Observations of Ectoparasites on Bats at Different Dominican Locations

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Abstract:

The bat fauna on Dominica is highly diverse; the insects that parasitize them are wide-spread. This study tested three separate collecting sites and five genera of bat. The experiment showed parasitism present in collected species, and rampant infestation in the Stinking Hole, of which nearly every specimen was parasitized. The results remain inconclusive due to a lack of sampled material and sample times.

Introduction:

The bats of Dominica are known to carry ectoparasites, predominantly flies in the family Streblidae. There are several genera of bats that are of interest in Dominica, *Ardops* and *Myotis* have not been captured during the Dominica study abroad course in a decade on Dominica, and in this time the activity of ectoparasites on these bats have been relatively unmonitored. A previous study by Patterson et al. in 2007 on bats and their relationship with streblids has shown that streblids with functioning wings mean that there is much intraspecific and interspecific competition for bat hosts. In this study ectoparasites were collected off of bats from three different locations: Emerald Pool in Morne Trois Pitons National Park, Stinking Hole on the trail to Middleham Falls in Morne Trois Pitons National Park and the Checkhall River next to the Archbold Tropical Research and Education Center in Springfield. The goal of this study was to find what streblids are found on different parts of the island, of particular interest were streblids on the bats mentioned above.

Materials and Methods:

Ectoparasites of bats were collected while attending catch and release sessions with another student group studying bats. Both soft tip and fine tip Bioquip forceps were used to collect live ectoparasites from the bats. Bats were handled for ectoparasite search by members of the group studying the bats. All ectoparasite specimens were stored in a vial of 95% ethanol during each session for preservation and

later identification with dissecting microscopes. Streblid specimens were identified with the "Key to genera and species of Streblidae known from Dominica" (Warriner and Woolley, 2001) and mite specimens were identified with the "Proceedings of the Entomological Society of Washington, Volume 71" (1969).

Results:

On June third, two streblid flies from the genus *Megistopoda* and one streblid fly from the genus *Metelasmus* were collected off of *Artibeus jamaicensis* near the Checkhall River at the Archbold Tropical Research and Education Center. One streblid fly from the genus *Trichobius* and one from the genus *Megistopoda* were collected off of *Myotis dominicensis* on June sixth at Emerald Pool in Morne Trois Pitons National Park. Also found were two wing mites in the family Spinturnicidae in the genus *Meristaspis*.

Lastly, thirty-two streblid flies from the genus *Trichobius* were collected off of *Brachyphylla cavernarium*, *Monophyllus plethodon* and *Natalus stramineus* at the Stinking Hole on the trail to Middleham Falls in Morne Trois Pitons National Park. A total of 37 streblid flies of 3 different genera were collected off of 5 different species of bat in three geographic locations.

Discussion:

This experiment had a lacking amount of data so any conclusive results cannot be derived from the data set. The original project failed due to a lack of samples, and an inability to obtain more ectoparasites. The remaining data that had any potential to show actual results was bat fly data. For future studies, it is recommended to attempt to sample a wider area than sampled in this paper. It is also recommended to sample everything possible, there was a heavy lack of ectoparasites on any collected specimens from

the field. Another area of focus could be on the *Trichobius* genus of Streblidae being found the three species of bats across two different families that all roosted in the Stinking Hole. More studies could be done on the *Trichobius* genus in the Stinking Hole through a prevalence study. Mammals seemed by far to be the most heavily parasitized, but there was no possible way to sample mammals without stealing the local cat's mice. It is recommended to attempt to actively survey for small mammals, and remove ectoparasites.

The amount of data collected could not support nor deny any of the findings found in Patterson et. al's (2007) paper. Competition amongst streblid species could not be measured due a lack of diverse samples. The effect of roosting habitat could not be referenced also due to a lack of data.

Two mites were found belonging to the family Spinturnicidae and genus *Meristapsis*, which are known bat wing parasites. These mites have not been identified in previous Dominica Study Abroad projects. Further projects could potentially look at these wing mites and other mites in greater detail.

The original concept of the study to sample different areas of the island cannot be conclusive due to an insufficient sample of streblid flies for the first two samplings. There also wasn't enough people to collect streblids in the last sampling of bats at the Stinking Hole. It is possible to note that the only area that did not collect *Trichobius* sp. was the sample at Checkhall River, this could potentially mean that *Trichobius* sp. does not parasitize bats in this area, but this statement cannot be confirmed once again to lack of sample size.

References

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