

Request for Information

Request for information to inform the planning of an aerial broadcast rodent eradication to restore Savana Island, U.S. Virgin Islands



SAVANA ISLAND SAFE HAVEN RESTORATION PROJECT, U.S VIRGIN ISLANDS

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Summary

Island Conservation is seeking information from companies that can supply aerial application services using an uncrewed aerial system (UAS) or helicopter equipped with a dispersal system capable of evenly distributing bait pellets to target invasive rats on Savana Island, U.S Virgin Islands. This is part of a joint project between Island Conservation, the U.S Fish and Wildlife Service (USFWS), the U.S Virgin Islands (DPNR-DFW) and the U.S Department of Agriculture to restore Savana Island as a safe refuge for the Endangered Virgin Islands Tree Boa (*Chilabothrus granti*) and improve the resilience of an important Caribbean Island ecosystem. The project is funded by US federal and likely private funding sources and is currently completing project planning and regulatory compliance with a planned implementation of March – April 2024. This request for information is intended to inform the project about the availability and constraints of current aerial broadcast service providers and will inform a request for proposals request anticipated on April 15, 2023.

Background

Island Conservation (IC) is a science-based nonprofit conservation organization committed to protecting island species and ecosystems. Island Conservation's mission is to prevent extinctions by removing invasive species from islands. Island Conservation is partnering with the Division of Fish and Wildlife in



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the Department of Planning and Natural Resources from the U.S Virgin Islands (DPNR-DFW) who are in the planning stages of a project to remove invasive rats from Savana Island. Savana is one of the islands Within the Puerto Rico Geographic Bank to serve as a refuge to introduce a population of the Endangered Virgin Islands Tree Boa (VI boa). However, invasive rats are one of the major threats to the VI boa, predated juveniles and adults. By eliminating invasive rats from Savana Island, we will create a safe refuge for a new population of the VI boa, contribute with the delisting criteria for the species recovery, build additional capacity within local partners for similar projects in the region, and demonstrate that drones can be safely used in the U.S. to manage or eradicate invasive species.

Given the size of Savana Island and its challenging terrain, an eradication will most likely require broadcast application methods applying bait via an underslung or attached bait spreader bucket. Both helicopter and uncrewed aerial systems (UAS) have been used to successfully eradicate invasive rodents from islands, however, a UAS-based rodent eradication has not yet occurred within U.S. sovereign territory. We seek information from aerial service providers to identify feasible and cost-efficient service solutions for the project

How are rats typically eradicated from islands?

Rats are typically removed from islands using a highly palatable cereal grain-based bait containing a rodenticide. Bait can be applied in bait stations, dispersed by hand, or applied aerially. Aerial broadcast operations use specialized spreader systems to sow bait across an island and GPS-guided flight to ensure accurate coverage. Generally, the entire island area is treated twice in two applications, separated by 10 to 20 days. In tropical environments, a gap between applications allows time for any sub-dominant or juvenile rats to access bait once most of the population is gone.

The following is a link to an informative video about a large-scale rat eradication project on South Georgia Island: <https://www.youtube.com/watch?v=A3KxxcNL93c>

The following is a link to blog about the first drone-eradication on Seymour Norte Island in Galapagos: <https://www.islandconservation.org/top-mind-podcast-innovation-conservation-rids-galapagos-island-invasive-rats/>

One of the essential parts of a broadcast application is ensuring every rodent on the island has access to a lethal dose of the toxicant (a single bait pellet). To ensure this, appropriate application rates in kilograms of bait per hectare of land area is determined in advance of the operation. These rates are informed by best practice guidelines for baiting that have proven successful in more than 600 rodent eradication operations worldwide. The aerial bait application is completed by flying straight parallel flight lines across the interior of the island while bait is broadcasted out in the spreader in varying directions and swath widths. For example, the coastal perimeter is treated by flying the actual coastline while spreading out of only one side of the spreader bucket to minimize bait getting into marine environments and sensitive exclusion zones. GPS data collected during the operation allows eradication managers to monitor bait coverage and density on the ground in real time, ensuring that the prescribed operational parameters are achieved.



