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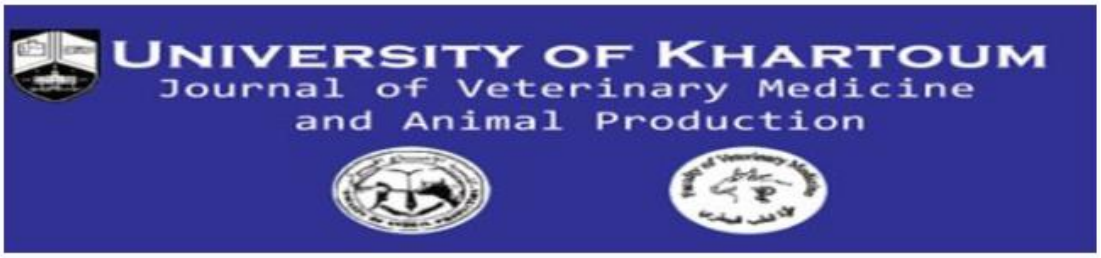

Some Studies on the Seasonal Abundance of Tabanids in Nyala- Southern Darfur State - Sudan

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Abstract

This study was conducted to determine the seasonal abundance of tabanid flies in South Darfur using traps and fly patrol team using hand nets. Modified Epsilon traps were deployed in Nyala along Wadi Nyala (seasonal valley stream) during the period, September 2002 to August 2004. The species composition of tabanid flies caught were *Tabanus sufis* (55.9%), *Atylotus spp*.(41.4%), *T.taeniola* (4%), *T.biguttatus* (3.2%) and *Philoliche magrettii* (0.27%). The highest abundance of tabanids was during September, October and November of the year. The hand nets were found more efficient than traps in catching *T.biguttatus* and *T.taeniola* from resting sites. The findings of population peak of the most species particularly *T. suifis* and *Atylotus spp*. in rainy and early cold dry seasons suggest the risk and importance of mechanical transmission in the epidemiology of animal trypanosomosis in the region during these seasons. Control strategies may rely in deploying insecticides impregnated traps ,pour on and desiccation tabanid larvae habitat. Further studies on the evaluation of different tabanids traps such as conventional one catching only host seeking female with liquid captures water seeking male and female is highly recommended to avoid bias of conventional tabanid traps.

المستخلص

تم نشر مصائد (شراك) الذباب من النوع أبسلون حول وادي نيالا فى الفترة من سبتمبر 2002 وحتى أغسطس 2004 وذلك لمعرفة التواجد الموسمي للأنواع المختلفة لذبابة الخيل (التبانا)، فقد شكلت تبانس سوفس نسبة 55.9% تلتها أنواع ذبابة الاتيلوتس بنسبة 42.4% ثم تبانس تنيولا بنسبة 4% وتبانس بقاتيتس بنسبة 3.2% واخيرا فيلوليشيا ماقرتى بنسبة 0.27% . الوفرة الكبيرة لهذه الأنواع من الذباب كانت فى شهر سبتمبر ،أكتوبر ونوفمبر للعامين 2002 و2003 وقد وجد أن الشبكة اليدوية أكثر كفاءة من الشراك في القبض على نوعى تبانس بقاتيتس و تبانس تنيولا. التواجد الكبير لذباب الخيل خاصة انواع الأتيلوتس وتبانس سوفيس خلال موسم الأمطار والفترة المبكرة من الموسم الجاف البارد يفسر أهمية النقل الميكانيكي فى وبائية مرض النوم .تعتمد إستراتجية المكافحة على نشر المصائد المشبعة بالمبيدات ، الصب الفوقي للمبيد على الحيوان وتجفيف بيئة اليرقات.هنالك حوجة لمقارنة وتقييم انواع المصائد المختلفة كالمصائد التقليدية والتي تجذب فقط الإناث التي تبحث عن المضيف بالمصائد السائلة التى تجذب عليها الإناث والذكور الباحثة عن الماء.

