

SPECIES DIVERSITY OF BATS AT SPRINGFIELD ESTATE

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Dominica Study Abroad Research

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Introduction

There are twelve bat species that have been observed on Dominica, two of which are endemic to the Lesser Antilles. Bats are essential for insect control and pollination on Dominica. These nocturnal mammals rely heavily on echolocation while they forage. The purpose of this project was to determine species diversity of bats in Springfield. Hopefully this project will be a useful guide for future bat research projects. For this reason, not only was species diversity recorded, but net placement, time of capture, and general weather conditions were also noted.

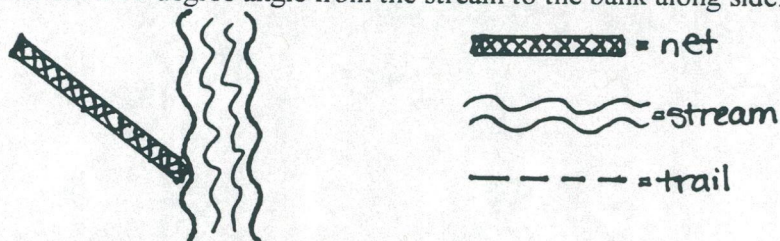
Materials and Methods

To capture the bats, mist nets 6 meters long were set up. Bamboo was cut with a machete to about 9 feet long to make poles. Bamboo poles were chosen that were about 2 inches in diameter so the mist net could easily slip over. A post hole digger or shovel was used to dig holes about 1 foot deep to place poles. Rope and stakes were used to secure the poles.

Six nets were placed at different locations. The locations were the stream, bee house, dining area, streamhouse, and two at Mt. Joy. The nets were placed during the day, and a different net was dropped each night. Nets were dropped around dusk (between 6 and 7 pm) except for the dining net which could not be dropped until after dinner (around 9 pm). When a net was not in use it was folded on itself and held together with close pins. Species, sex, time of capture, parasite collection, and tissue samples were recorded or collected for each bat. Bats were removed from the net and released once identified and processed. If possible, each location was done twice. The following are descriptions of net placement at different locations.

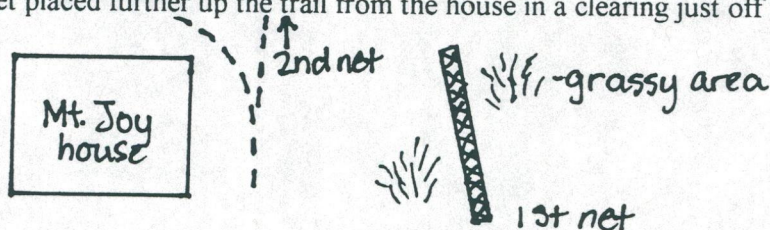
1. Stream

-Net placed at about a 45 degree angle from the stream to the bank along side.



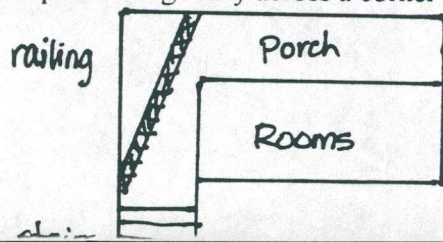
2. Mt. Joy

-First net placed parallel to remains of Mt. Joy house in the grass.
-Second net placed further up the trail from the house in a clearing just off the trail.



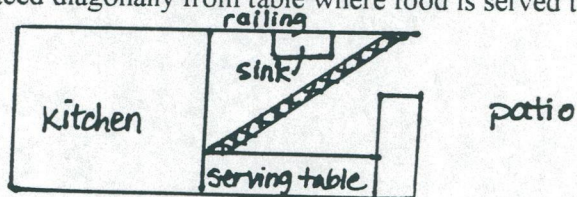
3. Stream house

-Net placed diagonally across a corner of the second floor balcony.



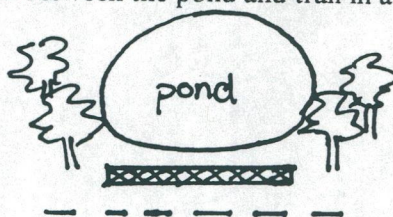
4. Dining area

-Net placed diagonally from table where food is served to railing.



5. Bee house

-Net placed between the pond and trail in a clearing between trees.



