

A Select Survey of Roosting Sites and Flight Corridors of Bats in Dominica,
West Indies

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Abstract:

Several roosting sites and flight corridors were surveyed over a three-week period in Dominica. Five out of 12 species known from Dominica were captured at five locations. No bats were captured at two of the locations surveyed.

Introduction:

The island of Dominica is located in the West Indies and is home to 12 species of bats, none of which are endemic to Dominica (Evans and James, 1997). Six of these species are insectivorous, four are frugivorous, one is nectivorous and one is piscivorous. The six insectivorous species include Davy's Naked-Backed Bat (*Pteronotus davyi*), the Brazilian Free-Tailed Bat (*Tadarida brasiliensis*), the Pallas' Mastiff Bat (*Molossus molossus*), the Funnel-Eared Bat (*Natalus stramineus*), the Big Brown Bat (*Eptesicus fuscus*) and the Dominican Myotis (*Myotis dominicensis*). The four frugivorous bats include the Jamaican Fruit-Eating Bat (*Artibeus jamaicensis*), the Yellow-Shouldered Bat (*Sturnira lilium*), the Antillean Tree Bat (*Ardops nichollsi*) and the Antillean Fruit-Eating Bat (*Brachyphylla cavernarum*). The nectivorous bat is the Antillean Long-Tongued Bat (*Monophyllus plethodon*) and the piscivorous bat is the Big Fishing Bat (*Noctilio leporinus*) (Gannon et al., 2005).

Several previous studies have been done on bats of Dominica. The Checkhall River has been a very popular spot for bat surveys as it is a water source for many bats. Hunter (2001) caught *M. molossus*, *A. jamaicensis*, *S. lilium* and *T. brasiliensis*. Adams et al. (2003) collected *M. molossus* and *S. lilium* and Sweny (2003) collected *M. molossus* and *M. dominicensis*. Taylor (2005) netted *A. jamaicensis*, *A. nichollsi*, *S. lilium*, *T. brasiliensis*, *M. plethodon* and *M. molossus* and Smith (2005) caught *M. molossus*, *T. brasiliensis*, *S. lilium*, *A. jamaicensis*, *A. nichollsi* and *M. plethodon*. By far, the most common bat caught at the Check Hall River was *M. molossus*. Another popular site for mist netting has been the pond at the Beehouse. Hunter (2001) caught *T. brasiliensis*, *P. davyi*, *A. jamaicensis*, *S. lilium*, and *M. plethodon* and Adams et al. (2003) caught *A. jamaicensis* and *S. lilium*. Franzen et al. (2003) caught *S. lilium*, *T. brasiliensis* and *A. jamaicensis* and Sweny (2003) caught *A. jamaicensis* and *S. lilium*. Smith (2005) attempted mist netting at the Beehouse pond, but was unsuccessful. Bats have often been seen flying over the back porch at ATREC and various attempts have been made to net at this location (Franzen, 2003; Smith, 2005), but only Hunter (2001) was successful and caught a *P. davyi*.

There are many known roosting sites on the island that have been studied. Stinking Hole in Morne Trois Pitons National Park is a lava tube that is used as a roosting site by various species of bats and mist netting has been attempted by various groups. Hunter (2001) caught *M. plethodon*, *N. stramineus* and *E. fuscus* and Adams et al. (2003) found *M. plethodon*. Crocker (2004) caught *M. plethodon* and *B. cavernarum* using a harp trap. Franzem et al. (2003) and Sweny (2003) both caught only *M. plethodon*. Another roosting site is the cave near Rodney's Rock. Hunter (2001) caught *A. jamaicensis*, *T. brasiliensis*, and *M. molossus* at this site. An additional cave roosting site can be found at Champagne Beach. Franzen et al. (2003) captured *P. davyi* at this location. Massacre

cave is another site where bats have been captured. Crocker et al. (2004) captured *T. brasiliensis* at this location. Bats have also been seen roosting at Fort Shirley in Cabrits National Park. Hunter (2001) and Swick and Bennett (2001) captured *T. brasiliensis*. Kirk (2000) and Wade and Bradshaw (2000) captured *A. jamaicensis* and *T. brasiliensis* and Wade (2000) captured *T. brasiliensis*.