Introduction

Tabainds bite animals causing irritation, loss of condition, reduction in milk yield, death due to the effect of numerous bites and they also play an important role in mechanical transmission of diseases (Bulfour, 1906).

Classification of many of Sudanese tabanids was found in the works of Austin (1909) and King (1910). The early comprehensive study of tabanids of Sudan was done by Lewis (1953) who reported seventy species under nine Genera of tabanids and their distribution, biology and ecology. Later Yagi (1968) added four species to the seventy of Lewis from Messairya area in West Kordofan.

Yagi and Abdel Razig (1972) described the seasonal abundance of tabanidae in South Darfur and found that the main species were *Tabanus taeniola, Atylotus agrestis, Atylotus fuscipes, Tabanus biguttatus, Ancala latipes, Philoiche magrettii* and *Tabanus sufis.* More studies were carried out in the area by (Abdelkarim, 1980; Hall *et al*., 1983; Abdelkarim and Benjamin, 1989) who confirmed the earlier ones.

Several studies were conducted on tabanids in different parts of Sudan that covered their basic biology, ecology and their possible role in mechanical transmission (A/Rahman *et al*., 1990; Suliman 1992; Kheir *et al*., 1995 and Sawsan, 1997).

The objective of this study is to provide some knowledge on tabanid seasonality and the most probable time for transmission of these pathogens to assist in formulation of control plans.

Materials and Methods

The traps

Tabanid flies were caught in Nyala town using locally modified Epsilon trap. The traps were made from three-walled triangular shape (Flint, 1985) of blue and black cotton cloth. Five traps were deployed in August 2002 along Wadi Nyala (seasonal valley stream) on open areas under direct sun light and near some dairy farms. The distance between each trap and the other was ½ km. the study continued up to August 2004. Flies were collected from traps three times weekly and identified according to Oldroyd (1954, 1957).

Flies also were collected by a team of two men from resting sites and moving animals around the trapping area, using hand nets during the period of September and October 2002.

Results

Only 4754 Tabanid flies of five species were caught by traps. The results obtained showed that the percentage of *T. sufis* to the total catch was 55.9%, *Atylotus* species 41.4%, *T. taeniola* (4%), *T. biguttatus* 3.2% and *Philoiche magrettii* 0.27%. *T. sufis* started to appear in August and their number raised to reach the peak in October then it dropped gradually and disappeared completely in the dry hot season, (March to July). *Atylotus* species were present throughout the year and reached the peak in September and October. *T. taeniola* was caught in few numbers, their lowest abundance was in August and reached the peak in November and then decreased in numbers and disappeared completely in March. *T. biguttatus* was only seen during the period from September to December,

whereas *Philoiche magerttii* was only caught in September (Fig.1).

Fly round results:

Only *Tabanus biguttatus* and *T. taeniola* were captured by fly hand nets with a percentage of 81.8% to 18.2% respectively. Both males and females of *T. biguttatus* were caught with a percentage of 56% to 44% respectively. On the other hand, no females of *T. taeniola* were caught by hand nets. The highest abundance of *T. biguttatus* was in October while that of *T. taeniola* was in September (Table 1)

