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ECTOPARASITES INFESTING LIVESTOCK IN THREE LOCAL GOVERNMENT AREAS (LGAs) OF NASARAWA STATE, NIGERIA.

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INTRODUCTION

Ectoparasites are organisms that live on the surface of bigger animals upon which they depend for food, shelter and other basic needs to survive (Rechav & Nutall, 2000). It has been observed that ectoparasites do not only have direct effects on their host, they may also transmit pathogens, thereby acting as vectors of diseases (Parola *et al.,* 2001). Ectoparasites generally affect the health of animals and the quality of hides and skin. The leather industries have suffered great loses over the years because of infestation of animal skin.

Ticks are blood sucking ectoparasites of mammals and birds. About 850 species of ticks have been described worldwide (Furman & Loomis, 1984; Vrededoe, 2002). Two main families of ticks include the Ixodid (hard) ticks and Argasid (soft) ticks are known to transmit the widest variety of pathogens of any blood sucking arthropods such as bacteria, rickettsiae, protozoa and viruses (El-Kammah *et al.,* 2001) They are also reported to transmit pathogens that causes some human diseases such as lyme diseases, ehrliciosis, babesiosis, rocky mountain spotted fever, tularemia and tick borne relapsing fever (Solomon & Mallew, 2001, Parola *et al*., 2001). Campel & Lasley, (1985) observed that ticks were capable of causing tick paralysis in children. Iwuala & Okpala (1978) reported higher tick infestation on cattle, followed by sheep and goats in eastern Nigeria.

In Nigeria ticks are the most important ectoparasites of farm livestock because of their heavy rate of infestation causing significant damage to hide and skin as well as transmitting diseases to their host. Amuta *et al.,* (2010) reported high prevalence of *Sanguineus rhipicephalus* (80.5%), *Boophilus annulatus* (14.6%), *Hyloma trucatus* (4.7%) infesting dogs in Wurukum, Makurdi, Nigeria. Stachurski & Lancelot (2006) picked up 90% of adult *Ablyomma variegatum* in cattle when the animals returned from pasture in the evening. El-Kammah *et al.,* (2001) reported that an average daily infestation of about 50 engorged *Boophilus* tick is capable of causing substantial loss in diary product and beef. Knipling & Steelman (2000) stated that *Boophilus annulatus* can spread cattle tick fever and Texas fever from one cattle to another. The large numbers of ticks seen on cattle, sheep, goat, horses and camels have been attributed to their methods of grazing (Iwuala & Okpala, 1978; James-Rugu & Iwuala, 2002).

About 1,500 species of blood socking fleas have been reported from birds and mammals (Iwuala & Okpala, 1978). Fleas are known to require blood meals before egg production and are usually found in crevices in floors under carpets, litter or sleeping places of host animals. Two species of fleas (*Ctenocephalides* and *Xenopsylla cheopis*) have been reported to parasitize livestock especially goats in Nigeria (James-Rugu & Iwuala, 2002).

Mites cause a lot of damage to hides of livestock by denuding the hair of the hides and forming scabs on the hide. They are also responsible for predisposing the animal to bacterial and fungal infestation and other parasitism including screw worm attack caused by wounds due to bites in the animal skin with gross infestation (Hungerford, 1984).

Blood sucking lice and tick infestation have been incriminated in causing anaemia, abortion, lower milk production, stunted growth, general unthriftness, respiratory disease and death of livestock (Hungeford, 1984). Both fleas and lice are known to cause havoc to livestock through sucking of blood leading to anaemia, abortion, lower milk production, respiratory disease and discomfort. This study therefore provides preliminary information on the prevalence of common species of ectoparasites of livestock in Nasarawa State, Nigeria.

