

A Survey of Insects Living in *Heliconia wagneriana* and *Heliconia rostrata* on the Island of Dominica, W.I.

Patricia L. Mullins

Abstract

A survey of the insect fauna of *Heliconia rostrata* and *Heliconia wagneriana* was conducted. A total of 20 families was collected, including Formicidae, Entomobryidae and other Collembola, Labiidae, Staphylinidae, Aphididae, Anthocoridae, Nitidulidae, Meloidae, Curculionidae, Pentatomidae, Phalacridae, Tenebrionidae, Micropezidae, Simuliidae, Ulididae, and unidentified families in the orders Psocoptera and Blattodea. Several immatures of Stratiomyidae, Chironomidae, Tenebrionidae, Tipulidae, Staphylinidae, and Cicadellidae were also collected.

Introduction

Members of the genus *Heliconia* (Family Heliconiaceae) are among some of the most common plants in disturbed regions on the island of Dominica (Lack, Whitefoord, Evans, James, 1997). *Heliconia rostrata* and *Heliconia wagneriana* are the most prevalent species at the Archbold Tropical Research and Education Center (ATREC). *Heliconia rostrata* has yellow-green flowers and red-orange bracts with yellow toward the green margin and is approximately 4-7ft. tall. *Heliconia wagneriana* has green flowers and light red bracts with green margins and is about 3-7ft. tall. The concave bracts of *H. wagneriana* provide an excellent environment in which a variety of insects can live. This paper aims to identify the different families of insects found to live in both *H. wagneriana* and *H. rostrata* near ATREC, Springfield, Dominica.



Figure 1: *Heliconia rostrata*



Figure 2: *Heliconia wagneriana*

Materials and Methods

Insects were collected from two species of *Heliconia* in May and June, 2007 around (ATREC) in Springfield, Dominica, W.I., 15° 20.800N, 061° 22.118W. *Heliconia wagneriana* was sampled at 15° 20.720N, 061° 22.084W was located on a rainy afternoon near Checkhall River on 28 May 2007. Insects were collected from two plants: one with 9 bracts and one with 8 bracts. Using a plastic pipette, water recently accumulated in bracts was extracted where present, placed in a 4 dram vial, and labeled. Next, forceps and an aspirator were used to collect insects present on the outside area of each bract and placed in a 4 dram vial filled with 95% ethanol and labeled. Finally, insects were collected from the inside of the bracts using

forceps and an aspirator, placed in a separate 4 dram vial in 95% ethanol, and labeled. *Heliconia rostrata* was located on 30 May 2007 at 15 20.800N, 061 22.118W northwest of ATREC during a sunny early morning. Three *H. rostrata* plants were sampled: the first with 11 bracts, the second with 13 bracts, and the third with 14 bracts. First, insects were aspirated from the outside of each plant, placed in 95% ethanol, and labeled respectively. The same process was repeated for the inside of each plant. Insects were subsequently inspected under a microscope and identified to family where possible using Borror and DeLong's *Introduction to the Study of Insects*, 7th edition and the Peterson Field Guide to Beetles by Richard E. White.

Results

A total of 203 insects belonging to 20 families was caught and identified. In *Heliconia rostrata*, 30 adult insects were identified in 7 different families, not including one tipulid larvae and one unidentified Blattodea nymph. In *Heliconia wagneriana*, 138 adult insects were identified in 15 families, 28 larvae in 5 families, 3 unidentified Dermaptera nymphs, and 2 cicadellid nymphs. Table 1 lists the number of families identified from each inflorescence in order of collection. Under each plant, families are listed by method of collection: from the water inside of the bracts of each plant, insect specimens collected from inside of the bracts, and insect specimens aspirated from the outside of each plant. In some collections, only one or two of these methods resulted in any families; if none were collected, it is not listed in Table 1.

Table 1. Insects collected from *Heliconia wagneriana* and *Heliconia rostrata*.

28 May 2007

H. wagneriana : 9 bracts

Water inside:	Chironomidae larvae:	3
	Tipulidae larvae:	2
	Stratiomyidae larvae:	1
Outside:	Formicidae:	19
Inside:	Labiidae:	2
	Staphylinidae:	1
	Anthocoridae:	3
	Aphididae:	2
	Formicidae:	17

H. wagneriana : 8 bracts

Inside:	Aphididae:	12
	Formicidae:	7
	Entomobryidae:	1

30 May 2007

H. rostrata: 13 bracts

Inside:	Staphylinidae:	1
	Blattodea nymph:	1
Outside:	Formicidae:	5

H. rostrata : 11 bracts

Inside:	Formicidae:	2
	Psocoptera:	1
Outside:	Formicidae:	6
	Micropezidae:	1

H. rostrata : 14 bracts

Inside:	Formicidae:	8
	Entomobryidae:	2
	Staphylinidae:	3
	Nitidulidae:	1
	Tipulidae larvae:	1

H. wagneriana : 10 bracts

Inside:	Staphylinidae:	29
	Formicidae:	9
	Other Collembola:	15
	Anthocoridae:	2
	Labiidae:	4
	Meloidae:	1
	Phalacridae:	1
	Tenebrionidae:	7
	Simuliidae	1
	Psocoptera:	3
	Stratiomyidae larvae:	4
	Dermaptera nymph:	3
	Tenebrionidae larvae:	2
	Staphylinidae larvae:	11
	Tipulidae larvae:	5
Cicadellidae larvae:	2	
Outside:	Ulidiidae:	1
	Micropezidae:	1

Table 2 and Figure 3 represent the number of families collected in each species of *Heliconia*. Unless specified, insects identified are adults.