Results

Three species of bats were caught in the nets that were placed: Artibeus jamaicensis, Molossus molossus, and Sturnira lilium. A. jamaicensis is a large brown fruit eating bat, and is one of several leaf nosed bats in Dominica. M. molossus is a very small, reddish-brown free tail bat that has very velvety fur and eats insects. S. lilium is a small, dark brown fruit eating bat with reddish shoulders and a noseleaf. Bats were only caught at three of the locations: bee house, stream, and stream house. The following is a sample data sheet that was used to record bat information, net location, time of net use, and weather:

Date:

Location:

Weather:

Net drop time:

Net up time:

No	Species	Sex	Time of Capture	Processing

The following data represents the species and frequency at each location and the total number of bats caught at each location.

Location	<u>A. jamaicensis</u>	<u>M. molossus</u>	<u>S. lilium</u>	Total
Mt. Joy	0	0	0	0
Bee House	1	0	3	4
Stream	7	2	1	10
Stream House	0	30	0	30
Dining Area	0	0	0	0

See Figure 1 also.

Percentages of species at each location was 25% A. jamaicensis and 75% S. lilium at the bee house, 70% A. jamaicensis, 10% S. lilium, and 20% M. molossus at the stream, and 100% M. molossus at the stream house. See Figure 2.

Discussion

Six nets were set up in 5 different areas of the Springfield estate. Bats were caught at the stream, stream house, and bee house. No bats were caught at Mt. Joy or the dining area.

A total of 44 bats were caught. Three species of bats caught were Artibeus jamaicensis, Molossus molossus, and Sturnira lilium.

At the stream house only Molossus molossus were caught. This is most likely because the Molossus are roosting in the roof of the stream house. The bats caught were either leaving or returning to the roost in the roof. This observation became the center of two classmates' bat project. It was also interesting that of the 30 molossus caught, only one was male, and six of the females were pregnant on palpation. This suggests that the molossus may live in harem groups or the colony might be a nursing colony. At the bee house S. lilium was the predominant species caught. The net was placed in an open area by the pond to catch bats in their flight path to drink water. The stream net had the most species diversity of bats. Although A. jamaicensis was the clear majority, some M. molossus and S. lilium were also caught. The stream was chosen as a location because it was a big clearing near running water which bats could fly through to get water.

Although I observed bats in the dining area after dinner, all three attempts at netting were unsuccessful. I observed bats feed on the insects attracted to the light in the dining area, so the net was put in the dining area with the same light on. It was questionable whether or not the bats could see the net with the light on, but if the light was off then there would be no bugs for bats to feed on. This dilemma could be why no bats were caught. Another problem was that it rained on and off everytime we netted in the dining area. I observed that when it rained at the bee house one night, bats were caught before the rain started, but no bats were caught after the rain started. The rain could be another reason why no bats were caught at the dining area. No bats were caught at Mt. Joy in either net. Net placement could be a possible reason. Placing the net(s) at different angles in the clearings at Mt. Joy might be more successful. Also, the night at Mt. Joy that netting was attempted, the sky was very clear. Bats usually fly less in the clearings and more in the trees to avoid predators in these conditions.

Since bats are nocturnal, the nets were dropped at dusk, presumably just before bats leave the roost. Bats were caught as early as 6:45 pm and as late as 10:15 pm. No nets were left down later than 11:43, so no data was collected for this project after that time.

Hopefully this information will give future bat projects in Dominica a place to start as far as location and species diversity so that more extensive research can be attempted.

Works Cited

- Carvan, Paul. 1991. Bat Project Dominica.
- Evans, Peter and Arlington, James. 1997. Dominica Nature Island of the Caribbean: Wildlife Checklists. Vol. 2, Roseau. 44-47.
- Kricher, John C. 1989. Neotropical Companion. New Jersey: Princeton University Press. 131-141.