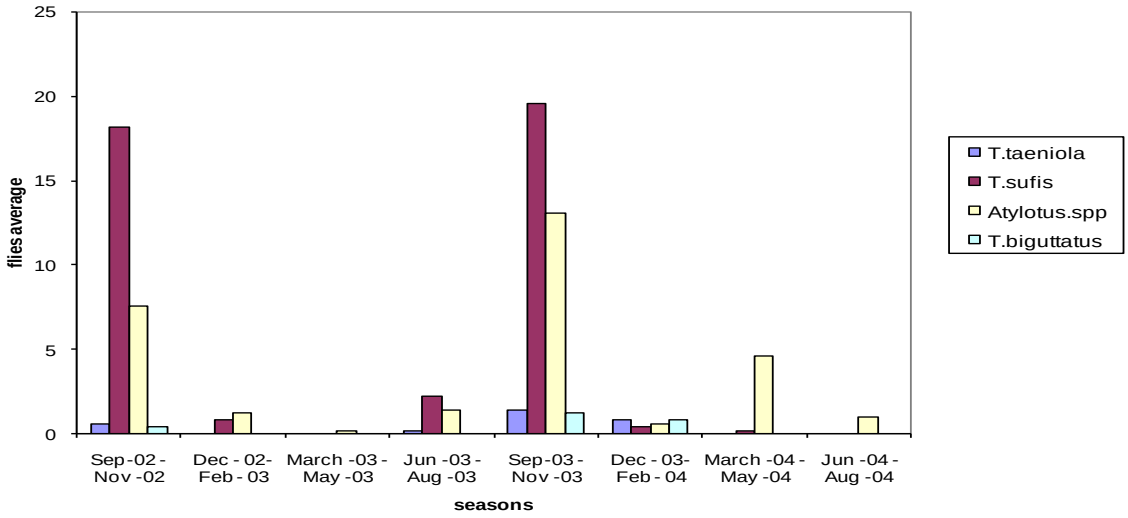

Figure (1): Tabnid flies caught by Epsilon traps in different seasons during September 2002 - August 2004 in Nyala South Darfur State

Table 1: Flies caught by fly hand nets, Nyala South Darfur State, September- October 2002

Month	*T. bigauttus*		Total	*T. taeniola*		Total
	Male	Female		Male	Female	
September 2002	7 (58%)	5 (42%)	12	5	0	5
October 2002	8 (53%)	7 (47%)	15	1	0	1
Total	15 (56%)	12 (44%)	27	6	0	6

Discussion

Five species of tabanids were caught by traps and fly hand nets in the vicinity of Nyala town. *Tabanus sufis* is the most abundant fly followed by Atylotus spp., *T. taeniola, T. biguttatus* and *Philoliche magrettii*. Abdel Karim *et al*. (1980-1989), reported the same species from Nyala area, suggesting that *Tabanus sufis* and Atylotus spp. are relatively important as mechanical vectors of animal trypanosomosis

due to their high abundance. *Atylotus agrestis* is well distributed tabanid species from Senegal to South Africa (Oldroyid, 1954) and it is considered as the most abundant Tabanids in several African countries (Goodwin, 1982). Many authors believed that it is highly efficient as natural mechanical vector (Dequesnes *et al*., 2003). In Khartoum State, Sawsan (1997) found higher *Atylotus* population, and concluded that Epsilon (F_3) trap is more efficient than Canopy in catching *Atylotus spp*., while the reverse is true for *T. sufis*. The peak abundance of *T. suifis* and *Atylotus spp.* was in October. *T. suifis* disappeared in the hot season while *Atylotus spp.* seem to be abundant throughout the year in small numbers. These observations were also reported by Abdel Karim (1980) Suliman (1992) and Abdel Salam (1996) in Nyala, Sinnar and Singa respectively. *T. biguttatus* catches were very low as they don't enter traps and are only captured by hand nets from resting sites (Abdel Karim *et al*., 1989 and A/Rahman, 1991b) reported the same findings. The findings of population peak of the most species particularly *T. suifis* and *Atylotus spp.* in rainy and early cold dry seasons suggest the risk and importance of mechanical transmission in the epidemiology of animal trypanosomosis in the region during these seasons. Control strategies may rely in deploying insecticides impregnated traps, pour on and desiccation tabanid larvae habitat (Mikuska *et al*., 2012). Further studies on the evaluation of different tabanids traps such as conventional one catching only host seeking female with liquid and sticky traps capture water seeking male and female is highly recommended to avoid bias of conventional tabanid traps.

References

A/Rahman, A.H.A.; Abdoun, A.M.O.; El-Khidir, M.E. and Hall, M.J.R. (1991b). A tsetse and trypanosomiasis survey of South Kordofan Province, Sudan. II Entomological aspects. Sudan Journal of Veterinary Research 10:13-20.