This study was conducted on livestock from three local Government Areas (LGA) of Nasarawa State, namely Karu, Keffi and Kokona. The State lies between latitude 7^{o} 45N and 9^{o} 25N of the equator and between longitude 7^{o} and 90^{o} 37E. and shares boundaries with Kaduna State in the North, Plateau State in the East, Taraba and Benue in the South while Kogi and the Federal Capital Territory Abuja are in the West (Akwa *et al*., 2007). Two villages were selected from each LGA: Pyanku and Angwan Lambu in Keffi LGA, Gitata and Panda in Karu LGA, Sabon-Gida and Angwan Maisuri in Kokona LGA for the study. The selected LGAs are known to harbour large number of Fulani herdsmen.

Survey of Ectoparasites: Ticks and fleas were obtained from the animals by direct picking using forceps. Cattle lice and mites were obtained by brushing the skins of the animals onto a white cloth. Cattle, sheep and goats were randomly sampled for ticks, lice and fleas. Three thousand, six hundred (3,600) live stock consisting of one thousand two hundred of cattle, sheep and goats accordingly, were examined for ectoparasites. This total wa derived by examining 400 cattle, 400 sheep and 400 goats from each LGA. This was done with the permission and assistance of the livestock owners.

The ectoparasites (ticks, lice, mites and fleas) so collected were preserved in separate sampling bottles containing 70% alcohol. Such sampling bottles were well labeled indicating the area of collection, type of parasite and the date of collection, and transported to the laboratory for identification. Anderson (2004) method of expressing prevalence and intensity was adopted.

It was observed that livestock (Cattle, sheep and goats) were infested by ticks, fleas, lice and mites in all the six villages that made up the three LGAs. Prevalence of tick infestation on cattle (73.3%) was common than in sheep (49.5%) and in goats (39.3%) in this study (Table 1). Chi-square statistical analysis showed no significant difference ($p > 0.05$) in the distribution of ticks, fleas, lice and mites in the six villages.

In this study ticks were the most common ectoparasites found infesting livestock. They were observed in all parts of the animals especially around the ears, trunk, legs, tail and the perineum. Overall, the following tick species were encountered: *Amblyoma*

variegatum (22.3%), *Amblyoma lepidum* (9.8%), *Boophilus annulatus* (9.0%), *Boophilus decoloratus* (10.5%) and *Hyaloma truncatus* (5.3%). It was also observed that mixed infestation accounted for 46.7% (Table, 2). Based on location, ticks infestation was more serious on cattle 311 (77.8%), followed by sheep 250 (62.5%) and lastly goats 180 (45.0%) in Kokona LGA. Infestation with fleas in the same area followed a similar pattern; cattle (55.5%), sheep (46.8%) and goats (35.3%).

An overall mixed infestation rate of 47.8% by lice was recorded on livestock in the study area. Two species of lice *Linogathus vituli* (long nose) and *Haematopinus euryternus* (short nose) made up 15.0% and 16.8% of the infestation. Lice infestation by location indicated the highest prevalence of 47.5% in Karu LGA in cattle, 37.3% in Keffi LGA in sheep and 21.8% in Keffi LGA in goats (Tables 1 and 3).

Table 1: Prevalence of ectoparasites of livestock in three LGAs of Nasarawa state, Nigeria.

LGA	Ticks			Fleas			Lice			Mites		
	Cattle	Sheep	Goat	Cattle	Sheep	Goat	Cattle	Sheep	Goat	Cattle	Sheep	Goat
Keffi	269	145	131	185	169	130	180.00	149.00	87.00	68.00	73.00	98.00
(n= 400)	(67.30)	(36.30)	(32.80)	(46.30)	(42.30)	(32.50)	(45.00)	(37.30)	(21.80)	(17.00)	(18.30)	(24.50)
Karu	300	199	160	201	145	120	190.00	147.00	72.00	72.00	64.00	59.00
(n= 400)	(75.00)	(49.80)	(40.00)	(50.30)	(36.30)	(30.00)	(47.50)	(36.80)	(18.00)	(18.00)	(16.00)	(14.80)
Kokona	311	250	180	222	187	141	157.00	103.00	57.00	83.00	74.00	81.00
(n= 400)	(77.80)	(62.50)	(45.00)	(55.50)	(46.80)	(35.30)	(39.30)	(25.80)	(14.30)	(20.80)	(18.50)	(20.30)
Total	880	594	471	608	501	391	527.00	399.00	216.00	223.00	211.00	238.00
(n = 1,200)	(73.30)	(49.50)	(39.30)	(50.70)	(41.80)	(32.60)	(43.90)	(33.30)	(18.00)	(18.60)	(17.60)	(19.80)

Where n = is the number of animals (cattle, sheep and goats) examined in each LGA

TABLE 2. PREVALENCE OF TICK SPECIES AFFECTING LIVESTOCK IN THREE LGAS OF NASARAWA STATE, NIGERIA.

