
I dedicate this work to my parents, sisters, brothers and nephews

Abdel Rahman, Hozifa, Abdulla and to my friends who have

heartily encouraged me throughout this work

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Synopsis

Diel and seasonal flight activities of Tabanidae and Muscidae were investigated from November 2007 to October 2008 at Hillat Kuku, Khartoum North, the Sudan. Flies were caught each hour from dawn to dusk in Nzi traps and simultaneously intercepted in flight at 1.5X1.5m electric nets. Diel changes in activity were related to simultaneous changes in relative humidity, temperature, light intensity and wind speed in the open and shade. Data were also obtained on resting sites, fat content of trapped and electrocuted tabanids and, for the first time, diurnal activity of male tabanids. The statistical package, Basica-Epistat, was used to analyze data throughout. Four species of tabanids were identified in the study area including: *Tabanus sufis* Jennike, *T. taeniola* Palisot, *T. gratus* Loew and *Atylotus agrestis* Weidmann along with many unidentified Muscinae and a few *Stomoxys* species. Nzi traps caught female tabanids exclusively while electric nets caught both males and females. The species catch composition of tabanids differed significantly between seasons, irrespective of the catching device excepting trap comparisons between the cool dry season (November to March) and the rainy season (July to October). Unlike their electrocuted counterparts, the species composition of trapped muscids (proportions of Muscinae and *Stomoxys* species in the catch) differed significantly between

seasons. No significant heterogeneity was detected in species composition of male tabanids with season. Excepting the cool dry season, trapped or electrocuted female and male tabanids as well as muscids had roughly biphasic diurnal activity peaks, one in the morning and another in the afternoon, irrespective of species or season. No nocturnal activity was denoted for muscids or any species of tabanids, although a few flies of both groups were entering the trap or impinging on the electric net at twilight, and then, during the hot dry season only (April to June). Linear correlation analyses indicated that the diurnal activity of pooled and each species of tabanids was significantly correlated to temperature, light intensity and wind speed, regardless of the catching device or where these meteorological records had been taken (shade/open). The corresponding correlations with relative humidity records were indirect and inconsistent as well. Although hourly changes in catches of muscids at the electric net or trap were directly significantly correlated to corresponding changes in relative humidity there were no similar significant direct correlations with temperature, light intensity or wind speed. Mean monthly trap catches of each species and pooled tabanids were significantly correlated to those of the electric net over the study period. Both data suggested that tabanids had bimodal flight seasons: one in March/April at the end of the cool dry season and another

one from September during the rains to November which heralds the cool dry season. Electric net mean catches of muscids were not significantly associated with those of Nzi trap thus suggesting differences in flight seasons contingent upon the catching device. While mean monthly trap catches implied an extended flight season of muscids in the cool dry period from December to March, the corresponding electric net catches did not show any clear flight season for these flies. All resting tabanids had fed recently on blood but attempts to identify the sources of such blood meals using polymerase chain reaction (PCR) at the University of Khartoum were unsuccessful, and therefore not reported. Estimates of fat content for any one species of tabanids did not differ appreciably between catching devices (trap *versus* electric net). The mean quantity (kg) of milk produced per cow per day in each month was negatively correlated with mean trap catches of muscids, though not with the mean catches of tabanids in the trap or mean catches of both groups of flies at the electric net. These results are discussed in relation to inherent in efficiencies of trap and electric net in sampling of flies and effects of blood-sucking flies associated with dairy cattle on milk production as well as recommendations for further research leading to durable control of these flies.

المستخلص

اجريت هذه الدراسة في الفترة من نوفمبر 2007 والي اكتوبر 2008 بمزراعة كلية الطب البيطري و الانتاج الحيواني بجامعة السودان للعلوم و التكنولوجيا - حلة كوكو، الخرطوم بحري- السودان لمعرفة النشاط اليومي و الموسمي لذباب السريت (Diptera: Tabanidae) و الذباب المنزلي (Diptera: Muscidae) الذي يتوالد في روث الحيوانات .

تم اصطياد الذباب في كل ساعة من ساعات اليوم من الفجر و حتي الغسق (0600-1800h) عن طريق استعمال مصيدة Nzi و اخر عن طريق مصيدة الصعق الكهربائي Electric net في وقت واحد. تم ايضا ربط التغيرات في اصطياد الذباب كل ساعة بالتغيرات المقابلة في الرطوبة النسبية، درجة الحرارة، كثافة الضوء و سرعة الرياح في مكان مكشوف وفي الظل.