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The Project Site

Savana Island is located approximately 2 to 3 miles west of St. Thomas Island in the U.S. Virgin Islands. Savana Island is a small uninhabited island (71 ha or 175 ac) with no man-made structures and is designated by the U.S. Virgin Islands Government as a wildlife Sanctuary that is managed by DPNR-DFW (Figure 1). The island was identified by Federal and Territory government agencies and other subject-matter experts as one of the best offshore islands to establish a highly resilient VI boa population. As a wildlife refuge, Savana is intended to protect and conserve wildlife, plants, and endangered species for the U.S. Virgin Islands.

The maximum elevation in Savana is approx. 80m, and the island is vegetated with a canopy not exceeding 20 m in height (Figure 2). Access to the island is by small boat, and it is expected that bait would be transported in this manner. Aerial broadcast applications of rodent bait will be made using either a helicopter or UAS. The operation of the helicopter or UAS will be conducted under professional guidance and coordination with the onsite safety manager. Bait loading for aerial applications may occur on Savana Island, an offshore barge, or on St. Thomas Island.

The aerial broadcast vendor will be expected to hold or acquire (within the project's timeline needs) the necessary certifications or approvals at Federal and Territory levels to both (1) operate their aerial platform within the USVI and specifically Savana Island airspace (<10km from an international airport), and (2) use that platform to aerially apply pesticide. IC and partners plan to handle NEPA and other environmental permissions for the project in general, outside of aerial broadcast.

