Title:	Guam Forest Insect Survey

Sponsoring Agency	NIFA	**Project Status**	COMPLETE
Funding Source	Mcintire Stennis	**Reporting Frequency**	Annual
Accession No.	1005269	**Project No.**	GUA0903
Project Start Date	11/28/2014	**Project End Date**	09/30/2018
Reporting Period Start Date	10/01/2016	**Reporting Period End Date**	09/30/2017
Submitted By	Rachael Leon Guerrero	**Date Submitted to NIFA**	01/04/2018

Project Director

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Recipient Organization

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Performing Department

Cooperative Extension Service

Non-Technical Summary

Despite the fact that Guam's forest ecosystems are rapidly being degraded by invasive insect species, such as the Asian cycad scale, Aulacaspis yasumatsui, the coconut rhinoceros beetle, Oryctes rhinoceros, and the little fire ant, Wasmannia aurapunctata, little is known about Guam's forest insects and their impacts on forest health. Discovery of three species of bark beetles not previously reported from Guam in a single trap at a single location [Moore, unpublished] illustrates this lack of knowledge.
Support is requested for a Guam forest insect survey which will fill some of the gaps in our knowledge base.

Accomplishments

Major goals of the project

The objective of the proposed survey is to build a knowledgebase on insects associated with plants in Guam's forests. The survey will result in a reference collection of Guam's forest insects and a publicly available online database to facilitate sharing of specimen data, images and ecological associations among plants and insects.
The knowledgebase will be usefull to natural resource managers responsible for maintaining the health of Guam's forests and to biologists trying to understand Guam's terrestrial ecosystems in the wake of major biological invasions.

What was accomplished under these goals?

My major accomplishment during this reporting period was organizing a forest entomology section for the 2017 Pacific Island Forestry Professionals Workshop at the request of the USDA Forest Service.

What opportunities for training and professional development has the project provided?

At the 2017 Pacific Island Forestry Professionals Workshop, I provided training and professional development to about 50 participants from American affiliated Pacific Islands. Here's an outline of the topics I covered during the 4 hours of presentations:

Concurrent Session 1B: Forest Health Protection: Entomology
Tuesday afternoon, April 4, 2017
3rd Floor Unnai Ballroom 3, Westin Hotel, Tumon Bay, Guam
Presentations

- Introduction
- Biological Invasion of Guam
- Coconut Rhinoceros Beetle
- Asian Cycad Scale
- Little Fire Ant
- Emerging Forest Insect Pest Issues in Micronesia

- Access to Information on Forest Insect Pests in Micronesia
- Using free Cell Phone Apps for Forest Pest Surveys
- Open Discussion

How have the results been disseminated to communities of interest?

I published presentation slides and other resources associated with the entomology section of the 2017 Pacific Island Forestry Professionals Workshop on an Open Science Framework Web Site at https://osf.io/a6t7v/.

What do you plan to do during the next reporting period to accomplish the goals?

During the next reporting period I will focus on building an online database of Guam's forest pest insects and the plants they attack. This is part of a larger project to assmble a biodiversity inventory for terrestrial organisms on Guam.

Participants

Actual FTE's for this Reporting Period

Role	Non-Students or faculty	Students with Staffing Roles			Computed Total by Role
		Undergraduate	Graduate	Post-Doctorate	
Scientist	0.1	0	0	0	0.1
Professional	0	0	0	0	0
Technical	0	0	0	0	0
Administrative	0	0	0	0	0
Other	0	0	0	0	0
Computed Total	0.1	0	0	0	0.1

Student Count by Classification of Instructional Programs (CIP) Code

{NO DATA ENTERED}

Target Audience

I provided information to the general public and NGOs such as the Guam Plant Extinction Prevention Project, and government agencies such as the USDA-APHIS, US Forest Service, and the United States Fish and Wildlife Service. This information includes identification of insect specimens given to me and recommendations on plant protection. Fact sheets on newly arrived invasive species were prepared and made available to the public in print and on web sites which I build and maintain.
As one of only 3 practicing PhD-level entomologists in Micronesia, I provide entomological services to the Commonwealth of the Northern Mariana Islands, the Republic of Palau, the Federated States of Micronesia, and the Republic of the Marshall Islands. Many, if not most, of current insect problems in Micronesia involve damage to forests by recently arrived invasive species.

Products

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2017	YES

Citation

Moore, Aubrey. 2017. "Entomology Section for Pacific Island Forestry Meeting." Open Science Framework. Website visited December 28. httpS://osf.io/a6t7v.

Type	Status	Year Published	NIFA Support Acknowledged
Journal Articles	Published	2017	NO

Citation

Marshall, Sean D. G., Aubrey Moore, Maclean Vaqalo, Alasdair Noble, and Trevor A. Jackson. 2017. "A New Haplotype of the Coconut Rhinoceros Beetle, Oryctes Rhinoceros, Has Escaped Biological Control by Oryctes Rhinoceros Nudivirus and Is Invading Pacific Islands." Journal of Invertebrate Pathology 149 (October):127–34.

https://doi.org/10.1016/j.jip.2017.07.006.

Type	Status	Year Published	NIFA Support Acknowledged
Journal Articles	Published	2017	NO

Citation

Moore, Aubrey, Diego C. Barahona, Katherine A. Lehman, Dominick A. Skabeikis, Ian R. Iriarte, Eric B. Jang, and Mattew S. Siderhurst. 2017. “Judas Beetles: Discovering Cryptic Breeding Sites by Radio-Tracking Coconut Rhinoceros Beetles, Oryctes Rhinoceros (Coleoptera: Scarabaeidae).” Journal of Environmental Entomology 46 (1):92–99. https://doi.org/https://doi.org/10.1093/ee/nvw152.

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2017	YES

Citation

Moore, Aubrey, Roland Quitugua, Trevor Jackson, Sean Marshall, and Mattew Siderhurst. 2017. “Invasion of Guam by the Coconut Rhinoceros Beetle.” presented at the 8th Regional Island Sustainability Conference, Tumon, Guam, April 20.

Other Products

{Nothing to report}

Changes/Problems

{Nothing to report}