تم ايضا معرفة اماكن راحة ذباب السريت و كمية الدهن الموجود في هذا ذباب المصطاد بواسطة مصيدة الصعق الكهربائي و مصيدة Nzi. ايضا درسنا النشاط اليومي و الموسمي لذكور ذباب السريت لأول مرة في السودان.

استعملت حزمة التحليل الاحصائي Basica-Epistat لتحليل البيانات في فترة الدراسة خلال هذا البحث. تم التعرف علي اربعة انواع من ذباب السريت في منطقة الدراسة وهي:

Tabanus sufis (Jennike), *Tabanus taeniola* (Palisot), *T. gratus* (Loew) and *Atylotus agrestis* (Widemann)

وبالنسبة للذباب الذي يتوالد في روث الحيوانات تم التعرف علي القليل من ذباب الاسطبل وكما لم يتم تحديد انواع الذباب الغير عاض من ضمن دون عائلة . Muscinae تصطاد مصيدة NZi اناث ذباب السريت فقط علي عكس مصيدة الصعق الكهربائي التي تصطاد الذكور والاناث معا.

انواع ذباب السريت و الذباب الذي يتوالد في روث الحيوانات المصطاد بواسطة مصيدة NZi و الصعق الكهربائي اختلفت معنويا بين فصول السنة ما عدا انواع الذباب الذي يتوالد في روث الحيوانات المصطاد بواسطة الصعق الكهربائي التي لم تختلف مكوناته بين الفصول كما لم تختلف ايضا ذكور ذباب السريت بين الفصول.

انواع ذباب السريت و الذباب الذي يتوالد في روث الحيوانات لهم قمتان من النشاط النهاري واحدة في الصباح والاخري في فترة ما بعد الظهر بغض النظر عن الانواع او الموسم. كما اشارت الدراسة الي عدم وجود نشاط ليلي لذباب السريت والذباب الذي يتوالد في روث الحيوانات ، علي الرغم من ان بعض الذباب من كلا المجموعتين كانت تاتي الي المصيدتين في الشفق خلال الموسم الحار الجاف فقط (ابريل - يونيو).

واشارت تحليلات الارتباط الخطي ان النشاط النهاري لكل انواع ذباب السريت ذات ارتباط موجب معنويا بدرجة الحرارة و كثافة

الضوء وسرعة الرياح بغض النظر عن طريقة اصطياد الذباب ورصد حالة الجو في الظل او العراء.

كان ارتباط متوسط اصطياد ذباب السرير في كل ساعة مع الرطوبة النسبية سالبا وغير متناسق علي عكس الذباب الذي يتوالد في روث الحيوانات كانت متوسطات اصطياده في كل ساعة ذات ارتباط موجب مع الرطوبة النسبية. وكذلك لم تكن هنالك ارتباطات مباشرة كبيرة مع درجة الحرارة وكثافة الضوء وسرعة الرياح بالنسبة لهذة المجموعة الاخيرة من الذباب.

ان متوسط اصطياد ذباب السرير في مصيدة Nzi ذات ارتباط معنوي موجب مع نظيره في Electric net خلال فترة الدراسة. كما اتفقت كلتا المصيدتين ان هناك موسمين للنشاط لذباب السرير الاول في مارس\ ابريل في نهاية الموسم البارد الجاف و الثاني من سبتمبر خلال موسم الامطارالي نوفمبر مع تباشير الموسم البارد الجاف.

علي عكس ذباب السرير لم يكن هنالك ارتباط بين متوسط اصطياد الذباب الذي يتوالد في روث الحيوانات في مصيدة Nzi مع المصطاد في مصيدة الصعق الكهربائي هذة النتيجة تدل علي ان طريقة اصطياد هذة الانواع من الذباب قد تحدد موسم النشاط او تعطي معلومة خاطئة عن هذا النشاط.

كل انواع ذباب السرير التي وجدت مستريحة في الاشجار قد تغذت علي وجبة دم وقد حاولنا معرفة مصدر هذا الدم باستخدام اختبار تفاعل البلمرة التسلسلي (PCR) في جامعة الخرطوم ولكن لم يكمل مجهودنا بالنجاح وبالتالي لم تورد مع النتائج في هذة الرسالة . وجد ان نسبة الدهن في كل انواع السرير لا تختلف بشكل ملحوظ بين طريقة الاصطياد (Nzi trap) والصعق الكهربائي).

