SHORT COMMUNICATION

Sokoto Journal of Veterinary Sciences
(ISSN 1595-093X)
Karshima *et al.* /*Sokoto Journal of Veterinary Sciences* (2011). 9(1):36-38.

A Survey for Biting Flies in three Local Government Areas of Taraba State, Nigeria

SN Karshima*[1], I Ajogi[1], G Mohammed[2] & AI Lawal[3]

[1]*Dept. of Veterinary Public Health and Preventive Medicine,*
[2]*Dept. of Veterinary Surgery and Medicine,*
[3]*Dept. of Veterinary Parasitology and Entomology,*
Faculty of Veterinary Medicine, Ahmadu Bello University, Zaria

*Correspondence: Tel.: +2347031092062, E-mail: torkarshima@yahoo.co.uk

Abstract
This study was carried out to determine the prevalence of biting flies from Gashaka, Ibi and Karim Lamido Local Government Areas (LGA) of Taraba State between July and August, 2010 using biconical traps, and identify them using morphological characteristics. Of the 908 biting flies collected from the traps 37.9% (344/908) were *Tabanus,* 25.9% (235/908) were *Haematopota*, 24.5% (223/908) were *Chrysops*, and 11.7% (106/908) were *Glossina.* Based on the LGAs sampled, the distribution of the flies in Gashaka, Ibi, and Karim Lamido (K/Lamido) were 44.6% (419/908), 21.9% (199/908), and 33.5% (290/908) respectively (p<0.05). An infection rate of 1.89% (2/106) was observed among the tsetse flies trapped. Two species of tsetse flies were identified as *Glossina palpalis* representing 67.9% (72/106) and *Glossina tachinoides* 32.1% (34/106). In conclusion, Tabanids had the highest distribution while *Glossina* had the lowest distribution across the three (3) LGAs of the State.

Keywords: Biconical traps, Biting Flies, Survey, Taraba State.

Introduction
Biting flies are arthropods of the order Diptera, and comprise of the Suborders Nematocera (mosquitoes, sand flies, black flies, and biting midges), Brachycera (*Tabanus*, *Haematopota*, and *Chrysops*), and Cyclorrhapha (*Glossina, Oestrus*, blowflies) (Service, 1980). Their bites are painful constituting a nuisance to humans and animals, annoyance and blood loss, allergic reactions such as skin rashes, itching, and body swelling. They are also vectors of African trypanosomosis, leishmaniasis, bartonellosis, tularaemia, loiasis and onchocerchiasis (Sinshaw *et al*., 2006).
A sound knowledge of the species of biting flies in an area and their bionomics is important in the institution of prevention and control strategies against these flies (Urquhart *et al*., 2003). This study was carried out to collect and identify biting flies around cattle grazing sites in Taraba State so as to provide baseline data useful in designing control measures. The need for urgent aggressive control programme for these biting flies in the State and indeed the whole country, Nigeria is indicated.

Materials and methods:
Study Area
Taraba State is located in North-eastern Nigeria between longitude 8^0 00'N and latitude 10^0 30'E and shares borders with the States of Gombe (North), Adamawa (North-East), Plateau (West), Bauchi (North-West), and Benue (South-West), and with the Republic of Cameroon (South). The State covers an area of 54,473 km^2 representing 5.9% of the total land area of Nigeria. It comprises of 16 Local Government Areas (LGAs) and three Senatorial districts (Northern with 6 LGAs, Central and Southern Senatorial districts with 5 LGAs each). Three LGAs were randomly selected from the three Senatorial Districts, one LGA from each Senatorial District using simple balloting (Kuzma & Bohnenblust, 2001).

Vector sampling
Biting flies were collected for three consecutive days per week for a period of six weeks using biconical traps placed around cattle grazing sites as described by Challier & Laveissiere, (1973). The traps were

emptied every 24 hours and the flies collected (with the exception of tsetse) into sample bottles containing 70% alcohol, and transported to the Entomology Laboratory of the Parasitology Department, Ahmadu Bello University, Zaria, for identification using the method of Murray *et al.* (1983). Tsetse flies were kept in fly cage until needed for dissection.

Vector identification and dissection

Flies were identified using morphological characteristics as described by Murray *et al.* (1983). Tsetse flies were dissected as described by Service, (1980) to check for vector stages of the parasites. Data collated were analyzed as percentages and the Chi square test was used to compare the differences in the distribution of biting flies based on their genera and LGAs.

Results

The distribution of the 908 biting flies collected from the traps based on their genera was as follows: *Tabanus* 37.9% (344/908), *Haematopota* 25.9% (235/908), *Chrysops* 24.5% (223/908), and then *Glossina* 11.7% (106/908) as presented in Table 1. The differences in the distribution of flies in relation to their genera were statistically significant (p<0.05). Based on the LGAs sampled, the distribution of the flies in Gashaka, Ibi, and K/Lamido were 44.6% (405/908), 21.8% (198/908), and 33.5% (305/908) respectively (Table 1). An infection rate of 1.89% (2/106) was observed among the tsetse flies trapped. Of the two species of tsetse flies encountered during the course of this study, *Glossina palpalis* represented 67.9% (72/106) while *Glossina tachinoides* represented the remaining 32.1% (34/106) as shown in Table 2.

Table 1: Distribution of biting flies based on LGAs of Taraba State.

