

**STUDY OF SOME BITING FLIES (DIPTERA) IN SINGA
AREA
(SINNAR STATE, SUDAN)**

By

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ABSTRACT:

A study was conducted from May 1994 to April 1995 at two locations in Sennar State central Sudan, to study trap catches of horse flies (Diptera: Tabanidae) and stable flies (Diptera: Muscidae). Flies were caught using modified canopy traps. Catches of horse flies and stable flies were highest in September and October at the end of the rains and were lowest from November to April just before the rains.

ملخص:

أجريت الدراسة في أبريل 1994 وحتى مايو 1995 في منطقتين بولاية سنار. غرض الدراسة تمثل في دراسة نتائج صيد ذباب الخيل وذباب الإسطبل بواسطة شرك الخيمة المعدل. نتائج صيد الذباب بشرك الخيمة كان عاليا في شهري سبتمبر وأكتوبر عند نهاية فصل المطر وكان متدنيا من نوفمبر وحتى أبريل قبل هطول الأمطار.

INTRODUCTION:

Most workers agree that in absence of tsetse, the principal agents of transmission of bovine trypanosomosis are the horse flies (Diptera: Tabanidae) and stable flies (Diptera: Muscidae) [1]. Tabanid flies are implicated in the transmission of surra among camels [2] Besides disease transmission, cattle suffering from the bites of these insects have generally an inferior physical condition caused by combination of blood loss, energy loss and loss of grazing time [3].

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In this paper we report observations made to assess the catches of tabanidae in the vicinity of Singa during a general study of bovine trypanosomiasis in sedentary cattle in Sennar State, Sudan.

MATERIALS AND METHODS

The study was conducted from April 1994 to May 1995 at about 12-50 km South of Singa, the capital town of Sennar State, central Sudan. The area is famous for its indigenous Kenanna breed of dairy cattle and the wafish breed of sheep.

The area is generally dry with an effective rainy season from June to September with annual rainfall of about 300mm. Maximum temperatures range from as low as 15° C in January (Winter) to above 40° C in May (Summer). Relative humidity ranges between 20% in the hot dry season and 85% during the rainy season. Both vegetation and climate are unsuitable for tsetse and the nearest suspected tsetse belt is about 300 km. towards the east.

Natural vegetation is affected by cultivation during the rains and irrigated plots along the bank of Blue Nile. The main trees are of *Acacia* and *Balanites* spp. Grass is plenty during the rains, but it becomes drier and scarce in the dry season. For these reasons nomadic herds of cattle, sheep and goats are trekked southwards as far as the River Khor Tabus where they contact tsetse and become infected with trypanosomiasis [4]. On their return at the beginning of the rainy season (June) they intermix with sedentary herds where mechanical transmission of trypanosomiasis among other diseases occurs, through the agency of biting flies of the families Tabanidae, Muscidae and Hippoboscidae.

Two sites were chosen for the present study. Each has a permanent artificial irrigation system of canals, which creates suitable breeding sites for Tabanidae throughout the year.

[1] The first site was Umbencin Livestock Research Station (ULRS) at Umbencin village about 12km south of Singa and 375km south of Khartoum. The total area of the station was 945 hectares of which 90 hectares are irrigated by canals. The non-irrigated area provides natural grazing for livestock during the rains.

Site [2] Sudanese-Arab Kenaf Company situated near Abu Naama village about 50km south of Singa and 415 km south of Khartoum. The area of the project is 1000 hectares, of which 750-hectares are irrigated.

CATCHES OF FLIES:

Flies were caught using two modified canopy traps [5] in each site. Traps were spaced at 200m. Catches were collected at 0900 and 1800h daily each month, from May 1994 to April 1995. The average catch trap/day was taken to represent the apparent density of flies in each month. A less comprehensive data were obtained using hand nets for catching flies on vegetation.

RESULTS:

In both study sites traps catches throughout the year consisted of Tabanidae and Muscidae. The Tabanids were mainly *Atylotus agrestis*, *Tabanus taeniola* and *Tabanus sufis*; the Muscidae were *Musca* spp. and *Stomoxys* spp. *T. Bigutatus* and *Philoliche magretti* were caught off vegetation in addition to *A. agrestis*, *T. taeniola* and *Tabanus sufis*. The *Philoliche magretti* and *T. bigutatus* were not attracted to traps and were not caught in traps. The difference in proportion captured of *Atylotus agrestis* at Umbenein is significant between September and all other months (i.e. vs. August $P < 0.05$, July $P < 0.01$ and the rest of months $P < 0.001$) whereas at Abu Naama they were significant between September and all other months (i.e. vs. August $P < 0.05$, July $P < 0.01$, and the rest of months $P < 0.001$). The differences in proportions captured of *T. taeniola* at Umbenein and Abu Naama are significant between September and all other months of survey (i.e. $P < 0.001$). Tables [1-3].