Table 2. Number Families Collected in *Heliconia wagneriana* and *Heliconia rostrata*.

	<i>Heliconia wagneriana</i>	<i>Heliconia rostrata</i>
Formicidae	52	21
Staphylinidae	30	4
Other Collembola	15	0
Aphididae	14	0
Staphylinidae larvae	11	0
Tenebrionidae	7	0
Tipulidae larvae	7	1
Labiidae	6	0
Anthocoridae	5	0
Stratiomyidae larvae	5	0
Chironomidae larvae	3	0
Unidentified Psocoptera	3	1
Labiidae nymph	3	0
Cicadellidae nymph	2	0
Tenebrionidae larvae	2	0
Entomobryidae	1	2
Meloidae	1	0
Micropezidae	1	1
Phalacridae	1	0
Simuliidae	1	0
Ulididae	1	0
Blattodea nymph	0	1
Nitidulidae	0	1

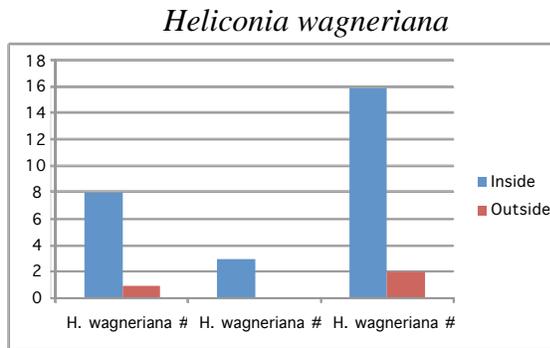


Figure 6. Inside vs. Outside of *H. wagneriana*.

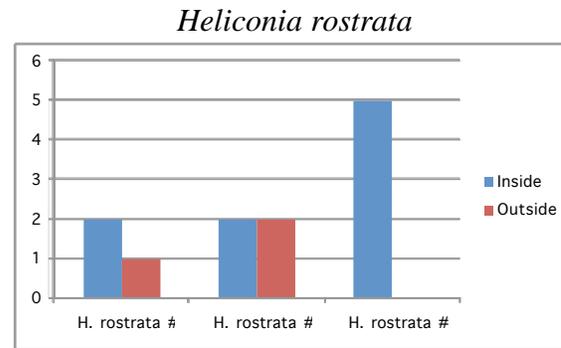


Figure 7. Inside vs. Outside of *H. rostrata*.

Discussion

The diversity of insects was much larger in *Heliconia wagneriana* than in *Heliconia rostrata*. These results can be explained due to the structure of each species of *Heliconia*. *Heliconia wagneriana* has open concave bracts suited for holding water, therefore attracting a larger number and diversity of insects and providing protection and sustenance for both matures and immatures. In regards to larvae, 28 different specimens were collected in *H. wagneriana*, including those in the families Chironomidae, Tipulidae, Stratiomyidae, Tenebrionidae, and Staphylinidae. Comparatively, only a single tipulid larvae was found inside one of the bracts of the three inflorescences of *H. rostrata* that were examined. Obviously, in comparing these two species of *Heliconia*, *H. wagneriana* is more suited to insect inhabitation than *H. rostrata*.

More data were not collected due to the time it took to methodically collect and identify 203 insects and larvae in the given period of time. More research and data collection is needed to identify insects in other species of *Heliconia* on Dominica. This study could easily be used as a stepping stone for future studies.

Acknowledgements

I would like to thank Dr. James Braden Woolley and Dr. Robert A. Wharton for their invaluable advice and assistance with this project and for tolerating my shenanigans, for helping me to identify countless insects and their larvae, for providing me much entertainment and distractions, and Dr. Wharton for supplying me with priceless random trivia each day. I would also like to thank Nancy Osler and the staff at ATREC for their generosity and kindness throughout our stay in Springfield and Texas A&M University for giving me the Study Abroad Scholarship and the International Education Fee Scholarship.

References

Lack, Andrew J., Caroline Whitefoord, Peter G. Evans, and Arlington James. Dominica Nature Island of the Caribbean. 1st ed. Roseau, Common Wealth of Dominica: Ministry of Tourism, 1997. 49.

Triplehorn, C.A. and N.F. Johnson. 2005. Borror and Delong's Introduction to the Study of Insects. 7th ed.

White, Richard E. New York City: Houghton Mifflin Company, 1983. 56-333.