

**PROCEEDINGS
OF THE
NINTH SYMPOSIUM
ON THE
NATURAL HISTORY OF THE
BAHAMAS**

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Gerace Research Center
San Salvador, Bahamas
2003

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Printed in the USA

ISBN 0-935909-73-7

VISITORS TO *PITHECELLOBIUM KEYENSE* BRITT. EX BRITT. AND ROSE ON THREE ISLANDS OF THE SOUTHERN BAHAMAS

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ABSTRACT

During our visit to Acklins Island in February 2000, we observed that *Pithecellobium keyense* Britt. ex Britt. and Rose was one of the few trees in flower, and thus attracted a large number and wide diversity of floral visitors. On Feb. 12, 2000, we made counts of visitors to this species. We repeated these observations and counts at flowering individuals of the same species on Great Inagua on Feb. 26-27, 2000, and on Mayaguana on Mar. 5 of the same year.

On Acklins, seventeen species made a total of 76 visits; the visitors included six species of Hymenoptera, seven species of Lepidoptera, three of which were diurnal moths, and four species of Diptera. On Inagua, there were 80 visits by 22 different species. Visitors included six species of Hymenoptera, eight of Lepidoptera, none of them moths, seven species of Diptera, and two bird species. On Mayaguana, there were 54 visits by ten different species, including four Hymenoptera, four butterflies and two birds. Only two species of insects visited this plant on all three of the islands; these were the anthophorid bee, *Xylocopa cubaecola* Lucas, and the pierid butterfly, *Phoebis agaritha antillia* Brown.

INTRODUCTION

Acklins, Great Inagua and Mayaguana are three of the southernmost islands in the Bahamas, each of them lying on a separate bank, and isolated from the others by deep ocean passages. Separated from Long Island on the Great Bahama Bank by the Crooked Island Passage, Acklins shares a common bank with Crooked Island; Acklins' exposed land area is 497 square km (Miller *et al.* 1992). Mayaguana

lies to the east of Acklins and north of Inagua, and is separated from the former island by the Mayaguana passage and from the latter by the Caicos passage. The land area of Mayaguana is approximately 285 square km, and of Great Inagua, about 1269 square km (Miller *et al.* 1992).

Pithecellobium keyense Britt. ex Britt. and Rose is a shrubby legume with inflorescences that vary in color from red to off-white; its curved fruits are the source of the common name, ram's horn (Correll and Correll 1982). Correll and Correll (1982) listed the species as occurring in all of their eleven designated areas of the Bahamas except Areas 11 (Cay Sal Bank) and 3 (Acklins, Crooked and Mayaguana). However, since they reported its occurrence both to the north and south of area 3, the omission from this area was most likely the result of lack of collecting records for these particular islands prior to publication of their book.

During February and March, 2000, as part of our survey of insects on these islands, we observed visitors to flowers of *P. keyense* on Acklins, Mayaguana and Inagua, making comparisons among the three islands.

METHODS

We counted and identified visitors to individual shrubs for 30-minute intervals on the following dates: Acklins: at Spring Point in the vicinity of the airport on 12 February, 2000; Gt. Inagua: near a freshwater pond north of Matthewtown on 26 Feb., 2000 and at a well field east of Matthewtown on 27 Feb.; Mayaguana: along a trail from Abraham Bay to Guano Point on 5 March, 2000.

RESULTS

We observed a total of 210 visits by insects and birds. Inagua had the greatest number of visits (80) and of species visiting (22); Mayaguana had the fewest visits (54) and species of visitors (10), with Acklins having an intermediate number: 76 visits by 17 species (Tables 1, 2, 3).

On Acklins, day-flying moths accounted for ten of the sixteen visits by Lepidoptera, and it was the only island on which we saw these moths visiting the plant (Table 1). The most visits by Hymenoptera (54) occurred on Acklins, where two common visitors were the scoliid wasp *Campsomeris bahamensis* Bradley, and an unknown species of the halictid genus *Agapostemon*. These small bees were so common that they were uncountable; the number reported represents the number collected in a

thirty-second sweep every ten minutes and is undoubtedly an underestimate of their numbers (Table 2). On Acklins we observed no visits by birds (Table 3).

On Inagua, there were many visits by butterflies (23 visits by 8 species; Table 1) and flies (20 visits by 10 species; Table 3). The most common fly was the large bombyliid, *Ligyra cereberus*. There were six visits by the Bahama woodstar, *Calliphlox evelynae* on Inagua.

On Mayaguana, there were no visits by dipterans. Birds were relatively common; the bananaquit, *Coereba flaveola* accounted for ten visits to the shrubs, and there was also one visit by a woodstar (Table 3). Mayaguana also had more visits by Lepidoptera (26) than did the other islands. Only two species, the large carpenter bee, *Xylocopa cubaecola*, and the pierid butterfly, *Phoebis agaritha antillia* were observed as visitors on all three of the islands.

TABLE 1. Lepidopteran visitors to *P. keyense* on Acklins, Inagua, and Mayaguana.