Another location that has been attempted is the fig tree on ATREC (Franzen et al., 2003) but no attempts have been successful.

Materials and Methods:

Bats were caught at 5 locations on a total of 9 nights. Avian mist nets were set up at Stinking Hole (1 night), the pond at Archbold Tropical Research and Education Center (ATREC) (2 nights), the Checkhall River (2 nights), the back porch at ATREC (2 nights) and the Streamhouse at ATREC (2 nights). Bats were also netted at the Streamhouse at ATREC with hand nets on 1 night. These locations were chosen because they were known roosting sites or flight corridors, they were easily accessible and they were poorly lit. Observations were made at the fig tree on ATREC on 2 nights and it was determined that mist netting in that location would not be useful.

Bat observation and netting was done on a total of 9 nights. Bamboo poles were used to set up the mist nets. The poles were either anchored down with ropes or rocks depending on the location. A 10 meter net was set up at the Check Hall River on May 25 and May 30. Hand netting was done at the Streamhouse on May 28 and mist-netting was done by the other bat group with a 10 meter net on June 4 and June 6. On June 3 a 6 meter net was used at Stinking Hole. In this case, poles were not used because of the high density of bats emerging from the hole. The net was held up every 30 minutes by students until a bat was netted and then it was quickly taken down. On June 4 and June 8 a 10 meter net was set up at the pond at ATREC. The net was tied to the gate at the front of the station and a nearby pole. Finally, on June 6 a 10 meter mist net was set up on the back porch at ATREC and on June 8 a 6 meter mist net was set up in the same location. Once a bat was caught in the net, it was extracted as quickly as possible to avoid distress. Gloves were worn to avoid getting bitten by the bats. If the bat could not be removed in a timely manner or was hopelessly entangled, the net was strategically cut. Head lamps were utilized to free up any available hands to extract the bats.

Observations and echolocation recordings were done at the fig tree using a Pettersson Ultrasound Detector D 100 and a Marantz tape recorder model number PMD220 on May 27 and observations were done on June 1.

Results:

Bats representing 5 out of the 12 bat species were captured on the 9 nights netting was performed for a total of 32 bats. See Table 1 for species, dates and localities of capture. In table, M = male, F = female, U = unknown, N/A = not applicable because bats were not captured.

Table 1: Data Collection

Species	Sex	Location	Date	Time
Molossus molossus	M	Checkhall River	25-May	6:45-7:45
Molossus molossus	F	Checkhall River	25-May	6:45-7:45
Molossus molossus	U	Checkhall River	25-May	6:45-7:45
Molossus molossus	U	Checkhall River	25-May	6:45-7:45
Artibeus jamaicensis	U	Checkhall River	25-May	6:45-7:45
Artibeus jamaicensis	U	Checkhall River	25-May	6:45-7:45
Artibeus jamaicensis	U	Checkhall River	25-May	6:45-7:45
Artibeus jamaicensis	U	Checkhall River	25-May	6:45-7:45
Molossus molossus	M	Streamhouse at ATREC	28-May	6:30-7:00
Unknown	U	Checkhall River	30-May	6:54
Molossus molossus	M	Checkhall River	30-May	6:55
Artibeus jamaicensis	M	Checkhall River	30-May	6:56
Molossus molossus	F	Checkhall River	30-May	7:04
Artibeus jamaicensis	M	Checkhall River	30-May	7:09
Artibeus jamaicensis	M	Checkhall River	30-May	7:15
Molossus molossus	F	Checkhall River	30-May	7:20
Molossus molossus	F	Checkhall River	30-May	7:25
Molossus molossus	F	Checkhall River	30-May	7:25
Artibeus jamaicensis	M	Checkhall River	30-May	7:25
Monophyllus plethodon	U	Stinking Hole	3-Jun	6:26
Monophyllus plethodon	U	Stinking Hole	3-Jun	6:26
Monophyllus plethodon	M	Stinking Hole	3-Jun	6:31
Monophyllus plethodon	F	Stinking Hole	3-Jun	6:32