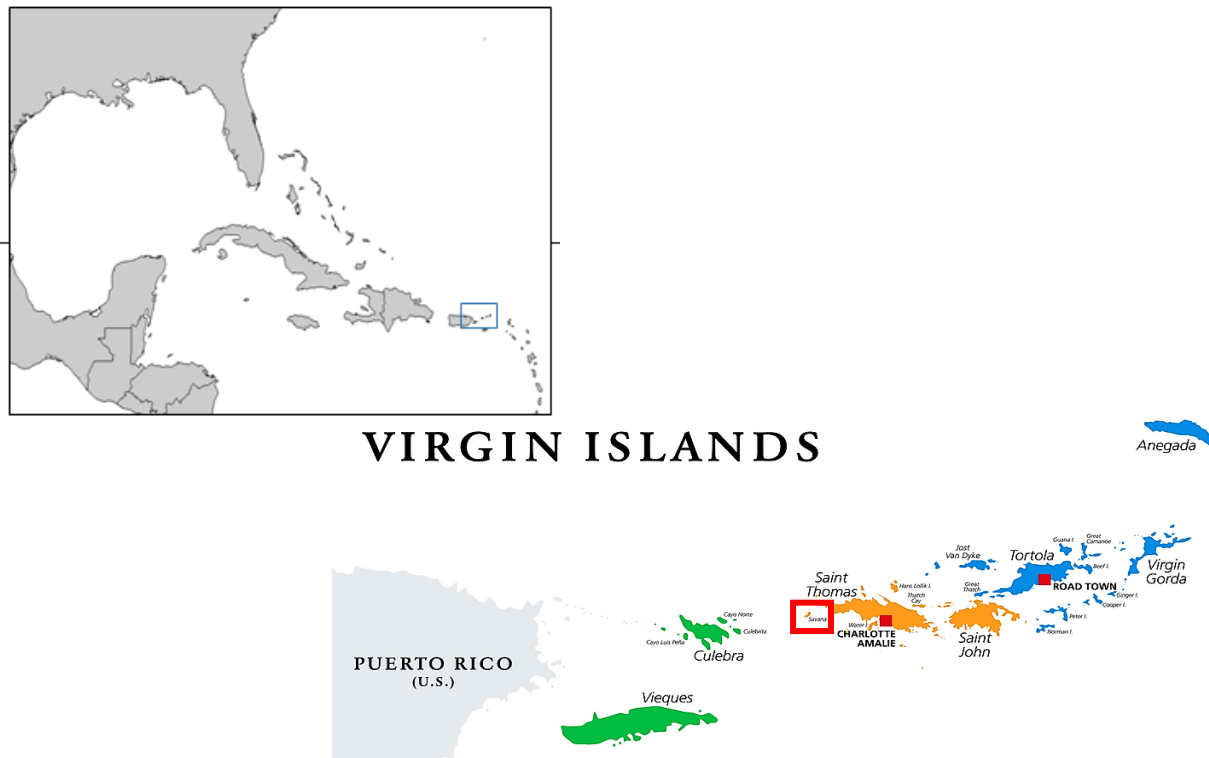


Figure 1. Location of U.S. Virgin Islands in the Caribbean (blue square) and Savana Island in the U.S. Virgin Islands (red square).



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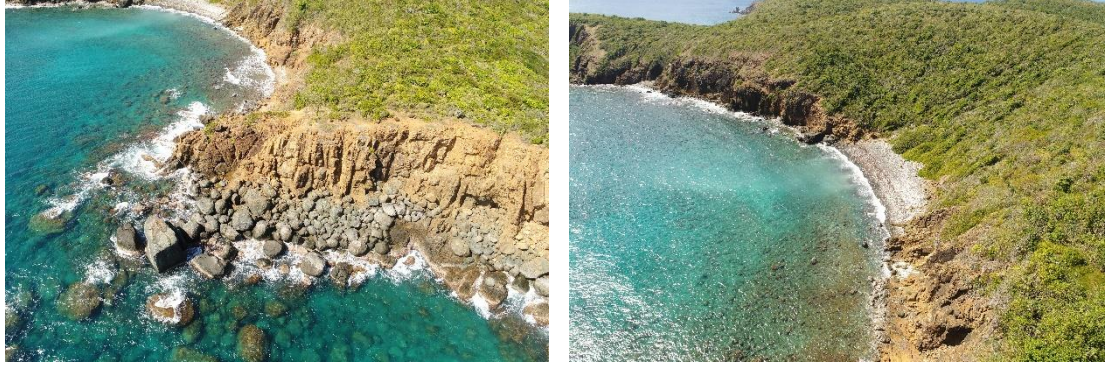


Figure 2. Savana Island topography

Project management

The planning and management of the overall eradication operation will be led by Island Conservation and DPNR-DFW. Island Conservation will also provide experienced staff and institutional knowledge of eradication operations, including GIS and aerial baiting expertise. DPNR-DFW is the project lead and has the final decision-making authority over the project. Island Conservation and DPNR-DFW are developing a memorandum of understanding to complete this rat eradication in Savana Island.

During the baiting operation in Savana, Island Conservation will oversee the overall eradication project implementation and evaluate bait application progress. The UAS or helicopter team will manage the aerial operations.

Specifications for the Proposed Operation

Operational area*	1 site ~71ha (175 acres)
Proposed operational timing	March/April 2024
Max island elevation	~ 80 meters (262 feet)
Interval between applications	21 days (planned, but may adjust based on weather, etc)
Expected time commitment	37 days
Total bait to be applied**	3,600 kg (7,920 lb). Individual baits are 0.5 inch (13mm) in diameter and weigh an average of 2.4 grams.
Accommodation	The aerial operations team will generally be accommodated on the main island of St. Thomas, but during the baiting operations will camp on Savana.
Access to the island	Small and medium boats (<10m) will be able to move personnel, supplies, and equipment for the aerial operations between St. Thomas and Savana.
Operational landing and bait loading sites	If a UAS is used, it is expected that loading sites can be established on Savana or on a barge. If a helicopter is used, the load site could be considered to be either in Savana or the nearest point in St. Thomas. The loading site area on island is approximately 20x60 meters.
Refueling or recharging	For UAS, both 91 and 98-octane petrol (gasoline) can be sourced locally. Gas-powered generators suitable for recharging LiPo