DISCUSSION

The present study showed that many species of insects of veterinary and public health importance were caught with canopy traps and hand nets. These included *Atylotus agrestis*, *Tabanus taeniola* and *Tabanus sufis*; the Muscidae were *Stomoxys* spp. *T. Bigutatus* and *Philoliche magretti*. These results are in agreement with [6,7].

**TABLE (1): MEAN DAILY CATCHES OF ATYLOTUS AGRESTIS
IN CANOPY TRAP IN SINGA**

Months	ABU NAAMA		UM BENEIN	
	No. Days	Mean±S.D	No. Days	Mean±S.D
May	20	17.55±3.3	10	5.2±1.55
June	22	44.06±7.31	20	1.5±1.85
July	24	71.79±9.19	15	12.53±1.88
August	26	72.35±11.09	25	16.28±2.42
September	28	82.19±17.88	20	18.45±2.16
October	15	17.67±5.45	24	4.85±1.18
November	15	2.87±1.36	10	1.6±1.07
December	25	4.28±1.86	10	1±0.93
January	20	4.4±1.5	15	1±0.93
February	25	4.48±1.53	20	1.55±0.76
March	23	4.57±1.12	15	1.67±0.98
April	26	1.73±0.96	15	1.73±0.96

**TABLE (2): MEAN CATCHES OF TABANUS TAENIOLA IN CANOPY
TRAP IN SINGA**

Months	ABU NAAMA		UMBENEIN	
	No. Days	Mean±S.D	No. Days	Mean±S.D
May	26	00.00	20	00.00
June	22	6.32±1.89	20	1.75±0.91
July	24	29.81±5.4	15	5.87±1.36
August	26	47.85±10.01	25	6.48±1.58
September	26	78.12±10.77	20	16.25±1.77
October	15	176.8±7.56	24	13.58±2.81
November	15	15.±2.65	10	0.4±0.52
December	25	9.04±1.69	10	3.7±1.25
January	20	9.6±1.93	10	2.7±1.06
February	25	6.76±1.53	20	0.65±1.09
March	23	3.82±1.19	15	0.2±0.41
April	25	1.46±1.45	15	0.2±0.41

TABLE (3): MEAN DAILY CATCHES OF STOMOXYS SPP IN CANOPY TRAP IN SINGA

Months	No. Days	ABU NAAMA		UMBENEIN	
		Mean±S.D	No. Days	Mean±S.D	No. Days
May	10	35.6±8.9	10	37.1±8.55	
June	20	62.7±4.76	20	62.65±4.89	
July	15	187.87±11.39	15	178.42±11.81	
August	25	133.42±18.58	25	137±5.28	
September	20	232.85±26.09	20	232.55±26.38	
October	24	145.37±14	24	145.21±14.87	
November	10	119±4.2	10	118.4±3.81	
December	10	36.1±4.2	10	36±4.29	
January	10	29.6±2.12	10	29±1.89	
February	20	10.65±3.33	20	10.8±2.35	
March	15	13.67±2.89	15	13.2±2.76	
April	15	14.2±2.37	15	13.67±2.59	

For tabanid and Stomoxys spp. Trap catches increased gradually from June, the beginning of the rains, to attain peaks in September and October at the end of the rains (Tab. 1-3). From November onwards catches declined sharply and remained at very low level until the end of the study in April 1995. However, it was noted that from June to October catches of *Atylotus agrestis* and *T. taeniola* at Abu Naama were respectively about 4-10 times and 3-5 times greater than those caught at Um Benein indicating the higher density of tabanidae in the former site.

The fact that *Philoliche magretti* and *T. bigutatus* were not attracted to traps and were not caught in traps suggest that either these insects were not attracted to traps at all or did not enter the traps and become caught even if attracted. This agrees with Abdel Karim [10]. For *T. sufis* trap catches increased gradually from June, the beginning of the rains, to attain peaks in September at the end of the

rains. The numbers of catches decrease sharply, these findings agree with Abdelkarim and Suliman [8,6].

Stomoxys spp. Reached peak of catches in September, same finding were reported by Suliman [6].

Many researchers, discussed the role of Tabanids in the transmission of trypanosomiasis, during their interrupted feeding on different animals [9,10].

Control of biting flies particularly Tabanidae may be extremely difficult due to their long breeding time, the ambiguity of their breeding and resting sites. They may not be easily accessible for spraying or use of biological sterile males. The use of baited or impregnated traps may, however, be tried as a safe and a less costly.

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