Family/Species	Acklins	Inagua	Mayaguana
Ctenuchidae:			
<i>Empyreuma</i> sp.	8		
Unidentified	1		
Pericopidae:			
<i>Composia fidelissima vagrans</i> Bates	1		
Hesperiidae:			
<i>Wallengrenia</i> sp.		4	
<i>Hylephila phyleus</i> Drury		2	
<i>Ephyriades brunnea</i> Herrich-Schaeffer	1		
Lycaenidae:			
<i>Strymon acis armouri</i> Clench	2		
<i>Cyclargus thomasi clenchi</i> L. Miller, Simon & Harvey		6	6
Pieridae:			
<i>Phoebis agaritha antillia</i> Brown	1	1	13
<i>Phoebis sennae</i> L.		3	2
<i>Eurema elathea</i> Cramer		2	
<i>Eurema chamberlaini inaguae</i> Munroe		4	
<i>Ascia monuste eubotea</i> Latreille			5
<i>Kricogonia lyside</i> Godart		1	
Heliconiidae:			
<i>Agraulis vanillae insularis</i> Maynard	2		
Island Totals	16	23	26

TABLE 2. Hymenopteran visitors to *P. keyense* on Acklins, Inagua, and Mayaguana.

Family/Species	Acklins	Inagua	Mayaguana
Scoliidae:			
<i>Campsomeris bahamensis</i> Bradley	28	2	
Tiphiidae:			
<i>Myzinum ephippium bahamensis</i> Krombein	1		
<i>Myzinum</i> sp.		2	
Eumenidae:			
<i>Pachodynerus tibialis barbouri</i> Bequaert		7	
<i>Pachodynerus linda</i> Menke			6
Sphecidae:			
<i>Sphex</i> sp.			1
Pompilidae;			
<i>Pepsis ruficornis</i> (F.)	6		
Halictidae;			
<i>Agapostemon</i> sp.	16+	4	
Anthophoridae;			
<i>Xylocopa cubaecola</i> Lucas	2	15	9
<i>Nomada cubensis</i> Cresson	1		
Megachilidae			
<i>Megachile</i> sp.		1	1
Island Totals	54	31	17

TABLE 3. Other visitors to *P. keyense* on Acklins, Inagua, and Mayaguana.

Group/Species	Acklins	Inagua	Mayaguana
DIPTERA			
Syrphidae:			
<i>Palpada albifrons</i>	1	1	
Unknown sp.		1	
Muscidae:			
Unknown sp.	1	3	
Sarcophagidae:			
Unknown sp.		1	
Calliphoridae:			
Unknown sp.		3	
Tephritidae:			
Unknown sp.	1	1	
Bombyliidae:			
<i>Ligyra cereberus</i>	3	10	
Island Totals: Diptera	6	20	0
BIRDS			
<i>Calliphlox evelynae</i>		6	1
<i>Coereba flaveola</i>		0	10
Island Totals: Birds	0	6	11

DISCUSSION

Two of the butterflies we observed have been reported to use *Pithecellobium* as a larval food plant. They are *Phoebis agarithe antillia*, which visited *Pithecellobium* on all three islands, and *Cyclargus thomasi clenchi*, which visited *Pithecellobium* on Mayaguana and Inagua, the only islands where it occurs (Smith *et al.* 1994). All the butterflies we observed are generalists in their use of nectar sources; most of them are reported by Smith *et al.* (1994) to visit a number of flowering trees and shrubs. Although *Eurema chamberlaini inaguae* is endemic to Inagua and *Cyclargus thomasi clenchi* occurs only on Inagua and Mayaguana (Smith *et al.* 1994), all the other butterflies we observed visiting *P. keyense* occur on all three of the islands (Clench and Bjorndal 1980, Miller *et al.* 1992, Simon and Miller 1986).

Some of the hymenopteran visitors we observed on *P. keyense* have a limited distribution among the three islands. The pompilid wasp *Pepsis ruficornis* (= *saphyrus*), which was a common visitor on Acklins, does not occur on either Mayaguana or Inagua, although it does occur on many islands of the northern and central Bahamas (Elliott and Elliott 1996). Two species of eumenids, *Pachodynerus tibialis barboursi* and *Pachodynerus linda* were visitors to *P. keyense* on Inagua and Mayaguana respectively. Each is endemic to the particular island, although the nominate subspecies of *P. tibialis* also occurs on Hispaniola (Menke 1986). The *Sphex* species we saw on Mayaguana appears to be morphologically distinct from *S. jamaicensis*, which is widely distributed throughout the Bahamas. The scoliid wasp, *Campsomeris bahamensis*, which may also be a distinct species (Bradley 1964), occurs on Inagua, Crooked Island, and Acklins. Only the carpenter bee, *Xylocopa cubaecola*, which is widely distributed throughout the Bahamas, visited *P. keyense* on all the islands where we made our observations.

The rates of visitation by insects that we observed on the three islands were in line with our general collecting results for each island (Smith and Elliott, unpub). The total number of insect visits to *P. keyense* on the three islands were as follows: Inagua, 74; Acklins, 66; and

Mayaguana, 43. The average numbers of insects we collected per day during our visits to the three islands were as follows: Inagua, 96; Acklins, 66; and Mayaguana 38. The trends do not hold up when records of specific orders are compared, however. We observed more Hymenoptera visiting the plants on Acklins than on the other two islands, although the relative number of Hymenoptera collected on Acklins and Inagua were approximately the same. While we observed the highest number of lepidopteran visits on Mayaguana, the total was only 26. We collected more Lepidoptera on Acklins than on the other two islands, however most of them were small nocturnal moths from malaise trap samples, rather than the butterflies and diurnal moths we observed as floral visitors.

ACKNOWLEDGMENTS

We thank Mr. Eric Carey of the Bahamian Department of Agriculture for permission to conduct research in the Bahamas. We also thank the many Bahamian citizens who assisted us during our visits to Acklins, Mayaguana and Inagua.

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