CANARI serves as CEPF's regional implementation team for the Caribbean Islands Biodiversity Hotspot.

Pest Management Plan

March 11, 2024

CEPF Grant 113885

American Bird Conservancy

Restoration of Isla Alto Velo

Jaragua National Park, Dominican Republic

Grant Summary

1. Grantee: American Bird Conservancy
2. Project title: Restoration of Isla Alto Velo
3. Grant number: 113885
4. Grant amount: $476,421 (US dollars)
5. Proposed dates of grant: July 1, 2024 – June 30, 2026
6. Country where activities will be undertaken: Dominican Republic
7. Summary of the project

This project aims to protect the Critically Endangered Alto Velo Curlytail Lizard (*Leiocephalus altavelensis*) by removing the primary threat to the species, invasive mammals, from its namesake island, Alto Velo, Dominican Republic. The long-term goal is island and facilitate the recovery of the curlytail and other species of native flora and fauna, with follow-on benefits to the near shore marine environment via increased beneficial nutrient input from seabird guano and to support coral growth and fish populations.

8. Date of preparation of this document: March 11, 2024

Pest Management Approach: This section should describe your understanding of the problem, your experience with pest management issues, and your proposed actions during the project. Specifically, what do you intend to do and how will you do it? The information presented should include methods of application, e.g. by hand or via aerial spraying.

Two rat species were introduced to Hispaniola in the 16th and 17th centuries; black or ship rat (*Rattus rattus*), and brown or Norway rat (*R. norvegicus*). Only black rats are believed to be on Alto Velo. Rats have been recorded on Alto Velo since 1932 (Noble and Hassler 1933), but are believed to have been introduced to the island around 1860 (Wiley and Ottenwalder 1990).

Rodents have been introduced onto more than 80% of islands worldwide, causing ecosystem-wide perturbations (e.g. Atkinson 1985, Jones et al. 2008, Kurle et al. 2008, Towns et al. 2009). The most pronounced impact has been the extinction of endemic species. Introduced rats (*Rattus* sp.) are responsible for an estimated 40-60% of all bird and reptile extinctions (Atkinson 1985, Island Conservation analysis of World Conservation Monitoring Centre data), and have caused the extinction of endemic mammals, birds and invertebrates on islands throughout the world's oceans (Andrews 1909, Hindwood 1940, Daniel and Williams 1984, Meads et al. 1984, Atkinson 1985, Tomich 1986). Even when extinctions do not occur, rodents can have ecosystem-wide effects on the distribution and abundance of native species through direct and indirect effects. In comparisons of rat-infested and rat-free islands, and pre- and post- rat eradication experiments, rats have been found to suppress population size, species diversity, and recruitment of birds (Campbell 1991, Thibault 1995, Jouventin et al. 2003), reptiles (Whitaker 1973, Bullock 1986, Towns 1991, Cree et al. 1995), and terrestrial invertebrates (Kurle et al. 2008, Towns et al. 2009), and in particular are known to cause significant nest failure in breeding seabirds (Tomkins 1985, Jouventin et al. 2003, Jones et al. 2005). In addition, introduced rats feed opportunistically on plants, in some cases degrading the quality of nesting habitat for birds that depend on the vegetation. Rats are known to alter the floral communities of ecosystems into which they are

introduced (Campbell and Atkinson 2002, Graham and Veitch 2002), reduce productivity of rare and endangered plants through seed depredation, and act as seed dispersers of invasive weeds.

To date, successful rodent eradications have been achieved on at least 304 islands in 20 different countries, including 284 islands from which *Rattus* sp. have been eradicated (Howald et al. 2007). The first successful rodent eradication was in 1951 on Rouzic Island in France (Lorvelec and Pascal 2005). Subsequently, through the 1970s and 1980s, New Zealand biologists developed the methodology for systematic rodent eradication techniques and successfully eradicated rats from several small islands (Moors 1985, Thomas and Taylor 2002). With the application of new strategies and research to monitor the campaigns, rats were eradicated from increasingly larger islands (e.g. Taylor and Thomas 1989, Taylor and Thomas 1993, Cromarty et al. 2002, Morris 2002, Clout and Russell 2006) and culminating on Campbell Island in 2002 (113 km^2), the largest island to date from which rats have been completely eradicated.

