CEPF FINAL PROJECT COMPLETION REPORT

Organization Legal Name:	Fauna & Flora International
Project Title:	Islands Without Aliens: Building Regional Civil Capacity to Eradicate Alien Invasive Species
Date of Report:	30 August 2014
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CEPF Region: Caribbean Islands

Strategic Direction: 1. Improved KBA management and protection

Grant Amount: $116,725.00

Project Dates: July 1, 2012-June 30, 2014

Implementation Partners for this Project (please explain the level of involvement for each partner):

National CSO Implementing Partners/ Primary Beneficiaries

1. **ENVIRONMENTAL AWARENESS GROUP** (National, Antigua & Barbuda). The EAG works in important conservation areas nationwide and has a longstanding interest (and government-endorsed remit) in the management of the Offshore Islands KBA. The Offshore Islands Conservation Programme's Project Coordinator is Natalya Lawrence. Together with EAG members, project staff (including two Field Officers), locally contracted biologists, volunteers and other stakeholders, Ms. Lawrence participated in every training opportunity under this project and facilitated project implementation, including rodent and mongoose eradications, biosecurity, and monitoring and evaluation. Ms. Lawrence and the EAG developed public education activities to support this work (the EAG's staff and operational costs were factored into their complementary grant from CEPF #60933) and conducted school trips and other nature-based tours to the offshore islands, which benefitted directly from this project and provided employment to local communities. Empowered with greater skills and know-how, the EAG remains firmly committed to continuing its vital role in conservation management, including invasive species control in the Offshore Islands KBA.

2. **SAINT LUCIA NATIONAL TRUST** (National, Saint Lucia). The SLNT is responsible for managing several coastal areas and islands within and adjacent to priority KBAs,

including Dennery Island, the Maria Islands Nature Reserve and the Pointe Sable Environmental Protection Area. Under a Sub-grant, this project enabled the SLNT to appoint two Field Officers to work in these areas and help prevent them being (re)invaded by alien species. The project also trained additional new and full-time Trust personnel who have taken on an active role in conservation actions in the KBAs. The SLNT provided permits and logistical support, and has integrated the invasive alien control measures into its operational procedures and budgets for the islands. The Trust also conducts nature tours to the Maria Islands, which have benefitted directly from this project and provided employment to local communities. The SLNT also facilitated public education activities to support this work, including issuing local press releases and organizing public theatre shows, and remain committed to using the training and materials to continue advancing invasive species control in Saint Lucia after the project ends.

National Government partners

The project also benefitted from very active support and collaboration from government agencies in the host countries (much of which was in-kind: no CEPF funds were used to pay government staff):-

3. **MINISTRY OF AGRICULTURE, LANDS, HOUSING AND ENVIRONMENT (MALHE), GOVERNMENT OF ANTIGUA AND BARBUDA.** This ministry includes three highly relevant agencies: the Forestry Unit, which is responsible for the management of all terrestrial wildlife; the Fisheries Division, which is responsible for marine areas (including the marine protected area that encompasses the Offshore Islands KBA); and the Environment Division, which is responsible for national environmental policies and practices. Staff from these agencies participated in fieldwork, site visits and project meetings, and helped to ensure the project complemented and informed government policy on invasive alien species (e.g. Environment Division personnel participated in GEF meetings in Canada where this project was presented). This project gained attention from the highest levels of government, including the Prime Minister of Antigua and Barbuda, who visited the project site in 2013.

4. **SAINT LUCIA FORESTRY AND LAND USE DEPARTMENT, GOVERNMENT OF SAINT LUCIA**. This is the government agency with responsibility for terrestrial environmental policy and conservation in Saint Lucia, and has designated staff to manage wildlife on the offshore islands of Saint Lucia. The Department employs a number of staff with experience in ecological monitoring and assessments, who kindly assisted in teaching and mentoring staff from the Saint Lucia National Trust (e.g. Forestry staff Stephen Lesmond taught the SLNT Field Monitors how to catch and identify native and alien reptile species, and the Deputy Chief Forestry Officer Adams Toussaint provided training in bird monitoring and identification). In return, Forestry staff also benefitted from training opportunities provided by this project in alien invasive species management and biodiversity monitoring, and will continue to collaborate with the SLNT staff on restoring and managing the offshore islands. This Department was also one of two lead agencies in Saint Lucia for the CABI project '*Mitigating the Threats of Invasive Alien Species in the Insular Caribbean*' and facilitated information exchange and cooperation between the two projects (e.g. Forestry staff presented this CEPF project at a regional meeting of the CABI partner organizations in November 2012).

