were collected by brushing through the bases of the hairs with grooming brushes. Skin scrapings were carried out at suspected mange lesions and these were treated by lightly boiling in 10% potassium hydroxide and washed with distilled water before examining for the presence of mites. Myiatic larvae brought were either collected directly by pressing the skin of the life animals or at postmortem. Lice, mite and fleas were examined by light microscopy, while ticks and myiatic larvae were examined with the aid of dissecting microscope. Identification of parasites was done using standard keys (Lapage, 1968; Soulsby, 1982).

4 RESULTS

The records indicate that out of 931 animals checked, 524 (56.28%) were infested with ectoparasites. A total of 221 cases (23.74%) were mites, out of which *Demodex canis* and *Notedres cuniculi* were the dominant species. Ticks appeared in 146 (15.68%) of the cases, of which *Amblyomma variegatum* and *Rhipicephalus sanguineus* were the most abundant species (Table 1). Lice were seen in 104 (11.28%) of the animals, with *Manacanthus stramineus* being most conspicuous. Fleas and myiatic larvae were in 36 (3.90%) and 17 (1.82%) samples, respectively (Table 2). The percentage distribution of the positive cases from the various animal species are, dog (24.90%), birds (23.85%), cattle (19.08%), rabbit (11.07%), sheep (8.21%), goat (5.73%), pig (3.05%), snake (2.10%) and cat (1.15%). There were no records on the type of the management of these animals.

More samples with mites were submitted to the laboratory in January and March, while that of ticks were in April and August (Figure 1). More samples with lice were submitted in July while that of fleas were in April and July (Figure 2).

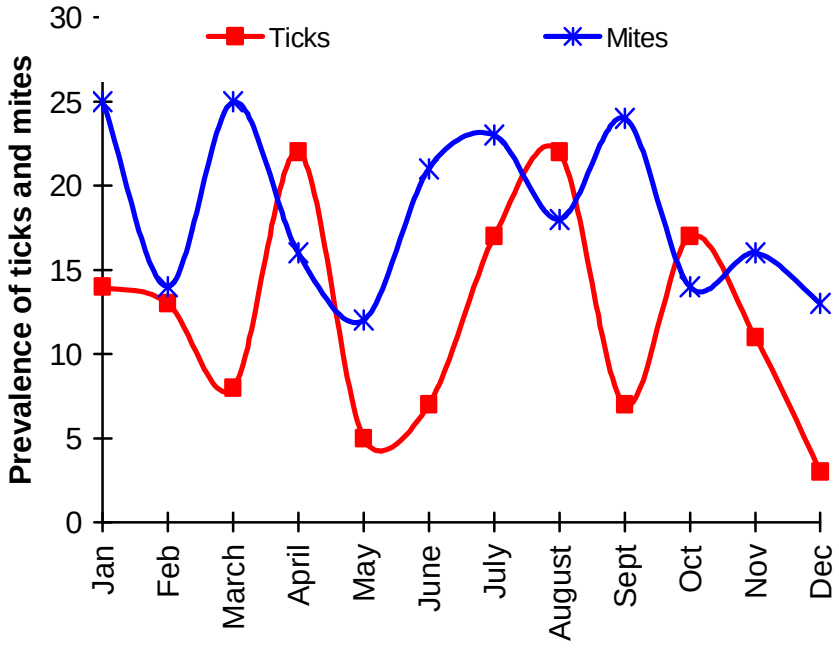

Figure 1: seasonal population pattern of ticks and mites infesting domestic animals in Northern Nigeria (based on data from samples brought to the Veterinary Parasitology and Entomology laboratory of Ahmadu Bello University Zaria).

5 DISCUSSION

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The general result shows that an array of parasites affects various species of domestic animals in northern Nigeria. Some of the parasites were reported in a previous study (George *et al.*, 1992). The abundance of *Demodex canis* observed in this study is quite significant as it affects the well being of dogs in the region. Some female dogs are known to carry a genetically controlled factor, which results in immunodeficiency. More over, *Demodex* itself is thought to cause a cell-mediated immunodeficiency which suppresses the normal T-lymphocyte response, consequently, predisposed to bacterial invasion of the lesions. (Taylor *et al.*, 2007). More mite samples brought to the laboratory in January possibly indicates the abundance during this period. The pathological effects of infestation with mites on domestic animals are well documented (Cohen, 1980; Health *et al.*, 1983; Yeruham *et al.*, 1985), in addition, the marketability of cattle is severely affected due to lesions on their bodies (Mohammed & Agbede, 1980).

A tick fauna with peaks at the onset and end of rains has been reported in Nigeria (Mohammed, 1977) and in Ghana (Koney *et al.*, 1994). This was attributed to the high humidity and optimum temperature required for the hatching of eggs, which leads to the sudden up-surge. The presence of *Amblyomma variegatum* almost throughout the year was in consonance with the findings of Koney *et al.* (1994). This suggests the resilience of this tick species when the environment is harsh and almost impossible for other tick species to survive. Natala *et al.* (2002) in an invitro study observed that *Amblyomma variegatum* thrives well even at the relative humidity of 72±2% provided by NaCl. The implication is that farm owners must maintain their tick control regimen all year round to avoid the menace of this cosmopolitan tick.

Table 1: [Published separately as annex. Download from journal website, link is adjacent to paper title]

Table 2: Species of lice, fleas and myiatic larvae infesting domestic animals in Northern Nigeria. Data covered the period from 1990 – 2005.