The fundamental methodology that all but one of these eradications used was the delivery of bait containing a rodenticide. Bait is distributed consistently across the island and during a time of year when rats are relatively food deprived. In temperate regions this period is typically defined by fall and winter resource-dependent population declines, but in tropical environments this period might be more closely aligned with a characteristic dry season. Depending on island topography and size, climate, native species assemblages, operational logistics and other factors, documented eradication operations applied bait using either bait stations or broadcast, or both. Bait stations are typically laid out on a grid pattern across the entire island; the largest successful rodent eradication using bait stations was Langara Island (3,105 ha) in British Columbia (Taylor et al. 2000). Bait broadcast can be done by hand, by using a spreader bucket suspended beneath a helicopter, or using a unmanned aircraft (drone) to aerially broadcast bait. Bait broadcast has been typically used on islands that are remote and infrequently visited, or which have rugged terrain that prevents access to every part of the island (Howald et al. 2007).

Because of the remote location of Alto Velo, the rugged terrain and inaccessible inland cliff areas, the recommended strategy for rat eradication is to apply rodent bait aerially. In order to achieve success, bait must be placed in every rat territory on the island. The steep topography and cliff areas on Alto Velo are difficult to access without serious risk to personnel safety, and would exclude personnel from reaching every rat territory on the island. For this reason, the use of bait stations or hand broadcasting bait would have a low likelihood of success.

Island size, topography and geographical location

At 154 ha in size, Alto Velo is well within the range for successful eradications from islands. However, the island's size, rugged coastal areas, and interior cliffs mean that much of the island is difficult to access on foot and rodent bait should be applied aerially. The island's remoteness in the western Dominican Republic and approximately 27 kilometers offshore from the southern coast, presents some logistical difficulties. However, rodent eradications have been successfully completed on much more remote islands

Rodenticides and bait products

For the successful eradication of invasive rodents from Alto Velo, the fundamental requirement is that every last rodent is removed or killed. Thus, every effort is made to kill the last rodent. The use of bait containing a rodenticide is the only known technique capable of achieving successful

eradication on an island the size of Alto Velo. The choice of rodent bait is important in achieving eradication success, but its use must be also evaluated against potential negative consequences, such as poisoning of non-target species

From an eradication perspective, the choice of bait used must:

- contain an active ingredient that is known to be highly efficacious to rodents,
- be palatable and demonstrate low or no bait shyness by rodents,
- be delivered into the territory of each rodent on the island,
- be consumed in sufficient amounts by every single rodent to receive a lethal dose.

From an efficacy standpoint, the bait must contain a rodenticide that has the ability to kill rodents and prevent the possibility of incurring bait avoidance before all individuals consume a lethal dose. In addition, the bait product must be legally available for use in the Dominican Republic. There are three primary classes of rodenticides typically used for rodent eradications from islands; the acute rodenticides, the subacute rodenticides, and the anticoagulants. About 58% of successful rodent eradications from islands have used a second-generation anticoagulant (e.g. brodifacoum, bromadiolone) (Howald et al. 2007, Island Conservation unpubl. data). Other rodenticides used have included acute toxicants (e.g. strychnine) and first-generation anticoagulants (e.g. diphacinone, pindone) the latter of which are less persistent in the environment, which can make them a preferred choice for some operations (Eason and Ogilvie 2009).

Brodifacoum

For successful rodent eradication from Alto Velo, brodifacoum is recommended as the toxicant mostly likely to achieve success with an aerial broadcast technique. Brodifacoum is a coumarin-based second-generation anticoagulant. It is a vertebrate toxicant that acts by interfering with the blood's ability to form clots, causing sites of even minor tissue damage to bleed continuously. Before the toxicant can have any measurable physiological effects, brodifacoum levels in the liver must reach a toxic threshold (which can vary widely between species). The relative threshold level for rats to experience negative effects from brodifacoum exposure is very low, but can be higher in other vertebrate species. Brodifacoum is the primary rodenticide used in rodent eradications on islands (Howald et al. 2007). Detailed descriptions of brodifacoum and its effects on other native species or "non-targets" can be found in: Kaukeinen 1993; Eason and Spurr 1995; Eason et al. 2002; Erickson and Urban 2004; and Hoare and Hare 2006.