International NGO implementing partner

5. **DURRELL WILDLIFE CONSERVATION TRUST.** Under a Sub-grant, Durrell's Eastern Caribbean Manager, Mr. Matthew Morton, served as the National Coordinator in this project and coordinated many activities and logistics from his office in Saint Lucia. Tasks included organizing monthly focal point meetings, regularly meeting with and mentoring the SLNT Field Monitors, compiling progress reports and liaising with local consultants, communities and other stakeholders. Mr. Morton also notably assisted with setting up and managing GIS-linked databases (for invasive species management and biodiversity data) for the project, and worked closely with local biologists to develop monitoring methods for Saint Lucia's offshore islands. Although the Sub-grant focused on Saint Lucia, Mr. Morton also voluntarily assisted the EAG and FFI with several tasks in Antigua, including developing terms of reference for rat eradication personnel in 2012 and developing a grant proposal to the Net Trust in 2014. At the start of the project, Durrell's IAS expert Dr. Nik Cole spent two weeks in Saint Lucia to help to develop biosecurity protocols for the offshore islands. Durrell also generously provided additional training opportunities for Saint Lucia National Trust staff, including sponsoring Ms. Murlina Murray to participate in the acclaimed Durrell Endangered Species Management Graduate Certificate course in Jersey.

On a more informal basis, this project team also collaborated with a number of other regional and international organizations including: **Island Conservation** (including sharing feasibility plans and operational plans), **Island Resources Foundation** (involved in project planning and evaluation in Antigua), **Commonwealth Agricultural Bureau International (CABI)** (which provided co-funding under the UNEP-GEF project "*Mitigating the Threats of Invasive Alien Species in the Insular Caribbean*" in 2012 and 2013, and will continue to help disseminate outputs from the CEPF project), and participated in the 2013 regional conference of **Birds Caribbean** (previously the Society for the Conservation and Study of Caribbean Birds) to disseminate methods and lessons learned from this project. Staff and students from the **University of West Indies** also took part in project training and site visits, and secured resources for the successful eradication of rats from Culpepper Island, Barbados, in 2013. (See performance reports for a fuller list of collaborating organizations and communities).

Conservation Impacts

Please explain/describe how your project has contributed to the implementation of the CEPF ecosystem profile.

The Caribbean Islands Ecosystem Profile highlighted the extraordinary threat to this region from **invasive alien species**, including rats, Asian mongooses, feral goats and the African chytrid fungus. Combating alien species on large, populated islands is often prohibitively expensive, even for developed countries, and chronically undermined by the perpetual risk of re-invasion. For many island nations, a more practical and cost-effective strategy is to **focus on restoring offshore islands**, from which invasive alien species and other threats can be permanently eliminated to create truly safe refuges for native biodiversity. This strategy lay at the heart of this project.

Working in four priority KBAs in Saint Lucia and Antigua & Barbuda, this CEPF project strengthened the capacity of local civil society organizations to eradicate and control rodents (*Rattus rattus, R. norvegicus*), small Asian mongooses (*Herpestes javanicus*) and goats (*Capra*

hircus)— aliens that are widespread across the Caribbean Hotspot and have severe ecological impacts on almost every island. This project demonstrated that these animals can be successfully eliminated from islands using methods that local groups can readily acquire and safely and effectively apply themselves.

At a post-project meeting in Saint Lucia on 26 August 2014, Ms. Shirlene Simmons, Conservation Manager of the Saint Lucia National Trust, stated: "*This project has helped the National Trust achieve our mandate for biodiversity conservation. We have gained a lot of technical skills and knowledge. Before this project, the Trust didn't have any such field conservation activities. We own 26 sites, half of them islands, and are now developing a work programme for all of our sites. We have gained capacity and hired two more persons, one of whom is the lead person for biosecurity work and conducting tours to the offshore islands*". Ms. Simmons added "*I like the way this project has been managed, especially the monthly coordination meetings with Forestry, Durrell and FFI to review progress and plan upcoming activities. This is one of the best models of implementing a project I have seen, and we intend to apply this to all our projects from now on*."