	batteries will be provided by IC and sourced locally if available or shipped. It is the responsibility of the UAV operator to provide requirements for refueling and recharging necessary to complete daily operations without interruption, inclusive of spares, as the project is intended to be self-supported. For helicopters, Jet A1 fuel will be utilized, and IC will provide all necessary fuel. If the fueling is at the loading site, the company or bidder will be responsible for all the fuel testing and handling onsite.
Constraints	Heat, humidity, rainfall, wind speed, sea conditions, international travel.

*This area is an initial estimate based on a two-dimensional area using the coastal perimeter. Actual application areas will be determined using the three-dimensional surface area calculated using the DSM.

** This total is based on the estimated area; the actual total bait applied will be calculated from 3D surface areas.

Request for information

To inform the project timeline, budget, and compliance requirements Island Conservation requests information from interested vendors about what is required to deliver aerial bait application services on Savana Island. It is requested that submissions propose practical service-based solutions that rely on existing technology and best practices for aerial bait application services and/or solutions that are expected to be proven and available by March 2024. Services that require significant technical development and do not demonstrate a pathway to be proven and reliable will not be considered. Further, submissions that only provide hardware but not service provision will not be considered.

1. Would your organization be interested in providing aerial bait application services for Savana Island? Why?
2. What are the capabilities of the aerial bait application solution? In your response please specify:
 - Flight endurance and capacity
 - Mission planning and GPS guidance systems
 - Radio communication systems, including potential BVLOS (beyond visual line of sight) capacities for UAS.
 - Ability to export data and report on bait application treatment
 - Ability to update or refine flight planning on site
 - Bait spreading system including swath width, product dispersal capabilities, and bait application rates
 - Maintenance and service requirements
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3. What are the operational parameters needed to deliver aerial bait application services in the U.S. Virgin Islands for your solution? In your response please specify:
 - Charter and transport of aerial platform
 - Provision of fuel/power source
 - Requirements for a loading and re-fueling site
 - Pre-operational site visit scoping requirements
 - Flight plan data requirements
 - Radio communications



4. What are the regulatory requirements necessary to deliver aerial bait application services in the U.S. Virgin Islands and your organization's experience applying for approvals? In your response please specify:
 - Insurance requirements
 - FAA endorsement requirements such as agricultural aircraft operator certificate, external loads, aircraft certifications
 - Pesticide applicator certifications
 - Timeline for securing endorsements
 - Experience securing approvals for aerial pesticide application
5. What is the cost structure for your organization to deliver aerial bait application services? In your response please specify:
 - Estimated daily and/or hourly rates for transport, charter, and downtime
 - Estimated daily and/or hourly rates for aerial bait application service provision
 - Travel and accommodation requirements
6. What is your organization's experience in delivering aerial bait application services?
7. Given a March 2024 operational window, what is the earliest date that you would need a contractual commitment to plan and implement the aerial bait application services?
8. What additional information or expertise would your organization require from Island Conservation in order to deliver the aerial bait application services?

Responding to this Request for Information

By submitting an RFI response, submitters represent that they are interested in responding to a future request for proposals to deliver contract services. Submissions should describe at a high-level the solutions and services available for contracting and should not be more than 5,000 words and provided the responses using a Google form found in this link: <https://forms.gle/sSDfHzCUdwUrxPFq6> If you have descriptions or case studies of similar or relevant projects, please include these as supporting information and send to jose.herrera@islandconservation.org by March 15, 2023. The email must be identified in the subject line that it is an Information for the Savana Rat Eradication Project.

All RFI responses and questions should be directed to the contact below:

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