Bait formulation

Available bait products containing brodifacoum are typically formulated as a bait block or pellet that comprises the rodenticide locked within a grain-based matrix; the grain matrix is typically very attractive to rodents. The formulation is designed to persist on the ground long enough for all rodents to be exposed but to degrade sufficiently quickly to minimize the risk of exposure to non-target species. To reduce the impact of brodifacoum to non-target species, the bait product can be formulated to be less attractive; typically bait blocks or bait pellets are dyed green or blue – colors which birds and reptiles are more likely to avoid (Tershy et al. 1992; Buckle 1994, H. Gellermen, unpubl. data).

Options for bait delivery

Aerial broadcast of rodent bait is recommended as the primary technique as it is most likely to achieve rat eradication from Alto Velo; aerial application is frequently the preferred method on large remote islands and on islands with physically challenging terrain such as Alto Velo. The technology for aerial bait broadcast for rodent eradications has been adapted from fertilizer application in the agricultural sector and aerial seeding in the forestry sector where similar techniques are used. Bait application is monitored using a combination of GPS technology to record bait application rate and ground coverage. The key to successful bait application is to recruit a pilot experienced in eradication techniques to ensure that bait is applied to every rodent territory and no baiting gaps occur.

The primary advantages of an aerial bait application are: safety for ground-personnel; the short amount of time the bait is available to non-target species, and minimum physical disturbance to vegetation, soil and native wildlife. Physical disturbance to native wildlife is limited with aerial bait application due to the short bait application operational time and the fact that ground personnel do not need to frequently access the entire island.

9. Current and anticipated pest problems relevant to the project.

Alto Velo currently has introduced rats, cats and possibly goats. With the implementation of the Biosecurity Plan developed as part of this project, which is designed to prevent future introductions and reintroductions, there are no additional anticipated pest problems on the island.

In regards to the current pest problems, we share this section from the proposal that outlines rodent impacts on islands.

Introduced rats (*Rattus* sp.) are responsible for an estimated 40-60% of all bird and reptile extinctions (Atkinson 1985), and have caused the extinction of endemic mammals, birds and invertebrates on islands throughout the world's oceans (Andrews 1909, Hindwood 1940, Daniel and Williams 1984, Meads et al. 1984, Atkinson 1985, Tomich 1986). Even when extinctions do not occur, rodents can have ecosystem-wide effects on the distribution and abundance of native species through direct and indirect effects. Rats are credited with declines in island lizard populations in New Zealand (Towns, 1991), St. Lucia, St. Croix, and the Bahamian Archipelago (Hayes et al. 2012) among other locations. Direct predation of *Anolis* lizards by rats has been observed on Alto Velo (Island Conservation 2010c) in Puerto Rico, and populations of Anolis lizards in the Bahamas suffered loss of genetic diversity on rat-infested islands (Gasc et al. 2010). In comparisons of rat-infested and rat-free islands, and pre- and post- rat eradication experiments, rats have been found to suppress population size, species diversity, and recruitment of birds (Campbell 1991, Thibault 1995, Jouventin et al. 2003), reptiles (Whitaker 1973, Bullock 1986, Towns 1991, Cree et al. 1995), and terrestrial invertebrates (Kurle et al. 2008, Towns et al. 2009), and in particular are known to cause significant nest failure in breeding seabirds (Tomkins 1985, Jouventin et al. 2003, Jones et al. 2005).

10. Current and proposed pest management practices.

There is currently no pest management on Alto Velo related to rodents, nor is there proposed control outside of this project.

11. Relevant integrated pest management experience within the project area, country or region.

Pest management, specifically rodent management, for conservation and human health occurs throughout the Dominican Republic. Specific projects ABC is involved in includes rodent control using traps for the protection of Black-capped Petrels. The Alto Velo project will be implemented in a manner consistent with integrated pest management practices. Where alternative methods to pesticides will be employed is primarily in the biosecurity phase of the project, and these could include cultural and mechanical or physical controls. This means changing the way humans store and pack gear and supplies to eliminate the chance of rodent ingress before accessing Alto Velo. It could include mechanical control of rodents around active boat loading zones.