Monophyllus plethodon	F	Stinking Hole	3-Jun	6:35
Monophyllus plethodon	U	Stinking Hole	3-Jun	6:57
Monophyllus plethodon	M	Stinking Hole	3-Jun	7:16
Brachyphylla cavernarum	M	Stinking Hole	3-Jun	7:54
Brachyphylla cavernarum	M	Stinking Hole	3-Jun	8:27
Brachyphylla cavernarum	M	Stinking Hole	3-Jun	9:08
Molossus molossus	F	Streamhouse at ATREC	4-Jun	6:29
Molossus molossus	F	Streamhouse at ATREC	4-Jun	7:40
Tadarida brasiliensis	M	Pond at ATREC	4-Jun	7:55
N/A	N/A	ATREC back porch	6-Jun	6:30 - 9:30
N/A	N/A	Pond at ATREC	8-Jun	6:30 - 9:30
N/A	N/A	ATREC back porch	8-Jun	6:30 - 9:30

Discussion:

We successfully captured bats at Checkhall River and the pond at ATREC because these sites have water readily available to thirsty bats. We also successfully captured bats at the Streamhouse and Stinking Hole because these sites provide roosts for the bats. The corrugated roof of the Streamhouse offers an ideal habitat for *M. molossus*. The lava tube, Stinking Hole, is also a good location for bats because it provides shelter and protection from the elements. Because of everything these sites offered we were able to successfully capture enough specimens for our research. However, we did not capture bats at all of the locations that we set mist nets up at or checked out.

First of all, there is a fig tree on the Massacre Trail on the ATREC property that has many openings within its buttresses, and which appears to provide a suitable roosting site. We listened for bats using the Pettersson echolocator at the fig tree, and we heard some echolocation calls with this equipment. However, we did not see any bats emerge from around the tree. We returned several nights later and watched for bats emerging for several hours, but we only saw one bat and we were not positive that it emerged from the tree. We decided not to set up a mist net near the tree because we could not determine if bats would actually emerge from the tree, or if they roosted there at all.

We also checked for bats at Fort Shirley in Cabrits National Park because we had heard of successful captures at that site and of sightings earlier that week. However, we

checked all of the buildings we had access to and found no roosting bats. A possible reason for not finding bats was that there was heavy reconstruction underway at one of the nearby buildings and the noise may have scared the bats from their roost.

Finally, we had read that successful netting has occurred at the pond near the Bee House of the ATREC facility, but when we went to scope out the location, we realized that the pond was probably too overgrown with vegetation and that we would not successfully capture any bats.

We had no success capturing bats on the porch of the ATREC facility. We saw bats flying through the area, but they avoided our nets. A possible reason for this is because the lights in the nearby building were illuminating the net enough for the bats to see it. Another potential reason is that this location is nearby the dinner room and the nets were up during dinner time. The sound of the people inside eating dinner may have scared the bats from coming too close.

On one of the nights that we set up a net near the ATREC pond we didn't catch any bats. A likely reason for this is because the pond is near a laboratory and the laboratory's lights may have illuminated the net, making it easier for the bats to detect. We may have been able to capture more species at all of the locations if we had been more experienced with the nets. None of us had used mist nets before this project, therefore we were still learning how to set them up. The nets could have been more taut on some of the nights that we trapped. We also had a bit of difficulty trying to get the bags in the net to be the right size. Additionally, we could have been more efficient in extracting some of the bats from the net, but again, we had no experience in netting before. Therefore, we had to cut the net around the bat on several occasions. This meant that later we had to mend the net and we had some trouble properly fixing the holes. Some of the bats may have been able to fly through these holes.

We noticed that Hunter (2001) captured *M. plethodon*, *N. stramineus* and *E. fuscus* while we caught *M. plethodon* and *B. cavernarum* at Stinking Hole. There are several explanations for this discrepancy. First of all, several years have passed since Hunter's project was conducted. It is entirely possible that the community composition in the cave has changed within those years. It is important to note that we saw different sizes of bats emerge at different times. We may have caught different species because we periodically held the net up at different times on the night we netted, than when Hunter did.

We didn't capture all of the 12 species of bats on the island because we did not go to all of the different habitats that the bats could be found in. This was mainly due to a limited number of nights to trap bats and the fact that only the professors had Dominican driver's licenses. The professors also had to help 12 other students with their projects, so they would not have been able to drive us to all of the potential locations that the bats could be found at.

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