Figure 1 SPECIES AND FREQUENCY AT EACH LOCATION

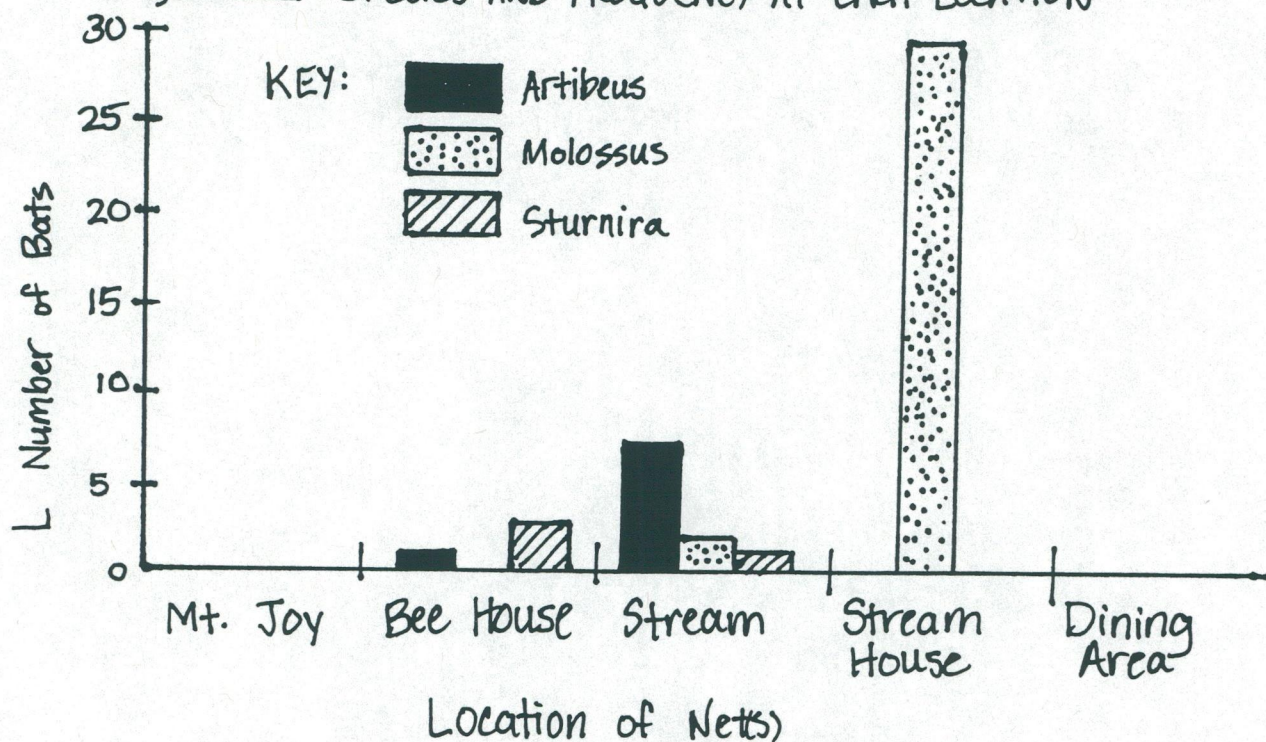
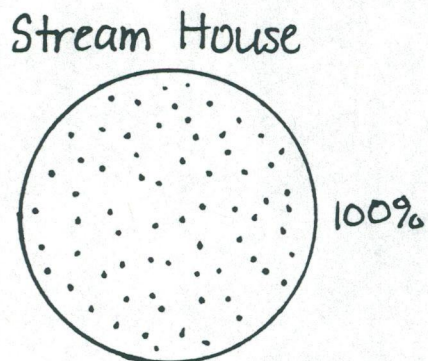
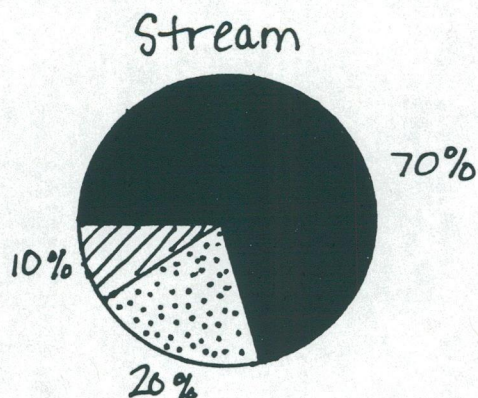
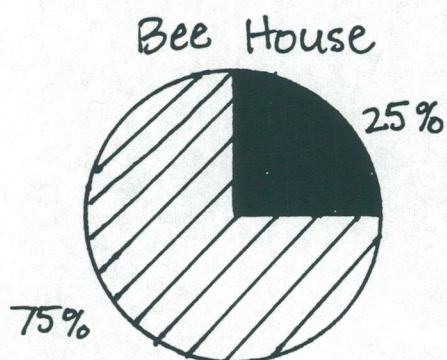