12. Assessment of proposed or current pest management approach and recommendations for adjustment where necessary.

Again, there is no current or proposed pest management at Alto Velo, aside from that proposed as part of this project.

Pesticide Selection and Use: This section should provide a comprehensive understanding of the pesticide that will be selected, why it was selected and what efforts were made to assess risks to human health. Note that this section should also present information on the potential impacts that the selected pesticide(s) will have on natural ecosystems and non-target species.

13. Description of present, proposed and/or envisaged pesticide use and assessment of whether such use is in line with international good practice.

Brodifacoum is the most extensively used rodenticide for rodent eradication from islands –of 332 known island rodent eradication efforts reported as successful as of 2007, 71 percent used brodifacoum (Howald et al. 2007a); 58 operations used aerial broadcast as the primary technique (Howald et al. 2007, Island Conservation unpubl. data).

The bait product selected for this operation is Brodifacoum-25D Conservation (EPA registration number 56228-37; Puerto Rico Depart. of Agriculture registration number 11-1320-3) manufactured by Bell Labs Inc., Madison, Wisconsin; this product is specifically manufactured for use in dry environments. The active ingredient, brodifacoum, is presented at 25 ppm (0.0025%) in a 2.0g pellet with an inert grain matrix; the pellets are colored green or blue.
Brodifacoum-25 Conservation bait products (both wet and dry formulations) have been successfully applied in at least five other rat eradications: the Aleutian Islands in Alaska (Buckelew et al. 2008), Palmyra Atoll in the central Pacific (Buckelew et al. 2005a, Wegmann et al. 2008, Alifano and Wegmann 2010), Pohnpei, Micronesia in the western Pacific (Wegmann et al. 2007), and three islands in the Gulf of Mexico (Samaniego-Herrera et al. 2009).

The methods proposed in the feasibility study are consistent with international good practice. Further, ABC project primary staff, Keitt, was lead author on a publication with international authorship on the best practices associated with rodent eradications on tropical islands and is thus very familiar with these guidelines (Keitt et al 2015).

14. Indication of the type and quantity of pesticides to be financed by the CEPF grant (in volume and dollar value) and/or assessment of increase in pesticide use resulting from the project.

No pesticides will be purchased with CEPF funds. However, we acknowledge other funds will be used to purchase pesticide to be used to eradicate rats on Alto Velo. We anticipate the project will use the equivalent of $50,000 USD of bait with 25 PPM brodifacoum. This project would result in the one-time application of approximately 0.125kg of brodifacoum on Alto Velo.

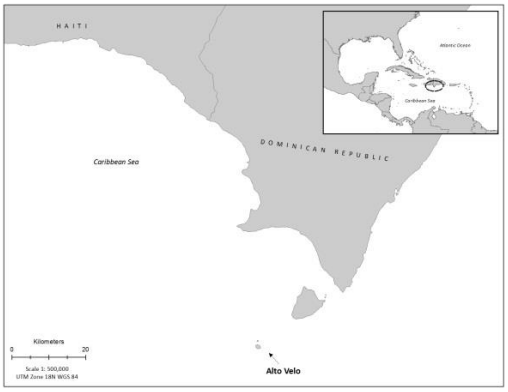
15. Chemical, trade and common names of pesticide(s) to be used.

