

Analysis of Streblid Flies on Dominican Bats

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Dominica Study Abroad

Summer 2003

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Abstract

Streblids are flies that live on bats. Streblids were sampled from selected bats species on the island of Dominica as part of an ongoing project to study the relationship of streblids and their host choice,. Some streblids seem to prefer certain bats.

Introduction

Parasites are organisms that live off of other organisms. Streblid flies are a family of flies that live on bats. Those in the family Sreblidae may be winged, wingless or have reduced wings. There are no ocelli, and the eyes are small or absent (Borror et al. 1989).

Bats, mammals of the order Chiroptera, are the only mammals capable of true flight. There are twelve species, in six families, that have been captured on the island of Dominica. This study looks at seven species, in four families, (*Pteronotus davyi*, *Sturnira lilium*, *Artibeus jamaicensis*, *Monophyllus plethodon*, *Tadarida brasiliensis*, *Molossus molossus*, and *Myotis dominicensis*) to see if the streblid flies are species specific in host choice as is often the case with parasites. This study is a continuation of the 2001 study “Analysis of Ectoparasites of Dominican Bats” (Hunter et al. 2001).

Host descriptions

Mormoopidae

Pteronotus davyi, Davy’s naked backed bat, is a brown insectivorous bat whose wings are attached along the dorsal midline giving the appearance of being hairless on the back (Evans and James 1997). The pocket formed by the wings tends to be a hiding place for streblids (pers. comm., Duane Schlitter).

Phyllostomatidae

Sturnira lilium, yellow-shouldered bat, is a small dark brown bat with reddish or straw-colored epaulettes that feeds on fruit (Evans and James 1997).

Artibeus jamaicensis, the Jamaican fruit bat, is a large brown frugivorous bat (Evans 1997).

Monophyllus plethodon, Lesser-Antillean long-tongued bat, is gray-brown with a long nose for feeding on nectar (Evans and James 1997).

Molossidae:

Tadarida brasiliensis, Brazilian (Mexican) free-tailed bat, is dark brown insectivorous bat with a wrinkled lip and its tail extends beyond the uroptagium (Evans 1997).

Molossus molossus, Pallas' mastiff bat, very similar to *Tadarida* except upper lip is smooth instead of wrinkled (Evans and James 1997).

Vespertilionidae:

Myotis dominicensis, mouse-eared bat, is a tiny dark brown bat that feeds on insects (Evans and James 1997). Its uroptagium is V-shaped and ends at the tip of the tail.

Ectoparasite descriptions

Megistopoda proxima complex have hind legs twice as long as their front legs, reduced or absent wings, and no ctenidium.

Aspidoptera phyllostomatis has no ctenidium, legs of approximately equal length and three rows setae on their mesepisternum of differing size.

Trichobius intermedius is the only species to have fully developed wings.

Materials and Methods

Mist nets were used to capture bats at most locations. *Monophyllus* and *Pteronotus* were caught using a hand net. Mist nets were set up using bamboo poles with stones and stakes for support. After removing the bats from the nets, parasites were removed from the bat before additional data were taken by other groups and released. Streblids were identified by dissecting microscope and *Key to genera and species of Streblidae known from Dominica* (Warriner and Woolley 2001).

Nets were set up in five locations, four around Springfield Plantation and one in Morne Trois Pitons National Park. The four locations around Springfield were at the Check Hall River, the Dining Patio, the Bee House, and a fig tree. The net at the Check

Hall River was set up across the pool at the base of the trail, a six meter net was used. On the Dining Patio, a twelve meter net set up across the west side. The pond in front of the Bee House had a twelve meter net on the west side and a six meter net on the north. A fig tree that is on a trail west of the Archbold's house was netted using two six meter nets. Two mist nets were used in the stream beds crossing the trail to Stinking Hole in Morne Trois Pitons National Park, and hand nets were used at Stinking Hole during the emergence.

Results

Bats were collected over three weeks. Fifty-two bats were collected. Streblids were extracted from seven of them. *Molossus molossus* made up nearly 40% of the total bats collected and none were found with streblids. Streblids were collected from *Pteronotus davyi*, *Sturnira lilium*, *Artibeus jamaicensis*, *Tadarida brasiliensis*, *Monophyllus plethodon*, and *Myotis dominicensis*. Table 1 shows locations and species of bats and the streblids that were collected from them. Also included in Table 1 is the date of collection.

Discussion

Streblids proved to be very adept at avoiding capture. Due to the small sample size in this study, it is difficult to draw conclusions. Hunter et al. (2001) found a correlation between species of bat and species of streblid. When the present data are included the correlation is reduced. *Sturnira lilium* was found to carry *Megistopoda proxima* complex, as before. The one difference was found with *M. plethodon*. It was found to carry *A. phyllostomatis* not recorded on the previous study (Hunter et al. 2001).

In future studies more than one person needs to be responsible for collecting flies. Many bats were not checked for flies during busy times. Collecting flies was also hindered by others trying to get their data from the bat first.

References

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- Hunter, D., R. Reinhardt, D. Scott, and A. Vilaythong. 2001 *Analysis of Ectoparasites of Dominican Bats*. Texas A&M University, Study Abroad Dominica
- Warriner, Laurie, and Jim Woolley. 2001. *Key to Genera and Species of Streblidae Known From Dominica*. Texas A&M University Publishing.

Tables

Table 1. Strelid found listed by species, date and locality

Species	Streblids	Date	Locality	Notes
<i>Artibeus jamaicensis</i>	<i>Megistopoda Proxima complex</i>	6/1/03	Bee House North	
<i>Artibeus jamaicensis</i>	<i>Aspidoptera phyllostomatis</i>	5/28/03	2nd stream on trail to Stinking hole	Collected by Noelle Sample vial also contained mites and a wasp
<i>Molossus molossus</i>	none	5/22/2003 5/25/2003 6/3/03	Check Hall River	
<i>Monophyllus plethodon</i>	<i>Aspidoptera phyllostomatis</i>	5/28/03	Stinking Hole	Collected by Noelle
<i>Myotis dominicensis</i>	<i>Trichobius intermedius</i>	5/22/03	Check Hall River	
<i>Pteronotus davyi</i>	<i>Trichobius intermedius</i>	6/2/03	Champagne Beach Cave	
<i>Sturnira liliium</i>	<i>Megistopoda Proxima complex</i>	5/23/03	Bee House North	
<i>Sturnira liliium</i>	<i>Megistopoda Proxima complex</i>	5/27/03	Bee House North	