

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

Edited by:

David L. Smith
Sherilyn Smith

Conference Organizer

Kenneth C. Buchan

Production Editors

David L. Smith
Sherilyn Smith
Vincent J. Voegeli

Gerace Research Center
San Salvador, Bahamas
2003

Cover photograph courtesy of David and Sherilyn Smith

©Copyright 2003 by Gerace Research Center

All Rights Reserved

No part of the publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage or retrieval system, without permission in written form.

Printed in the USA

ISBN 0-935909-73-7

A FIRST LOOK AT ACRIDID GRASSHOPPERS (ORTHOPTERA) OF THE BAHAMAS

Sherilyn G. F. Smith¹
David L. Smith¹
Nancy B. Elliott²

¹Department of Biology, Le Moyne College, Syracuse, NY 13214

²Department of Biology, Siena College, Loudonville, NY 12211

ABSTRACT

Initial collections of insects made on major islands of the Bahamas, to become part of the Bahamian National Insect Collection, have included a variety of grasshoppers in two families, Acrididae and Tettigoniidae. Acridid grasshoppers have been identified from eight of the islands collected: Abaco, Acklins, Cat Island, Great Inagua, Mayaguana, North and South Andros, and San Salvador. Four subfamilies are represented; species distributions are compared relative to habitat, as well as to dispersal behavior and flight capability in the species for which that information is known.

INTRODUCTION

Grasshoppers of the family Acrididae, the "short-horned grasshoppers," are ubiquitous worldwide and are serious pests in many places. Their long association with agriculture has frequently made them infamous, from the locust plagues of Biblical times (which continue to the present day) to grasshopper outbreaks from the United States to Australia. Grasshoppers cause serious damage to crops and can strip grazing lands very rapidly, and hence have considerable economic importance. They are also of considerable ecological importance, being an important food source for a variety of reptiles, small mammals, and birds. Therefore, a knowledge of the grasshopper fauna of any area is of interest, and establishing records of grasshopper species distributions on the islands of the Bahamas has a great deal of potential value from both an economic and an ecological standpoint.

Until recently, the only collection of Bahamian grasshoppers in the Bahamas was the collection at the Bahamian Field Station on San Salvador. Our collections of insects on a number of islands, resulting in the establishment of the Bahamian National Insect Collection, allow us to report here our preliminary results with respect to the grasshopper species of the Bahamas.

MATERIALS AND METHODS

In 2000, we undertook a comprehensive inventory of the insects of the Bahamas in cooperation of the Bahamian Department of Agriculture and the Bahamas National Trust. Between January, 2000 and June, 2001, we collected insects on twelve major islands: New Providence, Cat Island, Acklins, Great Inagua, Mayaguana, North and South Andros, Grand Bahama, Eleuthera, Great Abaco, San Salvador, and Long Island. These islands have been grouped into three very general categories, based on location, climate, and vegetation (Table 1). These categories are: northern "pine" islands, central islands, and southern islands.

The collecting techniques used included net collecting by hand and sweeping, supplementing these collections using malaise traps. Grasshoppers were generally collected in woody vegetation by hand netting, while those in low-growing herbaceous vegetation were collected primarily by sweeping. As the overall insect inventory is qualitative, no attempt to get strictly quantitative samples of grasshoppers from each island was made.

Table 1. Islands on which grasshoppers (Orthoptera:Acrididae) have been collected, groups by general location.

Northern "Pine" Islands	Central Islands	Southern Islands
Grand Bahama	South Andros Great Inagua	
North Andros	Eleuthera	Acklins
Abaco	Cat Island	Mayaguana
New Providence*	Long Island	
	San Salvador	

* no acridid grasshoppers found in insect collections as of yet

RESULTS AND DISCUSSION

Grasshoppers have been found on every island where we have made collections, with the exception of New Providence. Eight species in six genera have been found to date, with the number of species per island ranging from one to five (excluding New Providence). Only Great Inagua had five species, while Grand Bahama and San Salvador each had four species. Nine of the islands had three or fewer species.

The most widespread species found was *Schistocerca americana* (Drury), which was found on every island except New Providence (the Acklins specimen is most probably *Schistocerca americana*, although its identification has yet to be confirmed). This grasshopper is quite large (>40mm; Figure 1) and appears to be capable of long-distance flight, being described by Helfer (1963) as migratory. It is found throughout North America south of the 40th parallel, south to Central America, including the West Indies, and perhaps as far south as Argentina (Helfer 1963). Thus it is not surprising that it is quite widespread in the Bahamas. It was frequently found associated with woody vegetation, which is consistent with its recorded habitat preferences elsewhere.