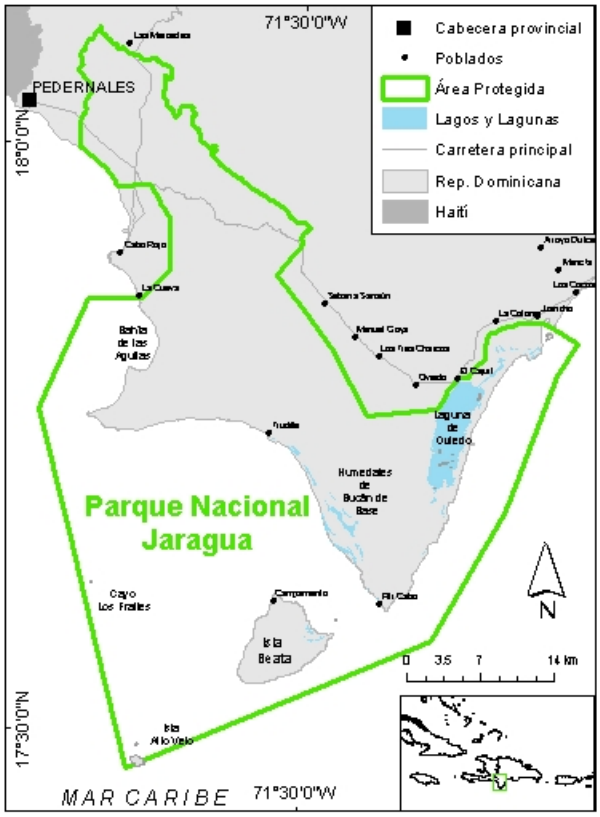
    Brodifacoum-25D Conservation (EPA registration number 56228-37; Puerto Rico Depart. of Agriculture registration number 11-1320-3) manufactured by Bell Labs Inc., Madison, Wisconsin; this product is specifically manufactured for use in dry environments. The active ingredient, brodifacoum, is presented at 25 ppm (0.0025%) in a 2.0g pellet with an inert grain matrix; the pellets are colored green or blue.

16. Form(s) in which pesticide(s) will be used (e.g., pellet, block, spray).

    2.0g pellet

17. Specific geographic description of where the pesticide(s) will be applied: province, district, municipality, landowners [do not give names of individual persons], and map coordinates (if available); and the total area (hectares) to which the pesticide(s) will be applied.





Alto Velo is 154 hectares in size and is located in the southern part of Jaragua National Park.

18. Assessment of environmental, occupational and public health risks associated with the transport, storage, handling and use of the proposed products under local circumstances, and the disposal of empty containers.

    In regards to public health risk, Alto Velo island is uninhabited and access to the island is prohibited without specific authorization.

    The efficacy of the project to remove rats from Alto Velo is reliant upon the use of fresh, unspoiled bait. Thus, chain of custody tracking of the bait combined with strict measures to meet biosecurity requirements and to avoid any ingress of water or other items that would affect the bait is part of the Standard Operating Procedure for rodent eradications.

    Bait will be transported within a locked 40 foot shipping container. The container will have temperature and humidity monitors to ensure the product does not get exposed to conditions outside of product specifications during transport and storage. The container will be stored in secure facilities.

    These factors will minimize risks associated with transport and storage of the bait.

    A detailed assessment of the risks associated with the use of the product will be developed as part of the operational planning for the project.

    All containers used to transport the product will be disposed of according to best practices established by the US EPA and USDA. This includes destroying all plastic buckets use for transport or storage of the product so that they are unable to be used for other purposes, and then disposing of them consistent with US regulations.

19. Description of plans and results for tracking of damage to natural ecosystems and/or harm to non-target species prior to pesticide application and subsequent to pesticide application.

It is current best practice for rodent eradications on islands to conduct extensive biological monitoring to first evaluate risk associated with the use of the rodenticide and then assess any impacts from the use of the rodenticide. The final operational plan for the project will lay out detailed environmental monitoring that includes pre-eradication baseline data collection followed by post eradication short and long-term monitoring. Below are examples of some of the monitoring that will occur:

Incidental Species Observations
Identification of incidental bird observations during the bait operations will contribute to the species records list for Alto Velo. In an effort to document any changes in the numbers of raptors on Alto Velo as a result of the eradication operation, sightings of individuals will be recorded prior to, during, and after the broadcast of bait.

Shorebird Transect Surveys
By conducting shorebird surveys, the monitoring team will be able to both monitor the presence of shorebirds on the island and document changes in shorebird numbers during the eradication. Shorebird transect surveys of a standard length and duration will be repeated prior to, during, and after the operation.