	Number of flies trapped				
LGA	*Glossina* (%)	*Tabanus* (%)	*Haematopota* (%)	*Chrysops* (%)	Total (%)
Gashaka	69 (16.5)	138 (32.9)	87 (20.8)	125 (29.8)	419 (44.6)
Ibi	0 (0.0)	94 (47.2)	63 (31.7)	42 (21.1)	199 (21.9)
K/Lamido	37 (12.8)	112 (38.6)	85 (29.3)	56 (19.3)	290 (33.5)
Total	106 (11.7)	344 (37.9)	235 (25.9)	223 (24.5)	908 (100.0)

P<0.0001, X^2=86.62, df=6

Table 2: Infection rates of tsetse flies trapped in Taraba State

Glossina species	No. of tsetse flies dissected (%) (N= 106)	No. positive for Trypanosomes (%)
Glossina palpalis	72 (67.90)	2 (1.89)
Glossina tachinoides	34 (32.10)	0 (0.00)

Discussion

The prevalence of biting flies in this study area may be attributed to the presence of the Gashaka-Gumti and the extended arm of the Yankari game reserves to the State both providing natural habitats and breeding sites for these biting flies, with lack of a sustained vector control as an additional factor. Cattle routes that transverse the State down to Southern Nigeria, and the presence of wild life species providing sources of bloodmeal may also contribute to the prevalence of these biting flies. The availability of rivers in the study areas may explain the capture of *Gossina palpalis* and *Glossina tachinoides* which are riverine in habitation (Urquhart *et al*., 2003). The low infection rate among the tsetse flies in this study may be due to the high and frequent rainfall associated with the period of study (July- August) which could interfere with their feeding frequency that exposes them to infection. Also the reduced invasion of tsetse habitats by humans and livestock in search of water which is a common practice in the dry season might be responsible for the low infection rate observed since humans and livestock are also sources of tsetse infection. Although the infection rate observed in *Glossina* species trapped in this study was low, it was higher than the 0% observed by Ogunsanmi *et al.* (2000) in South-western Nigeria. This might probably be as a result of wildlife reservoirs that serve as sources of infection to the tsetse flies (Njiokou *et al.*, 2006). The *Glossina* species encountered in this study have been reported by other workers in the neighbouring Plateau State (Kalu, 1996; Kalu & Uzoigwe, 1996) and the forest belt of the

South-West (Adeyemi & Esuruoso, 1997). This study identified different genera of flies that have been reported from other parts of the country (Akinboade & Ogunwunyi, 1984; Lloyd & Dipeolu, 1974). These flies are of great economic importance because they can transmit various pathogens to both man and animals (Nawathe *et al*., 1994). They also cause restlessness on animals which is hazardous to animal health and may lead to loss of weight and productivity.

References

Adeyemi IG & Esuruoso GO (1997). City resident tsetse: preliminary epizootiological investigation in Ibadan, South-Western Nigeria. *Epidemiologie et Sante, Animale,* **31**(1):4-6.

Akinboade OA & Ogunwunyi FA (1984). Seasonal incidence of dipterous flies at the lairages and control posts in South-western Nigeria. *Animal Tech.*, **36**(2):68.

Challier A & Laveissiere C (1973). A new trap for capturing *Glossina* (Diptera, Muscidae): Description and field trials.Cah. ORSTOM, Ser. *Entomology and Medical Parasitology,* **11**:251-262.

Kalu AU (1996). Acute trypanosomosis in a sedentary herd on the tsetse-free Jos Plateau, Nigeria. *British Veterinary Journal,* **15**(2):4-7.

Kalu AU & Uzoigwe RN (1996). Tsetse fly and trypanosomosis on the Jos Plateau: observations on outbreaks in Barkin-Ladi Local Government Area. *Tropical Veterinarian,* **14**:114-126.

Kuzma JW & Bohnenblust SE (2001). *Basic Statistics for the Health Sciences (4th edition).* McGraw-Hill publishers. Pp 374.

Lloyd DH & Dipeolu OO (1974). Seasonal prevalence of flies feeding on cattle in Northern Nigeria. *Tropical Animal Health and Production*, **6**:231-236.

Murray M, Trail JCM, Turner DA & Wissocq Y (1983). Livestock productivity and trypanotolerance. Network training manual. ILCA, Addis Ababa. Pp 45-75.

Nawathe DR, Srivastava GC & Sinha PK (1994). Survey of animal trypanosomiasis and its transmission factors in the arid zone of Borno State. *Final Report, University of Maiduguri.* Pp 57-61.

Njiokou F, Laveissiere C, Simo G, Nkinin S, Great G & Herder S (2006). Wild Fauna as probable animal reserviour for *Trypanosome brucei gambiense* in Cameroun. *Infection, Genetics and Evolution*. **6**:143-153.

Ogunsanmi OO, Ikede BO & Akpavie SO (2000). Effects of management, season, vegetation, and breed on the prevalence of bovine trypanosomosis in South-Western Nigeria. *Israel Journal of Veterinary Medicine,* **55**(2):273-278.

Service MW (1980). *A guide to medical entomology (3rd edition).*Blackwell Scientific Publishers. Pp 95-101.

Sinshaw AG, Abebe M, Desquesnes WY & Yoni W (2006). Biting flies and *Trypanosoma vivax* infection in three highland districts bordering Lake Tana, Ethiopia. *Veterinary Parasitol*ogy, **142**:35-46.

Urquhart GM, Armour J, Duncan JL & Jennings FW (2003). *Veterinary Parasitology* (*2nd edition)*. Blackwell Publishers, Pp 157.