A Photographic Field Guide to the Sphingidae at the Archbold Tropical Research and Education Centre

Caitlin Grant

Texas A&M University

Dr. James Woolley

Dr. Tom Lacher

Dominica Study Abroad 2011

Abstract

Thirty-three moths from ten species of the family Sphingidae were collected. A representative of each species was photographed. Specimens were added to the collections at Texas A&M University and the Archbold Tropical Research and Education Centre.

Introduction

I had originally come to Dominica hoping to study all Lepidoptera on the island. After collecting several species, I quickly became fascinated with Sphinx moths and decided to focus my study on them.

Sphinx moths belong to the order Lepidoptera and the family Sphingidae. Many of these moths are large-bodied and can be distinguished from other Lepidoptera by their long, slender forewings and small rounded hind wings. Many have been recorded with wingspans of 160 millimeters or more. They are very strong fliers and have earned the nickname “hummingbird moths” due to their size and flight patterns (Triplehorn, 2005).

Materials and Methods

The majority of the Sphingids seemed to appear around the station on their own. We had a light trap set up with a black light to capture other insects and some of the moths were found on the sheet. Many were even found on the sheet in the morning long after the light had been turned off. I collected the Sphingids by taking a Ziplock bag and holding it over the specimen until it flew into the bag. If I couldn’t reach the moth, I would use an aerial net to capture it and transfer it to a Ziplock. I let all of the air out of the bags to minimize wing damage and scale loss on the

specimens. Then I took a syringe and injected ethyl alcohol into the thorax of the moth, ensuring a quick and relatively humane death. The moths were promptly removed from the bags and placed onto wooden adjustable spreading boards. The wings were spread at a greater than 90 degree angle to the body so guarantee that the wings were fully spread which greatly aids identification. Strips of computer paper were placed over the spread wings and held in place with insect pins to keep the wings flat as they dried. I had written the date the specimen was collected as well as where it was found on one of the strips of paper to keep the moths organized. Once the spreading boards were full, they were placed inside a wooden cabinet in which we placed a 40 watt light bulb. A bag of moth balls was placed inside the cabinet to keep ants from eating the specimens. The moths remained inside the cabinet for at least 48 hours so that they were completely dry. After the specimens dried, they were placed into Schmidt boxes with temporary labels until the final labels were produced. The moths were then identified using *A Field Guide to the Moths of Eastern North America* and the *Catalog of the Lepidoptera of the French Antilles* and photos were taken of the highest quality specimen from each species.

Results

Date Captured	5/26	5/27	5/28	5/29	5/30	5/31	6/1	6/2	6/3	6/4	6/5	
Species												Total
Proambulyx strigilis	-	-	-	-	-	1	-	1	-	-	1	3
Agrius cingulatus	-	1	-	-	1	-	-	-	-	-	-	2
Coctyius duponchel	-	-	-	-	-	1	-	-	-	1	-	2
Manduca rustica	2	1	1	-	-	-	-	-	-	-	-	4
Enyo lugubris	-	-	-	-	-	-	-	1	-	-	-	1
Eumorpha lubruscae	-	-	-	-	-	1	-	-	-	-	-	1

Eumorpha obliqua	-	-	-	-	1	-	-	-	-	-	-	1
Eumorpha vitis	-	1	1	2	1	1	1	-	-	3	-	10
Pachylia ficus	-	1	-	1	-	1	-	-	-	-	-	3
Xylophanes chiron	-	1	-	-	1	1	-	-	1	1	1	6
Total	2	5	2	3	4	6	1	2	1	5	2	33

Sphingids were collected between May 26th and June 5th. *Eumorpha vitis* appears to be the most common species on the station. These Sphingids appeared to be unaffected by the weather conditions as there was usually at least one captured per night. The days following even a brief rain shower provided the most bountiful collection. For instance, it rained on May 29th, and in the two days following, 10 species were collected.