Shorebird and other Non-target Carcass Surveys
Both systematic and opportunistic carcass searches will be conducted for reptiles, shorebirds, and other bird species. For systematic surveys, search effort will be quantified and several designated sites repeatedly searched. Carcasses collected during this effort may be later tested for Brodifacoum residues.

Short-term Reptile monitoring
A Mark-Recapture-Resight program will be implemented to monitor short-term survival of the Alto Velo curly tail and Alto Velo anole, to provide an indicator of potential negative impacts to the species as a result rat eradication operations. Individuals will be captured, marked, and released prior to baiting operations, and recapture efforts will continue for up to one month post-bait operations using standard Mark-Recapture methodology. Additional recapture-resight trips may be conducted.

Geckos:
The Alto Velo gecko will not be part of the mark-recapture study because they are too small to effectively mark. Geckos will be summarily monitored using baseline transect counts from 2025. Two weeks after the second bait application, we will conduct visual counts along pre-existing line-transects, and the number of geckos encountered will be compared with the previous year's data. The methodology will follow that used for previous counts.

Long-term population monitoring
These studies are intended to document long-term population recovery in native and endemic species as a result of the rat eradication. Pre-eradication surveys will be completed in 2024 and 2025, and baseline abundance data for each species estimated. At least three annual post-eradication surveys are planned between one- and five-years post-rat eradication, the final survey being five years after the eradication is complete.

We can draw some inferences from the results of the Desecheo Island National Wildlife Refuge rodent eradication. This island is located near Alto Velo and is about the same size. It has an endemic anole, gecko and ameiva that is somewhat similar to the curlytail in its ecology. The Desecheo project was intensely monitored and reptile numbers increased significantly and quickly after the rodent eradication. The monitoring regime employed on Desecheo will inform the operational planning and final environmental monitoring plan on Alto Velo island.

20. Prerequisites and/or measures required to reduce specific risks associated with envisaged pesticide use under the project (e.g., protective gear, training, upgrading of storage facilities, etc.).

    During the operation:

- All personnel must have read and understood the MSDS for Brodifacoum-25D Conservation before commencing work on the project.
- The bait handling will be overseen by a staff person who has received their US Pesticide Applicators license and this person will provide training to all other staff that will or are likely to come into contact with the rodenticide.
- All staff involved in handling open bait bags must wear the appropriate PPE; overalls, gloves, covered footwear, and eye protection. Half faced respirators will be worn by staff working with the bait. In other situations, dust masks will be worn if exposure to dust is a possibility.

- Bait bags will be secured at the load site and will not be re-used for any other purpose. They will be disposed of according to US EPA guidelines.
- Protective clothing and equipment will be removed and hands/arms/face thoroughly washed at the end of a task or before eating, drinking, smoking or using the toilet.
- Food and water supplies will be covered during bait application.
- Only designated staff will be in the vicinity of the bait loading site.

21. Basis of selection of pesticide(s) authorized for procurement under the project, taking into consideration the risks identified under Section 19, and the availability of newer and less hazardous products and techniques (e.g. bio-pesticides, traps).