Figure 2 PERCENTAGES OF SPECIES AT EACH LOCATION



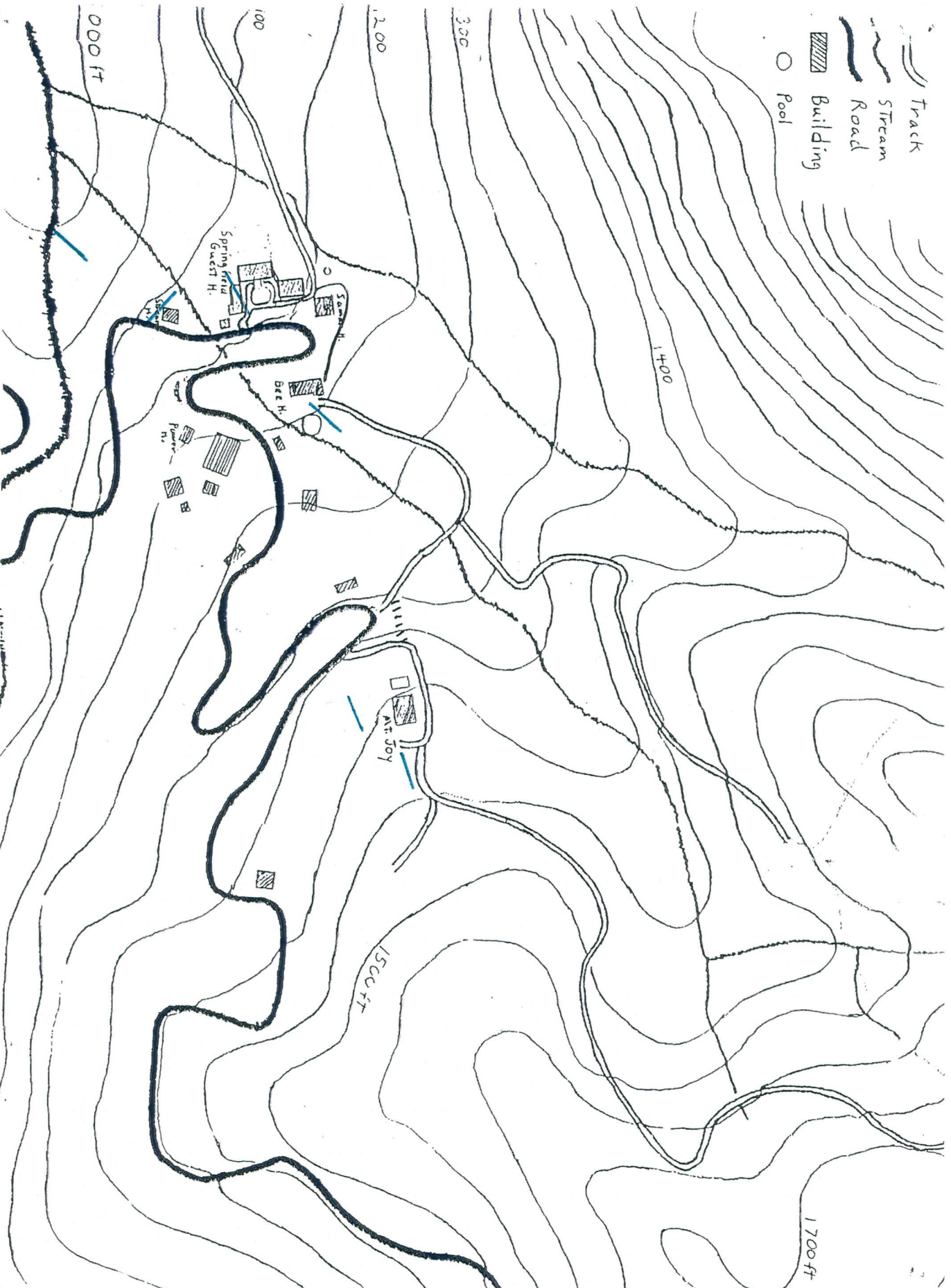
Use same key as above (in Figure 1).

Location of Mist Nets

27/09 '97 13:02 0809 449 2160 A.T.R.C./S.E.L. 001

— = net

- Track
- Stream
- Road
- Building
- Pool



SPRINGFIELD ESTATE