Abdel Salam, M. (1996). Incidence of trypanosomosis in sedentary cattle and seasonal abundance of biting fleis at two localities UmBenein and Abunaama Sennar State, Sudan. M.V. Sc. Thesis, University of Khartoum.

AbdelKarim, E. I. (1980). Studies on the life histories of some Tabanidae of Southern Darfur, Sudan: 1. Seasonal and daily abundance. Sudan Journal of Veterinary Science and Animal Husbandry, 21(2): 66-76.

AbdelKarim, E. I. (1991). Trypanosomiasis in trade cattle of South Darfur. Sudan. Journal of Veterinary Science and Animal Husbandry, 30(2): 61-63.

AbdelKarim, E. I. and Benjamin, G.H. (1989). Studies on Horse flies (Diptera: Tabanidae) in South Darfur Province, Sudan. Sudan Journal of Veterinary Science and Animal Husbandry, 28(1): 39-44.

Austin, E. E. (1909). Illustration of African blood-sucking flies other than mosquitoes and tsetse flies. London, Brit. Mus (Nat. History): pp221.

Balfour, A. (1906b). Biting and noxious insects other than mosquitoes. Ibid, pp. 29-50.

Desquesnes, M. and Dia, M.L. (2003). *Trypanosoma vivax*: mechanical transmission in cattle by one of the most common African Tabanids, *Atylotus agrestis*. Experimental parasitology 103: 35-4**3**.

Flint, S. (1985). A comparison of various traps for Glossina. Bull. Ent. Res. 75: 529-534.

Goodwin, J.J. (1982). In: The Tabanidae (Diptera) of Mali. Miscellaneous Publications of the Entomological Society of America, Maryland. U.S.A., p. 142.

Hall, M. J. R.; Kheir, S. M.; A/Rahman, A. H. and Noga, S. (1983). Tsetse and trypanosomosis survey of southern Darfur province, Sudan, I. Bovine trypanosomiasis. Tropical Animal Health and Production, vol., 15 pp 191-206.

Kheir, S. M.; Abdulla, H. S. and Rahman, A. H. A. (1995). Study of tsetse and Tabanids in Southeastern Sudan. The Sudan Journal of Veterinary Science and Animal Husbandry, 34:16-21.

King, H. H. (1910). Some observation on the bionomics of Tabanus par. and *Tabanus taeniola*. Bull. Ent. Res. 1:99-104.

Lewis, D.J. (1953). The Tabanidae of the Anglo-Egyptian Sudan. Bulletin of Entomological Research 44:174-216.

Mikuska, A.; Krcmar, S.; Radovic, A. and Mikuska, T. (2012). The influence of temperature ,precipitation and floods on the development of horse fly populations (Tabanidae) in the alluvial habitats of the Danube River in Croatia .Polish J. Ecol., 60:395–406.

Oldryod, M.A. (1954). The horse flies (Diptera: Tabanidae) of the Ethiopian Region. Vol. II Tabanus and related genera. London, British Museum (Natural Histroy) pp. 341.

Oldryod, M.A. (1957). The horse flies (Diptera: Tabanidae) of the Ethiopian Region. Vol. III. British Museum (Natural History) pp. 489.

Sawsan, S. M. Ahmed (1997). Ecology and biology of Tabanidae flies in Khartoum State, M.Sc. Thesis, U. of K.

Suliman, T. A. A. (1992). Trypanosomiasis in Sinnar area with some studies on related Diptera, M. .Sc. Thesis, U. of K.

Yagi, A. and Abdel Razig, M. T. (1972). The horse flies of Southern Darfur, Sudan (North of Bahr el Arab). (Diptera, Tabanidae). Rev, Zool. Bot. Afr., 85: 405-411.

Yagi, A.I. (1968). A Contribution to the knowledge of Tabanidae in the Sudan. Ph. D. Thesis, University of Khartoum, Sudan.