- Brodifacoum is the most frequently used rodenticide for rodent eradication from islands. Of 277 successful island rodent eradication events worldwide (where the toxicant applied was known), 196 (71 percent) used brodifacoum as the primary rodenticide (Howald et al. 2007, Island Conservation unpubl. data). Brodifacoum is highly toxic to rats; consumption of no more than a few bait pellets as a single feed or spread across multiple feeding events, would result in mortality (Erickson and Urban 2004, Eason and Ogilvie 2009). The LD50 dose has been achieved in Norway rats (Rattus norvegicus) ingesting 1.5 g (0.052 oz) of brodifacoum bait product in a single feeding (0.3 mg/kg at 50 ppm brodifacoum) (Buckle and Smith 1994), but within and between Rattus species variation also occurs (see Table 2.3). The toxicity of brodifacoum to rats makes it desirable as a tool for rat eradication because it reduces the need to make bait consistently available to rats for an extended period of time. Brodifacoum-25D Conservation (hereafter referred to as Brodifacoum-25D) is an unwaxed cereal bait product with 25 ppm brodifacoum, available in 2 - 3g pellets with a sweet, grain flavor. The product is manufactured specifically for conservation purposes; Brodifacoum-25D is for use in dry climates and is designed to break down rapidly on exposure to moisture, including both dew and rainfall. The bait product has been tested for efficacy and palatability under laboratory conditions, prior to its use in eradication operations. To successfully eradicate rats from an island, every rodent must be exposed to sufficient quantities of rodenticide, by either consuming bait or eating other animals that have consumed bait, to acquire a lethal dose of brodifacoum. During field trials, Brodifacoum-25D has been shown to be more palatable to rats in comparison to naturally-available food sources (Buckelew et al. 2005, Howald et al. 2005a, Buckelew et al. 9 2006, Island Conservation 2010a).
- In an effort to reduce risks to wildlife and people but allow rodenticide products to remain available, the EPA recently limited the use of brodifacoum and nine other rodenticides. Brodifacoum is currently restricted to agricultural applications, professional pest control operations and ecosystem restoration efforts on islands (Environmental Protection Agency 2008). However, the EPA does not discourage the use of brodifacoum for rodent eradication from islands. On the contrary, the EPA's recent decision to restrict brodifacoum use explicitly exempted island use from this decision (Environmental Protection Agency 2008). In addition, the New Zealand Department of Conservation identifies brodifacoum as the preferred toxicant for island rodent eradication (Eason and Ogilvie 2009). These explicit exemptions are logical in light of the fact that island rodent eradication operations are fundamentally different from rodent control operations. The potential risks from using brodifacoum for eradication can be avoided or reduced more effectively on an isolated island, with a finite time period of bait availability, than for rodent control operations on mainland or larger-island sites where rodenticide is available in the environment chronically. Furthermore, the generally high cost and logistical complexity of conducting a whole-island rodent eradication necessitate techniques and tools that maximize the probability of successful eradication on the first attempt.

22. Name and address of source of selected pesticides [do not give names of individual persons].

    Bell Labs Inc., Madison, Wisconsin

23. Name and address of vendor of selected pesticides [do not give names of individual persons].

Bell Labs Inc., Madison, Wisconsin

24. Name and address of facility where pesticides will be stored.

    Upon shipment to the Dominican Republic, the pesticide will be stored inside a locked shipping container within a secure facility on Ministry of Environment property.

Policy and regulatory framework, and institutional capacity: This section should describe the institutional and legal framework under which the pesticide(s) will be applied, with reference to the documentation and standards required under local and national law and international good practice. Where a particular pesticide is not regulated at the target site, you must identify similar pesticides and the applicable regulation in neighboring countries that could apply, and international good practice. You must also explain why this particular pesticide is necessary, even in the absence of national laws.

25. Policies on plant/animal protection, integrated pest management, and humane treatment of animals.

    The active ingredient in the rodenticide bait chosen for this project, brodifacoum, is widely used in the Dominican Republic to control rodents for human health and safety and for biodiversity conservation. Use around hotels, restaurants, and in agricultural settings is widespread. The specific product identified for use in this project is manufactured in the USA and registered by the US EPA and controlled by the US Department of Agriculture. A one time use import permit will be secured to allow the shipping of the product to the Dominican Republic.

26. Description and assessment of national capacity to develop and implement ecologically based invasive alien species control [where relevant].

    The Dominican Republic has a strong national capacity to implement ecologically based invasive species control and its implementation is part of many conservation projects in the country. However, eradication is specific form of invasive species control for which there is limited national capacity or experience.

27. Description and assessment of the country's regulatory framework and institutional capacity for control of the distribution and use of pesticides.

    As mentioned above, the pesticide bait product to be used for this project is registered in the US and will be imported to the Dominican Republic under a one-time special permit. The pesticide will be transported, stored, handled, and disposed of in compliance with US EPA regulations. Ensuring that this occurs is the responsibility of the project team, which includes the contractor Island Conservation, who has experience implementing these activities in countries around the world and in compliance with US and local regulations.

28. Proposed project activities to train personnel and strengthen capacity [list the number of people and what they are being trained in].