Category of livestock	No. examined	Infestation of tick species (%)					Mix infestation (%)
		A. variegatum	*A. lepidum*	*B. annulatus*	*B. decoloratus*	*H.truncatum*	
Cattle	1,200	250(20.8)	171(14.3)	154(12.8)	172(14.3)	81(6.8)	267(22.3)
Sheep	1,200	218(18.2)	103(8.6)	91(7.6)	120(10.0)	67(5.6)	735(61.3)
Goat	1,200	186(15.5)	79(6.6)	77(6.4)	85(7.1)	44(3.7)	678(56.5)
Total	3,600	804(22.3)	353(9.8)	322(9.0)	377(10.5)	192(5.3)	1,680(46.7)

TABLE 3. PREVALENCE OF LICE SPECIES AFFECTING LIVESTOCK IN THREE LGAS OF NASARAWA STATE, NIGERIA.

Category of livestock	No. Examined	Infestation of lice species (%)		Mix Infestation(%)
		L.vituli	*H.euryternus*	
Cattle	1200	281(23.4)	246(20.5)	768(64.0)
Sheep	1200	151(12.6)	248(20.7)	563(46.9)
Goat	1200	106(8.8)	110(9.2)	389(32.4)
Total	3600	538(15.0)	604(16.8)	1720(47.8)

The observation of high prevalence of ectoparasite infestation with no statistical significant difference between locations in this study is in agrrement with the work of Iwuala & Okpala (1978), who reported higher ticks infestation on cattle, followed by sheep and goats. Goats are known to graze less and graze just within the home compared to sheep and cattle that graze far into the bush hence come in contact with more vegetation and subsequently more ectoparasites. James-Rugu & Iwuala (2002) recorded infestation rate of 63.2% on adult animals and attributed this to contact due to their large body size and feeding on vegetation on which the ticks were attached. They also believe that adults and adolescents cattle, sheep and goat were always the preferred host for ticks' infestation than the young animals without any consideration of breeds or species.

The findings in this study also bore similarities with that of Stachurski & Lancelot (2006) who recorded about 90% *Amblyomma variegatum* infestation on cattle attached to inter-digital areas as they return in the evening from pasture. In a related development Amuta *et al.,* (2010) reported high prevalence of tick infestation in dogs in Makurdi due to *Rhipicephalus* (80.5%), *Boophilusannulatus* (14.6%) and *Hyaloma truncatus* (4.7%). High ectoparasite infestation has been associated with serious damage to hide and skin and is capable of destroying the milk and beef industry. The infestation by ticks is capable of causing bacterial and fungal infestation and other forms of parasitism like screw-worm attack due to wounds emanating from tick bites in the animal skin. The ticks, fleas, lice and mites are capable of reducing the market value and the products produce from the hides and skins of these animals.

At the end of the study health education was conducted for all live stock keepers within the studied LGAs. They were advised to use simple disinfectants like dettol or izal to treat wounds on their animals. The uses of acaricides were also demonstrated and live stock owners were directed to obtain such chemicals in National Veterinary Research Institute Vom, Plateau State. Follow up showed a considerable reduction in rate of infestation by the ectoparasites.

The result of the study indicates that cattle, sheep and goats were infested by ticks, fleas and lice in the three LGAs investigated. The economic and health implications of these ectoparasites are enormous, deserving urgent attention by Government, policy makers and nongovernmental organizations to give the farmers better value for their livestock.

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