

Scope of Work

Development of a Population Estimation Methodology and Spatial Ecology Assessment for the Cuban Hutia on Naval Station Guantanamo Bay, Cuba

Cooperative Agreement N62470-18-2-7011:

April 2018

Introduction

The Cuban hutia (*Capromys pilorides*) is a large rodent native to Cuba. Endemic to the West Indies, most species of hutia are rare or extinct because of over-harvest, exotic species introductions, and habitat modifications by humans. An exception is the U.S. Naval Station Guantanamo Bay, Cuba (NSGB), where the Cuban hutia is common and is responsible for a variety of damage to both natural and anthropogenic environments. Conflicts with humans include damaging landscape, gnawing cables and vehicle wires, and depositing feces in residential areas. Hutia are primarily herbivorous and cause substantial damage to native vegetation at NSGB with little subsequent regeneration of many plant species. Entire areas of native trees have been defoliated by grazing hutia.

The Public Works Department at NSGB treats the hutia as both a species that warrants conservation and a species that is a nuisance animal. The Republic of Cuba, Ministry of Revolutionary Armed Forces Engineering Department, issued **Environmental License #1-05-01** to the installation Commanding Officer on 29 May 2001 which authorized the reduction of hutia populations to two per hectare in sensitive areas of the Installation; monitor the Installation's hutia population; exclude the use of chemical repellants; exclude the introduction of exotic vegetation; establish control measures for the exotic species already introduced; and establish strict protective measures for the Cuban boa (*Epicrates angulifer*) and barn owl (*Tyto alba*)-known predators of hutia.

Before the arrival of humans at Guantanamo Bay, the native hutia population was likely controlled by a combination of drought-induced food shortages and predation by Cuban boas and birds of prey, such as the barn owl. The controlling effects of drought on the present-day installation, however, has been minimized by the planting of watered urban gardens and introduction of exotic drought-resistant trees such as leadtree (*Leucaena leucocephala*) and *Acacia* trees that provide foliage upon which hutia can graze. Meanwhile, the population of Cuban boas has shown evidence of depletion, perhaps as the result of road kills, predation of young by a large population of feral cats, isolated genetics, and other anthropogenic factors.

Project Objectives

In 2014, a Hutia Management Plan was developed for NSGB. One of the main recommendations of the plan was to modify the current hutia population estimation methodology. Specifically, it was recommend not using defined plots (as is currently

being used) to make population estimates, particularly if no population control is being implemented within the plots. Instead, it was recommended that daytime counts of family groups within targeted forest assemblage be used to estimate hutia numbers. However, no specific methodology was provided in the plan. Therefore, an objective of this project is to develop a population estimation methodology that can be used to estimate the population size of hutia within particular habitats and overall on NSGB. This methodology shall be field tested and taught to the NSGB Natural Resource Manager (NRM) who will conduct future population estimation efforts on the installation.

Another objective of this project is to get a better understanding of the activity range size of hutia on NSGB. In 2009-2010, biologists from Naval Facilities Engineering Command attached several hutia with Global Positioning System (GPS) tracking units. The results from this preliminary study indicated that the average activity range size of hutia was approximately 4 acres. The 2017 rainy season was particularly wet and as a result there is an increase in vegetation growth throughout the installation. More data is needed to better understand the spatial ecology of this species during different seasons. It is an objective of this study to use current available technology to collect more information on the activity range size of hutia within different habitats and during different seasons during this study.

Project Area

NSGB is on the southeastern coast of Cuba, 60.0 miles from the eastern tip of the island. The area leased by the U.S. is approximately 6.0 mi long by 5.6 mi wide and encompasses approximately 45.0 square miles of land and sea. The base is bordered by the Caribbean Sea to the south and is divided into two land areas (designated as the leeward side and windward side) by the waters of Guantanamo Bay. The land area comprises 19,621 acres and the water areas comprise 9,196 acres. All suitable habitat on the leeward and windward sides are included in this scope of work.

Project Goal

The Integrated Natural Resource Management Plan for NSGB discusses the importance of effective hutia management in context with having biological data including knowledge of hutia population numbers, movement patterns/home range size, and distribution on the base. The primary goal of this project is for the cooperator to monitor the movements of hutia using GPS tracking collars and develop a population estimation methodology that can be used by NSGB personnel to estimate the population of hutia on the installation in future years. Substantial involvement is expected between the Navy and Cooperator when carrying out the activities specified in the scope of work and will include activities such as the Navy's involvement in the development of study methodology, data gathering and analysis; review of work plans, reports and all deliverables; providing staff time to oversee and participate in field work. For example the natural resource manager of NSGB will participate in the initial population estimation methodology field testing. In addition, once the cooperator has fitted hutia with tracking devices, the NSGB personnel will assist with monitoring these animals.