The project established demonstration sites on multiple offshore islands in both Antigua (13 islands) and Saint Lucia (four islands), which will continue to be managed and monitored by the trained CSOs. We furthermore demonstrated the feasibility of eradicating alien mammals from critical parts of the mainland, using a 'mainland island' approach. The findings from this work are already exciting great interest among Caribbean states that either have no or very few offshore islands, or whose threatened species need much larger areas of alien-free habitat. See further comments under Replicability, below.

Planned Long-term Impacts - 3+ years (as stated in the approved proposal) and Actual Progress Toward Long-term Impacts at Completion:

As this project ran for just two years (2012–2014), it is too soon to confirm exactly what the long-term impacts (3+ years) will be. However, the progress made by the project end has been very positive, putting the project well on track to achieve and even exceed its intended long-term impacts:

Long Term Impact 1. ***"The permanent removal of alien invasive mammals from all important islands within three CEPF-priority Key Biodiversity Areas enables the significant and lasting recovery of a wide range native endemic and threatened species, including birds, reptiles, invertebrates and plants. Increased wildlife populations are demonstrated through the monitoring systems established on every site."***

PROGRESS 2012-2014:

- **Alien invasive mammals have been eradicated and/or prevented from reinvading 17 islands.** Specifically, 13 important islands in the Offshore Islands KBA (Antigua: Codrington, Galley Major, Galley Minor, Great Bird, Green, Guardhouse, Lobster, Lobster Extension, Pelican, Rabbit, Redhead, Unnamed and York), 2 islands in the Mandele Dry Forest KBA (Saint Lucia: Dennery and Praslin) and 2 islands in Pointe Sable KBA (Saint Lucia: Maria Major and Maria Minor).
- **Biodiversity monitoring data obtained during and prior to this project demonstrate very encouraging increases in the populations of target species** on the offshore islands. Examples include the following (see Short Term Impact 6, below, for even more examples):

- **The Critically Endangered Antiguan racer *AIsophis antiguae* has showed a >20% increase in global population** between end-2011 and end-2013 (from approximately 824 to 1,016 individuals, all on four islands in the Offshore Islands KBA that were kept alien mammal-free throughout this project with CEPF's support.
- **Brown noddies *Anous stolidus* increased by 50% per year on Rabbit Island**, from 86 pairs in 2010 to 290 pairs in 2013. This small but important island was kept clear of rats and other aliens by the CEPF project and is particularly important for local nature tour companies.
- **Vegetation cover on Dennery Island has improved dramatically since removing goats and sheep in early Year 1**, including a conspicuous increase in the number of new tree seedlings, some of which were almost one meter tall by the following year. Birdlife on Dennery Island has also sharply increased, with **a 50% increase in the number of bird species** present on Dennery Island in 2014 than in 2012.

- **CEPF support has established/ improved biodiversity monitoring systems** to enable both countries to continue tracking impacts on fauna and flora over the longer term.

Long Term Impact 2. **"*Local CSOs, underpinned with support from local communities and government agencies, have the technical capacity, materials and confidence to keep islands rat-free and embark on further alien invasive species management actions. This capacity is demonstrated by the CSOs undertaking their own eradication programs with little or no input from international organisations."***

PROGRESS 2012-2014:

- **The Environmental Awareness Group in Antigua and the Saint Lucia National Trust have notably advanced in their technical skills, knowledge and materials as a result of this CEPF project**. Both organizations are now capable of maintaining rat-free islands and have gained a greater understanding of how to plan and manage an eradication program, and how to prevent and address incursions:
  - The Environmental Awareness Group successfully organized the eradication of rats from three islands in Year 2, albeit with some technical backstopping from FFI. By applying training and materials developed by this project, the EAG furthermore successfully dealt with at least two incursions by black rats (including York Island in 2013: home to one of only four colonies of the Critically Endangered Antiguan racer).
  - Saint Lucia National Trust staff have not yet needed to organize their own rat eradication operation, but participated in the removal of goats and sheep from Dennery Island in Year 1 and in the rat eradication operations in Antigua in Year 2. The staff have certainly gained the necessary know-how and motivation to respond swiftly if any of their KBA islands are re-invaded by rats or indeed other aliens. Plans to eradicate rats from additional islands are under development, starting with Scorpion Island.
- **While the primary emphasis of our original proposal was on rats, Antigua and especially Saint Lucia made swift progress to expand to tackling a much wider**

range of harmful alien invasive taxa that threaten the biodiversity of their offshore islands, including goats, sheep, mongooses and various species of ants, lizards, snails, and plants. Several exotic species of plants (including Asian Nypa palms and papayas) were removed from Saint Lucia's Praslin Island and Maria Major Island by the trained SLNT Field Monitors, for example, while in Antigua, mongooses were eradicated from two islands in Antigua's Offshore Islands KBA in Year 2.

- **Both EAG and SLNT also benefitted from the completion of Biosecurity Plans for important offshore islands in both countries.** The illustrated plans set out the protocols for preventing, detecting and removing alien invaders. The principles and protocols appear to be well understood by the CSO field teams.

Long Term Impact 3. ***"Islands restored and kept free from invasive alien mammals benefit local communities by providing welcome new opportunities for education, recreation and tourism revenue. The removal of alien rodents also removes a major threat to human health."***

PROGRESS 2012-2014:

- **Visitor numbers to the offshore islands of Antigua and Saint Lucia have continued to rise annually**, including both local recreational users and foreign tourists. Rising use of the islands is reflected in benefits to the local economies from providing boat transport and other services. In Antigua, for example, local tour companies estimated the number of visitors to offshore islands exceeded 70,000 in 2013 (up from 50,000 in 2010, equivalent to a 12% annual increase), with foreign tourists contributing not less than US$ 5.5 million per year in tour fees. It is safe to say the Offshore Islands KBA is now one of the country's most popular and important tourist attractions.
- **Reports from Environmental Awareness Group (CEPF grant # 60933) highlight the value of the restored offshore islands for school trips ('Floating Classrooms'),** operated by the EAG every month as part of its environmental education program. Saint Lucian agencies have advanced plans for similar educational trips to Praslin Island.
- **Consultations and interviews with local stakeholders across all sectors, including coastal villages, have confirmed high levels of approval** of this project's efforts to eradicate and contain the spread of rats, which pose a significant health risk and are widely loathed.

Planned Short-term Impacts - 1 to 3 years (as stated in the approved proposal) and Actual Progress Toward Short-term Impacts at Completion:

Ongoing strong progress has been made towards all seven planned short-term impacts, although some analyses are still pending from Antigua (the sister Environmental Awareness Group project #60933 having been extended to the end of August 2014):

Short Term Impact 1. ***"At least 25 nationals, representing two local CSOs in the pilot countries and local communities, gain advanced skills in practical invasive species management techniques, including all key steps and tools to plan and implement mammal eradications, evaluate project impact, and prevent reinvasions,***

***based on the CEPF Civil Society Tracking Tool, grant questionnaire and trainer observations*."**

TARGET EXCEEDED:

- **More than 40 nationals in Antigua and Saint Lucia received formal classes and on-the-job training** on rodent detection, rodent control and selected biodiversity monitoring techniques: most of them employees or members of the CSOs. In addition, and at no cost to CEPF, training on rodent control was also received by 10 nationals in Barbados, 1 national of Saint Vincent, 1 national of Dominica and 1 national of St Kitts and Nevis.
- **The Civil Society Tracking Tool forms, completed by the CSOs, demonstrate increased capacity between the start and end of this project**. The Environmental Awareness Group's score rose from 67 to 77.5/100, while that of the Saint Lucia National Trust rose from 66.5 to 79/100.

Short Term Impact 2. **"*Both of the leading CSOs in the pilot countries, plus other local stakeholder groups and organisations across the region, gain access to tools, partners and expert advisers to enable them to work together to address rodents, goats and other harmful invasive alien species more effectively.*"**

TARGET ACHIEVED.