	Manecanthus stramineus	Lipeurus caponis	Gonoides gigas	Menopon gallinae	Haematopinus eurysternus	Linognathus vituli	Linognathus ovillus	Damalina ovis	Linognathus stenopsis	Damalina caprae	Haematopinus suis	Gonoides meliagridis	Total	Ctenocephalides felis	Echidnophaga sgallinae	Total	Oestrus ovis	Codylobia anthropophaga	Sarcophaga spp	Total
Jan	6	1	-	-	1	3	1	-	1	-	-	-	13	3	-	3	-	-	-	-
Feb	2	-	-	-	-	2	1	-	-	-	3	-	8	4	-	4	-	-	-	-
Mar	1	1	-	-	-	-	-	-	-	-	2	-	4	3	-	3	1	1	-	2
Apr	1	2	-	-	-	-	-	-	2	-	1	-	6	5	-	5	3	1	-	4
May	5	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	1	1	-	2
Jun	12	1	1	-	-	-	-	-	-	-	-	1	15	-	-	-	-	1	-	1
July	11	-	2	-	-	-	-	-	1	-	-	2	16	3	1	4	1	3	-	4
Aug	2	-	-	-	-	-	-	-	2	-	-	-	4	2	-	2	1	-	1	2
Sept	2	3	4	-	1	-	-	1	2	1	-	-	14	-	3	3	1	-	-	1
Oct.	4	1	1	-	1	-	-	-	3	1	-	-	11	-	5	5	-	-	1	1
Nov.	1	-	-	-	-	-	1	-	-	1	-	1	4	-	4	4	-	-	-	-
Dec.	1	-	-	1	-	-	-	-	2	-	-	-	4	-	3	3	-	-	-	-
Total	48	9	8	1	3	5	3	1	13	3	6	4	104	20	16	36	8	7	2	17
	LICE 104 (11.28%)													FLEAS 36 (3.90%)			MYATIC LARVAE 17 (1.82%)			

The presence of *Menacathus stramineus* year round sends signals to the poultry industry, particularly for the indigenous breeds that are on free-range, and indicates the need to constantly carry out

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surveillance and control. The movement of this parasite around the body of the birds has been reported to cause intense irritation and distraction from feeding, as most of the time is spent on pecking/grooming. *Haematopinus suis*, which has increased presence from February to April, should also be targeted for control and further investigation as it has been established to be one of the vectors of African swine fever, whose sporadic outbreaks have been reported in this region with devastating consequences.

The detection of *Ctenocephalides canis* from January to April could warrant the need for clinicians to be vigilant of dogs harboring *Dipylidium caninun*, of which this flea is the intermediate host. An earlier study on the prevalence of *Oestrus ovis* revealed the highest prevalence to be in October (Oniye *et al.*, 2006), contrary to the highest prevalence in April observed in this study. The discrepancy could have been because the earlier study was carried out for only 6 months (September to February), which limited the scope of that result. The mode of sample collection would perhaps account for the low prevalence in the current studies. Usually, only the few post mortem samples are sent to the entomology laboratory, unlike the Oniye *et al.* 2006 where the total samples were from post mortem.

The findings of this study have given an update on the inventory of ectoparasites of livestock in Northern Nigeria. For the first time, it has documented the tick of snakes (*Aponoma spp*) and the fleas of livestock in this region. Since the use of pesticides is still the main-stay for the control of ectoparasites, the right modes of application should be strictly adhered to in order to achieve effective control even when these parasites co-exist on a host.

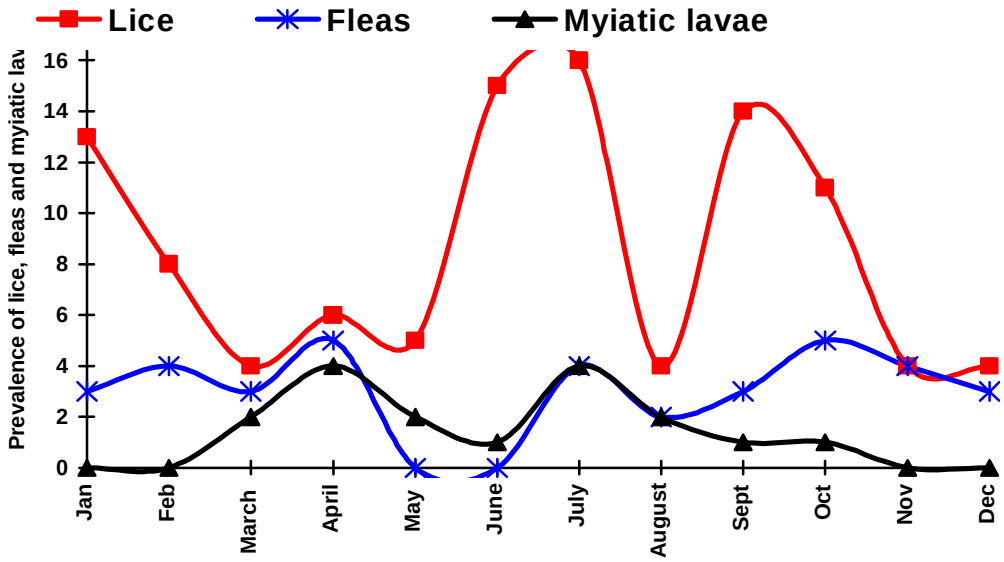

Figure 2: seasonal distribution of lice, fleas and myatic larvae infesting domestic animals in Northern Nigeria (based on data from samples submitted to the Veterinary Parasitology and Entomology laboratory of Ahmadu Bello University Zaria).

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