The Cooperator shall:

1. Participate in a kickoff teleconference within 14 days prior to project commencement to discuss the goals and objects of project, access to NSGB, introduce the participants involved in the project, and discuss any questions or concerns by both cooperator and the government.
2. Develop a population estimation methodology that takes into consideration the ecology (movement patterns, home range, habitat use and social organization) of hutia.
3. Conduct two (approximately 14 day-long) field trips to test the survey method at NSGB. Field trips shall be performed by a two-person team conducted once during the dry season (January-July), and once during the wet season (August-December). During these field visits, the Natural Resource Manager of NSGB will accompany the Cooperator and will be trained on how to conduct the population survey methodology.
4. Trap, attach and release 10 hutia with tracking collars.
 - a. Conduct a separate 14 day field visit to NSGB for the initial trapping, and release of hutia with Global Positioning System (GPS) devices tracking devices. Requirements of the GPS units are that they will have an accuracy of approximately 10 meters, and can be downloaded remotely without the need to recapture the animals. It is expected that the Cooperator has experience sedating small mammals to attach GPS devices. Any equipment purchased to conduct the field testing of the population estimation methodology and tracking of hutia shall be turned over to the NRM at NSGB at the end of the project.
 - b. The NRM will assist with periodically downloading data from the GPS tracking devices attached to the hutia in the field. As stated above, the GPS units used for this project shall have the ability to be downloaded remotely, without the need to recapture the telemetered individuals.
 - c. The Cooperator shall analyze the data recorded from the tracking devices and calculate the area utilization (both in minimum convex polygon and kernel home range) of each monitored individual. These data will be included in a Spatial Ecology Report (details discussed below).
5. The Cooperator shall provide a Draft Hutia Population Estimation Methodology and Spatial Ecology Report in Microsoft Word to the Navy Cooperative Agreement Technical Representative (CATR) and NRM for review, to be followed by a subsequent final report. The Plans shall include an Executive Summary, List of Tables, List of Figures, Biological Background, Population Estimation Methodology, Results of Field Testing, Literature Cited, and any applicable Appendices.

- a. The final report shall be submitted in the Living CD format. The Living CD is defined as a CD containing all reports, deliverables, correspondence, significant problems encountered with the project, and any other forms of written information which would help a researcher who is not associated with the deliverable gain a full understanding of the work associated with the project or task order. The documents on the Living CD will be stored as .pdf files and titled in accordance with the Living CD Instruction version 1.4. (See Attachment A for further details and clarification on the manner of storage, types of documents to be stored and the methodology for the titling of individual files).
- b. Any GIS maps and supporting data shall be delivered in accordance with Commander Navy Region Southeast (CNRSE) Standards for Geographic Information System (GIS) Deliveries (see Attachment B).

Performance Period

The period of performance for this task order shall be 18 months from the award date.

Travel to NSGB

Arrangements for travel to NSGB and access to on-base areas shall be coordinated with George Kenny (george.p.kenny2.civ@mail.mil). Air travel is available to NSGB from Fort Lauderdale, FL via IBC Air on Mondays, Thursdays and Fridays. A passport is required for travel to NSGB. On-installation housing and meals are available.

Schedule

The draft reports are due 120 days prior to the contractual end date.

An electronic copy (MS Word) and one hard copies of the draft reports, and an electronic copy and three hardcopies of the final report shall be delivered to:

Cooperative Agreement Technical Representative (CATR):

Chris Petersen
Senior Natural Resources Specialist
Naval Facilities Engineering Command Atlantic
6506 Hampton Blvd.
Norfolk, VA 23508
757-322-4560; chris.petersen@navy.mil

NSGB Natural Resources Manager:

George Kenny
NAVFAC-PWD Guantanamo Bay, Cuba
PSC 1005 Box 37 FPO AE 09593
Phone: 757-458-5626

Review comments will be provided to the Cooperator within 21 days after receipt of the draft report.

The final report will be due 30 days prior to the contractual end date.

Any schedule changes shall be submitted in writing to NAVFAC Atlantic CATR for review and approval. The intent is to develop a firm schedule and to allow extensions only with sufficient justification.

Required Provisions

The Cooperator shall, as amended after consultation with NAVFAC, abide by the safety plan that was submitted by the Cooperator as part of the response to the Request for Solicitation of Interest while working on-site at NSGB.