The other grasshoppers found on the northern islands (Table 2) include two species collected only on Grand Bahama, *Leptysm marginicollis* (Serville) and *Chortophaga cubensis* (Scudder). Both have been reported as preferring grassy habitats, *Leptysm* in moister areas and *Chortophaga* in dry, short-grass habitats (Otte 1981). *Orphulella pelidna* (Burmeister) and *O. punctata* (DeGeer) were

also collected on Grand Bahama and North Andros, respectively. These slant-faced grasshoppers are found in and feed exclusively on grasses, in which they are well-camouflaged (Figure 1). *O. pelidna* was found throughout the Bahamas, being collected on four of the eleven islands on which we collected grasshoppers (Table 2). The species is widespread in North America into Mexico and has previously been reported from the Bahamas (Otte 1981). The reported distribution of *O. punctata* includes Cuba and Caribbean islands south and east of Cuba, as well as Central and South America. Its presence on North and South Andros and Great Inagua suggest that it too is widespread in the Bahamas. Both of these *Orphulella* species were found only on Great Inagua; the degree to which they might compete for food or other resources is not currently known.

Three species were found on various central islands that had not been collected on the northern pine islands. These include *Melanoplus femurrubrum* (DeGeer), found on San Salvador, *Schistocerca alutacea* (Harris) from Cat Island, and a species tentatively identified as belonging to the genus *Trimerotropis*, collected from both San Salvador and Long Island. *M. femur-rubrum* is a generalist grasshopper that is widespread throughout North America in many different habitats. The leather-colored bird grasshopper, *S. alutacea*, is found in moister wooded habitats throughout the eastern half of the U.S. (Helfer 1963). The *Trimerotropis*, a band-winged grasshopper, is a ground-dwelling species which is well camouflaged against the bare ground and karst backgroundson which it is found (Figure 1). Its hostplants are not known.