    There will be multiple opportunities to train personnel and strengthen capacity throughout the course of the project. These include:

    Invasive Species Management: differences between invasive species control (reducing populations) and eradication (completely removing the population with a one-time effort) and how it affects decisions around what kinds of pesticides are appropriate to use. We will incorporate this message into the project summary and include it in workshops, group and individual meetings. Goal is to train at least 20 personnel in the Ministry of the Environment in understanding the difference and using this to evaluate projects.

    Pesticide Storage and Handling: The final project plan will provide extensive details on how the imported pesticide will be stored and handled when moving within the country and being prepared for use. A minimum of 15 Ministry of the Environment staff will be trained on the methods of storing and handling the pesticide used for this project.

    Pesticide Application: A minimum of four residents of the Dominican Republic will be trained in safe handling of the pesticide in the field on Alto Velo and gain direct experience in the application of the pesticide as part of project implementation.

    Pesticide Monitoring: A minimum of five Ministry of the Environment staff will be trained on best practice for post pesticide application monitoring through the sharing of the written monitoring plans and associated discussion. A minimum of four residents of the Dominican Republic will be trained and gain experience in implementing pesticide monitoring in the field as part of project implementation.

29. Confirmation that the appropriate authorities were approached and that the appropriate licenses and permissions were obtained by the project.

    The Ministerio de Medio Ambiente y Recursos Naturales is a key stakeholder in this project and have been consulted and involved going back to the development of the Feasibility Study and Draft Biosecurity Plan in 2015. They hold ultimate responsibility for providing approvals for the project, and they will continue to be engaged throughout additional planning and implementation. The project team will work with the Ministry to secure all required permits.

Participatory preparation: This section aims to outline the range of informed consultations that you have had both with experts to optimize the potential for success, and with stakeholders, particularly local communities, who are potentially affected by the use of pesticides (due to, for instance, proximity, use of certain areas for free-ranging livestock or non-timber forest product collection, etc.).

30. Dates, and results of expert consultations, if necessary.

    The project implementation plan for the eradication of invasive mammals from Alto Velo will be reviewed by and approved by the Island Conservation Eradication Advisory Team, an international team of experts with decades of experience planning, implementing and reviewing eradication

projects that use rodenticides. This team will verify that the project plan follows current global best practice for rodent eradications. Dates TBD.

Due to the remote nature of Alto Velo island, there is no anticipated impact to local communities associated with the use of the rodenticide.

31. Dates, and results of consultations with local communities.

    See section on biosecurity.

Monitoring and evaluation: This section aims to outline the steps you will take to monitor and evaluate the purchase, storage, application and effects of the pesticide(s) in the target area.

32. Description of activities related to pest management that require monitoring during implementation.

    - During implementation, monitoring will be conducted to validate rodenticide bait application rates on Alto Velo island and information will be used to adjust application accordingly.
    - Rate of disappearance of the rodenticide bait will be monitored, which is part of best practice protocols.
    - Surveys of the island will be conducted to assess and quantify non-target take associated with the use of the rodenticide.
    - Upon receipt of the rodenticide bait, it will be sampled for mold, or any other signs of degradation that might reduce it effectiveness. Monitoring will continue at regular periods until the bait is used in the field. A sub sample will be collected and sent for analysis to confirm the concentration of rodenticide within the bait matched label requirements.

33. Monitoring and supervision plan, implementation responsibilities, required expertise and cost coverage.

    The final implementation plan will provide specific details on how monitoring of bait will be performed and who is responsible. In general, the Project Manager (IC) will have ultimate responsibility for the creation of the final plan, assigning responsibility associated with the plan and making sure the plan steps are followed. The required expertise for this aspect is multiple years of experience in project management. The costs associated with the implementation of these activities are covered in the staff salaries included in the budget.

34. **Disclosure**: CEPF requires that pest management plans are disclosed to affected local communities and other stakeholders prior to project implementation. Please describe the efforts you have taken to disclose this plan.

    This plan will be shared with all stakeholders engaged in the project. Printed or electronic copies will be shared with all government agency stakeholders and key aspects of the plan will be incorporated into presentations on the project to these stakeholders.

The plan will be made available on the project website and links via QR codes will be provided in leaflets and on signs sharing information on the project.