

Program Name: Miami-Dade County Parks, Recreation and Open Spaces/Zoo Miami Conservation and Research Department Invasive Species Management

Project Name: Temporal and Spatial Habitat Use, Genetics, Diet and Disease Survey of the Boa Constrictor (*Boa constrictor spp.*) at the Charles Deering Estate at Cutler in Miami-Dade County, Florida

Project ID: 2708

Lead Agency: Miami-Dade County

Strategic Plan Goal(s) Addressed: Objective 2B.3- Contain the spread of invasive exotic species

Measurable Output(s): Determine the impact on the ecosystems of the Charles Deering Estate at Cutler by the non-native boa constrictor.

Use radiotelemetry and visual surveys to determine habitat preference of the boa constrictor.

Develop a management and/or eradication plan for this species based on data collected from the research conducted on the population.

Collect genetic samples to potentially determine the origin for the introduced population, the genetic diversity of the population to determine relatedness and possible number of founders, and develop a reference genetic profile for the population that will allow identification of individuals found outside the site as dispersers or unrelated releases.

Analyze gut contents and fecal samples to learn about its prey base, possible impacts on the local wildlife populations, and possible implications if the population were to ever disperse to other natural areas.

Discover any pathology, viruses or parasites that are endemic in the population that may pose a risk to native wildlife.

Project Synopsis: There are currently 3 species of large constrictors (Boidae) established in South Florida, the Burmese Python (*Python molurus bivittatus*), Northern African Rock Python (*Python sebae*), and the Common Boa Constrictor (*Boa constrictor spp.*). Of the three species, only the Burmese python and Northern African rock python have ongoing research and management programs.

The population of boa constrictors is established and reproducing on the grounds of the Deering Estate at Cutler. It has been at the site since the early 1990s with anecdotal reports as early as the 1970s. At least 157 boas have been captured at the Deering Estate or within 2km of the property, since 1989. Of those 157 boas, 41 were captured since October 2012, which suggests that this population is still established and reproducing.

From 2011-2012, the Florida Fish and Wildlife Conservation Commission (FWC) began surveys for Boa constrictors at the Deering Estate. During these surveys, there were no animals encountered, despite at least 9 survey attempts. These surveys were conducted during summer, fall, and winter during both daytime and nighttime.

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Because of the lack of success with surveys, a radio-telemetry project which would allow us to understand the temporal and spatial habitat use of this species was conducted between 2012-2014. Through the use of radio telemetry with non-native species in South Florida, researchers have learned a tremendous amount of behavioral and habitat use information (Snow 2007, Pernas 2012). By learning how this species is utilizing the property, we hope to discover when they are the most easily detected, what methods of detection are most likely to be successful, and what habitat characteristics are the most desirable.

We were able to track 2.2.2 (2 male, 2 female, and 2 juvenile) boa constrictors for a minimum of 10 months for each individual in the radio telemetry study. Any additional boas encountered are captured and permanently removed from the Deering Estate. Morphometrics and genetic samples will be taken on all specimens during the study period. Once an individual had completed the radiotelemetry tracking period of the study, or any other specimens encountered and removed from the area, are humanely euthanized utilizing a pentobarbital solution injection. Genetic samples of the liver and skin are preserved in alcohol, gut contents are frozen and saved for dietary analysis, any parasites encountered are preserved in alcohol for identification. Plasma is frozen for virology, and a full representative tissue set is preserved in formalin for histopathology. All specimens are vouchered with photographs and tissue samples through the Florida Museum of Natural History. A photograph and general location for each specimen captured is also uploaded onto ivegot1.com/eddmaps.com.

To date, we have only found one published study utilizing radio-telemetry with boa constrictors (Reed et al. 2007). In this study, 76% of boas were encountered in arboreal situations. The preliminary results of this study show the established population of snakes is utilizing a much different ecosystem type and exhibiting different behavior at the Deering Estate.

This study aims to provide managers and policymakers valuable information on the most effective means and methodology of detection, distribution on property, and potential ecosystem impacts for this introduced population. The genetic profiling and disease evaluation will help shape a more thorough risk assessment for the species.

There will be a component of public outreach, education and awareness building through public lectures, website development, scientific papers, and guided nature tours that will address the issue of non-native species in South Florida and impacts to native ecosystems. In addition, the naturalists at the Deering Estate were able to utilize the telemetry project during their classes and tours and will also be able to utilize future management strategies being developed for public education.

Current Status: Currently, the data of the radiotelemetry study is being processed and prepared for publication.

Thirty genetic samples from confirmed and vouchered boa constrictors within the study site are being analyzed at the Florida Museum of Natural History to help determine the source population, possible entry route to the wild, if multiple introductions have led to their establishment, and provide a management tool to determine if other boa constrictors are found within Miami-Dade County are dispersing from this source established population.

Any boa constrictors from the Deering Estate and surrounding properties are brought to Zoo Miami for humane euthanasia, necropsy and sample collection to build the sample size of the remaining portions of the study looking at prey, disease, and parasites in the species.

Project Schedule:

Start Date: October 2012

Finish Date: Ongoing

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Detailed Project Budget Information

	2014	2015	2016	2017	2018	Balance to Complete	Total
Federal							
SFWMD**							
Local	\$9,500	\$480	\$1080				
Total	\$9,500	\$480	\$1080				TBD

Contact: Frank Ridgley DVM; frid@miamidade.gov

Hyperlink: <http://zoomiamiconservation.com/project/rapid-response-to-floridas-invasive-non-native-reptiles-and-amphibians/>

Pictures:





Map of area:



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