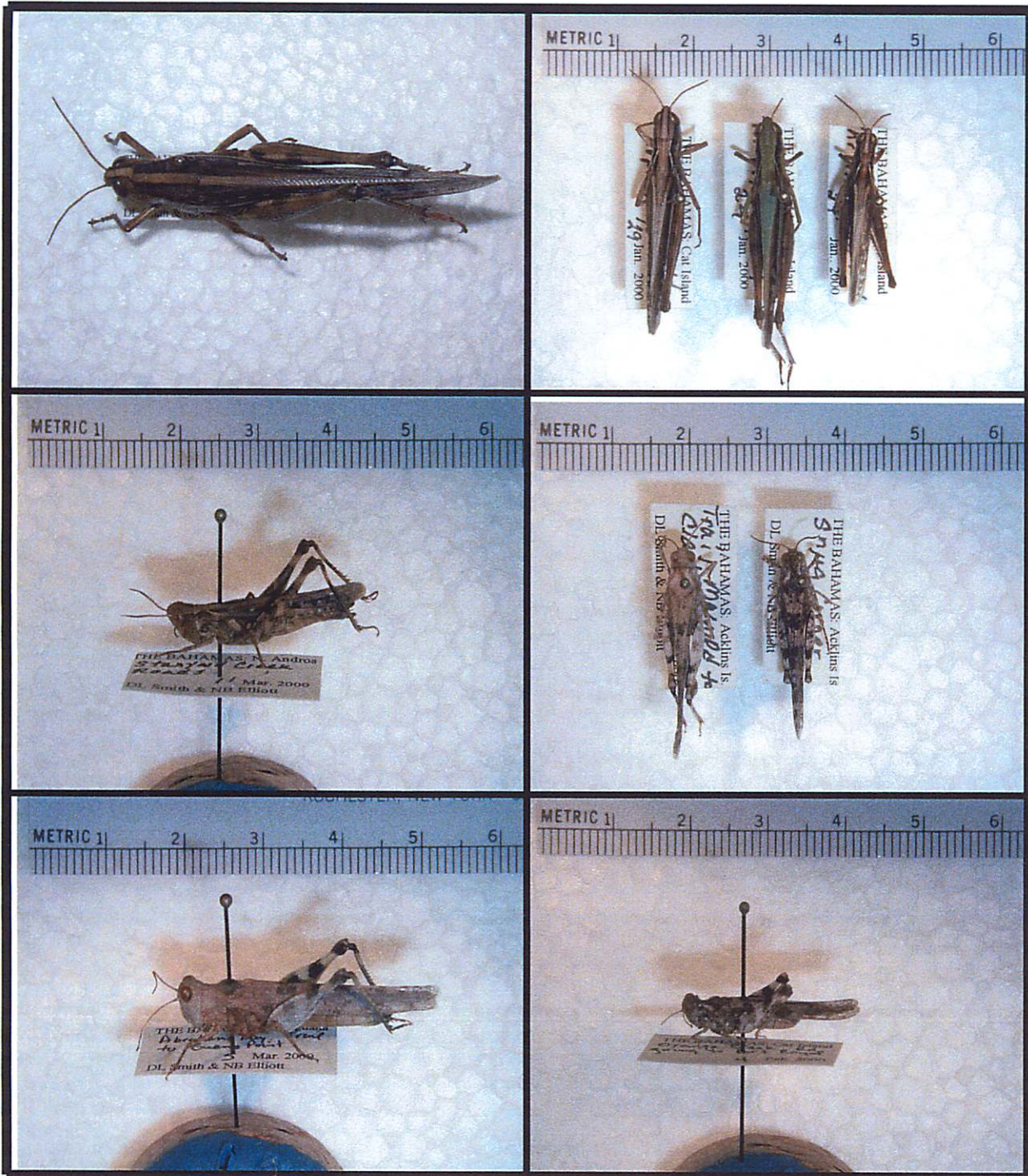


Figure 1. Four species of grasshoppers: *Schistocerca americana* (upper left), *Orphulella pelidna* (upper right), *Orphulella punctata* (center left), *Trimerotropis* sp. from Acklins (center right), *Trimerotropis* sp. from Mayaguana (lower left), *Trimerotropis* sp. from Cat Island (lower right).

Table 2. Species of acridids collected on the various islands, grouped by region as in Table 1.

Northern "Pine" islands	
<p>Grand Bahama <i>Schistocerca americana</i> <i>Leptysmia marginicollis</i> <i>Chortophaga cubensis</i> <i>Orphulella pelidna</i></p>	<p>North Andros <i>Schistocerca americana</i> <i>Orphulella punctata</i></p>
<p>Abaco <i>Schistocerca americana</i></p>	<p>New Providence*</p>
Central islands	
<p>South Andros <i>Schistocerca americana</i> <i>Orphulella punctata</i></p>	<p>Long Island <i>Schistocerca americana</i> <i>Orphulella pelidna</i> <i>Trimerotropis</i> sp.**</p>
<p>Cat Island <i>Schistocerca americana</i> <i>Schistocerca alutacea</i></p>	<p>San Salvador <i>Melanoplus femurrubrum</i> <i>Orphulella pelidna</i> <i>Schistocerca americana</i> <i>Trimerotropis</i> sp.**</p>
<p>Eleuthera <i>Schistocerca americana</i></p>	
Southern islands	
<p>Acklins <i>Schistocerca</i> sp. <i>Trimerotropis</i> sp.</p>	<p>Great Inagua <i>Schistocerca americana</i> <i>Schistocerca alutacea</i> <i>Orphulella pelidna</i> <i>O. punctata</i> <i>Trimerotropis</i> sp.**</p>
<p>Mayaguana <i>Schistocerca americana</i> <i>Trimerotropis</i> sp.**</p>	

* no grasshoppers yet collected

** tentative identification to genus

The same *Trimerotropis* species was also found on all three of the southern islands on which collections have been made. In addition, at least one *Schistocerca* species was found on each island (Table 2) and both *Orphulella* species were collected on Great Inagua, as mentioned above. Interestingly, Great Inagua had the most diverse grasshopper fauna with five species, followed by San Salvador and Grand Bahama, each having four species. This is only

a preliminary list of the grasshoppers however, and it would be reasonable to expect additional species on any of the islands with more intensive collecting.

Although this grasshopper collection is only preliminary, it does appear that there are differences in the fauna among groups of islands, as well as some grasshopper species that may prove to be ubiquitous in the Bahamas. The presence of *Leptysmia* and *Chortophaga* in

the northern part of the archipelago may be linked to moister climatic and/or edaphic conditions. The presence of the *Trimerotropis* species in the central and southern regions may also be linked to these factors. Members of that genus found in the U.S. tend to prefer dry, sparsely vegetated habitats (Helfer 1963, Otte 1984, Otte *et al.* 1997). Other patterns in species distributions may emerge as more collections on additional islands are made.

ACKNOWLEDGEMENTS

Sincere thanks go to all the individuals who helped make the collection of these insects possible, and especially to Mr. Eric Carey of the Bahamian Department of Agriculture. We are most grateful for all the support we have had in our collecting efforts.

LITERATURE CITED

- Helfer, Jacques R. 1963. *How to Know the Grasshoppers, Cockroaches, and Their Allies*. Dubuque, Iowa: Wm. C. Brown, Publishers. 353 pp.
- Otte, Daniel. 1981. *The North American Grasshoppers, Volume I*. Cambridge, Mass.: Harvard Univ. Press. 275 pp.
- , 1984. *The North American Grasshoppers, Volume II*. Cambridge, Mass.: Harvard Univ. Press. 366 pp.
- , David C. Eades, Piotr Naskrecki. 2001. Orthoptera Species File Online (Version 2). Available online at <http://osf2.orthoptera.org>