Subfamily: Smerinthinae

Proambulyx strigilis

This moth is most easily recognized by its bright orange hind wings with some brown banding. Forewings are brown with black spots near the body.

Subfamily: Sphinginae

Agrius cingulatus

Pink-Spotted Hawk Moth

The Pink-Spotted Hawk Moth has five to six pairs of pink spots on the abdomen. This moth also sports pink hind wings with black banding.

Subfamily: Sphinginae

Coctyius duponchel

This moth is similar in appearance to *Coctyius antaeus*, and can be differentiated by examining the hind wing. On *Conctyius duponchel*, the orange coloration at the wing base is not divided by black. Also, the clear area on the hind wing does not extend as far as on the *Coctyius antaeus*.

Subfamily: Sphinginae

Manduca rustica

Rustic Sphinx

The Rustic Sphinx features three pairs of orange spots along the abdomen. Fore and hind wings are white at the base and brown with a zigzagging pattern. They are similar in appearance to the Carolina Sphinx (*Manduca sexta*) and the Five-Spotted Hawk Moth (*Manduca quinquemaculata*) and can be differentiated by the number of spots on the abdomen as well as the coloration patterns on the forewings.

Subfamily: Macroglossinae

Enyo lugubris

Mournful Sphinx

The Mournful Sphinx is the smallest Sphingid observed in this study. It is identified by its brown and black coloration and its finlike extension at the end of the abdomen.

Subfamily: Macroglossinae

Eumorpha lubruscae

Gaudy Sphinx

The Gaudy Sphinx features an emerald green coloration on the forewings and abdomen. Hind wings have eyespots formed from patches of blue, orange, and red patterns.

Subfamily: Macroglossinae

Eumorpha obliqua

This moth is identified by its tan coloration with black accents along the edge of the forewing.

The hind wing is also tan with a black patch near the base.

Subfamily: Macroglossinae

Eumorpha vitis

Vine Sphinx

The Vine Sphinx features green and red coloration on its hind wings. The hind wings are brown on the edges, which differentiates this species from the Banded Sphinx (*Eumorpha fasciata*), which has red coloration on the edges of the hind wings.

Subfamily: Macroglossinae

Pachylia ficus

This moth is identified by its brown coloration with a lighter brown patch at the upper corner of the forewing. The hind wings are a lighter brown with black banding.

Subfamily: Macroglossinae

Xylophanes Chiron

This moth is identified by its bright green coloration on the forewings and body. The hind wings are black with yellow spots. This species is similar to the Pluto Moth (*Xylophanes pluto*) and can be differentiated by the pattern on the hind wings.

Discussion

Through this study, we have increased our knowledge regarding the diversity of species of Sphingidae inhabiting the Archbold Tropical Research and Education Centre. This study can be possibly be improved by trying different types of light at the light trap. After I had stopped

collecting, there was a mercury vapor lamp positioned at the light sheet. Within about an hour, a *Xylophanes chiron*, *Eumorpha vitis*, and *Enyo lugubris* were sighted on the sheet. A representative of each species will be added to the collection at Texas A&M University. The other specimens will be added to the collection here at the research centre.

Acknowledgements

I would like to thank Dr. Woolley and Dr. Lacher for giving me the opportunity to conduct this study and for always being positive and encouraging. Also, I would like to thank Dr. Woolley for his help in photographing these beautiful animals and all of my fellow students for helping me collect my specimens.

References Cited

Covell, Charles V, Jr. *A Field Guild to the Moths of Eastern North America*. Boston. Houghton Mifflin Company. 1984. Print.

Triplehorn, Charles A. *Borror and Delong's Introduction to the Study of Insects*. 7th Edition. Brooks/Cole. 2005. Print.

Zagatti, Pierre, et al. *Catalog of the Lepidoptera of the French Antilles*. 1995. http://www.inra.fr/papillon/indexing.htm Accessed June 2011.