وجد ان كمية الحليب المنتج (كلجم) لكل بقرة يوميا في كل شهر ترتبط عكسيا مع متوسط اصطياد الذباب الذي يتوالد في روث الحيوانات في مصيدة Nzi ، ولكن ليس مع متوسط اصطياد ذباب السرير في مصيدة Nzi او متوسط اصطياد كل من

المجموعتين من الذباب في مصيدة الصعق الكهربائي . نوقشت هذه النتائج بالنسبة لآلجة القصور الكامنة في مصيدة NZI و مصيدة الصعق الكهربائي في اخذ عينات من الذباب و اثر الذباب الماص للدم المرتبط بماشية الالبان علي انتاج الحليب، فضلا عن توصيات لآجراء مزيد من البحوث الرائدة للمكافحة المستدامة للذباب المتعلق بحيوانات الحقل.

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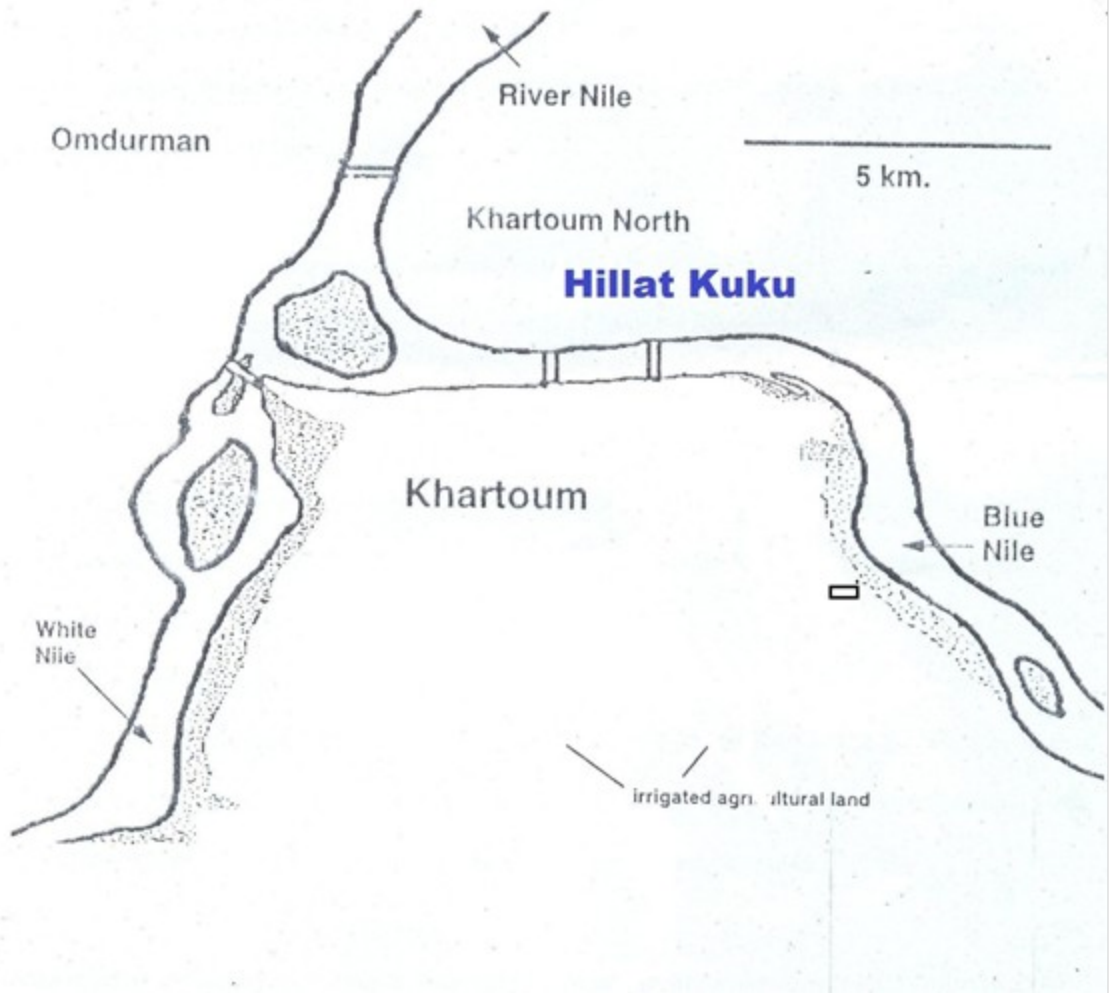


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