- **In Antigua & Barbuda, the Environmental Awareness Group gained important new skills and a network of new contacts and access to technical support** in the invasive species management sector. Consequently this CSO was able to organize the eradication of black rats and mongooses from three more islands in Year 2 with only moderate technical assistance from FFI.
- **A suite of tools and outputs have been developed,** including two rat and mongoose eradication operational plans (covering five islands), offshore islands biosecurity plan (covering almost the whole KBA), offshore islands biodiversity monitoring plan (ditto), safety protocols and rat and mongoose eradication feasibility plans, which the EAG can adopt and adapt for future invasive species operations in Antigua & Barbuda.
- **In Saint Lucia, the Saint Lucia National Trust has gained its first field personnel (Field Monitors) to manage invasive species and monitor wildlife** on offshore islands and other lands vested in the SLNT (26 sites in total). Furthermore, three existing SLNT personal have become dedicated to technical biodiversity conservation management. The Saint Lucia National Trust has also become significantly more engaged in joint activities with the government and local stakeholders in the KBAs since this project began: e.g. the removal of livestock from Dennery Island and workshops to develop management plans and biosecurity plans for Dennery and Praslin islands.
- **Exchange visits between Saint Lucia and Antigua were particularly fruitful and have helped to foster friendship, skills sharing and cooperation between the two CSOs**. Indeed, SLNT actively assisted the eradication of rats and mongooses from three islands in Antigua's KBA in early 2014. The CSOs in Antigua and Saint Lucia have in turn also exchanged skills with CSOs in other parts of this region,

including Jost Van Dyke Preservation Society, Anguilla National Trust and the regional Birds Caribbean society.

Short Term Impact 3. ***"The number of islands being actively and demonstrably kept invasive alien mammal-free within KBAs in the pilot countries is increased by 27% from 11 to 14 (at least 2 additional islands in Antigua and 1 additional island in Saint Lucia will be cleared of alien invasive mammals), and new or improved monitoring systems established on all 14 islands".***

TARGET EXCEEDED.

- **The number of islands being actively and demonstrably kept invasive alien mammal-free within KBAs in the pilot countries was increased by 54% from 11 to 17.** One additional island in Saint Lucia was cleared of alien invasive mammals (goats and sheep removed from Dennery Island in 2012) and three additional islands in Antigua were cleared of alien invasive mammals (black rats and small Asian mongooses from Pelican and Codrington islands, black rats from Guardhouse island). Improved biosecurity measures were established on 17 islands in total.
- **Improved biosecurity and biodiversity monitoring systems have been put in place** in Antigua (focusing on 13 islands in the Offshore Islands KBA plus neighboring cays) and Saint Lucia (four islands in Mandele Dry Forest and Pointe-Sable KBAs, plus another important island, Rat, situated outside of the KBAs).
- **In addition, and at no cost to CEPF, rats were eradicated from Culpepper Island in Barbados** to save the newly rediscovered endemic Barbados leaf-toed gecko *Phyllodactylus pulcher* (which is not on the IUCN Red List yet but qualifies as Critically Endangered).

Short Term Impact 4. ***"The land area of islands being actively and demonstrably kept free of invasive alien vertebrates within KBAs in the pilot countries is increased by at least 9% (from 78.1 hectares to 85.4 hectares) and potentially by more than 20% (to 94.3 hectares, if Antigua's Pelican Island is chosen over Codrington Island)."***

TARGET EXCEEDED.

- **The land area of islands being actively and demonstrably kept free of invasive alien vertebrates within KBAs in the pilot countries has been increased by 29%** from 78 hectares to 101 hectares.
- **While this project strategically focused on 17 islands of high conservation value, keeping these islands free from alien mammals significantly helps to buffer other islands** in the KBAs that might otherwise become invaded by alien animals using a stepping-stone effect. The CEPF project, and the upgraded biosecurity plans and protocols for Saint Lucia's and Antigua's offshore islands, have thus strengthened the biosecurity and conservation values of almost every island in their KBAs, a total land area of some 262 hectares.

Short Term Impact 5. ***"Monitoring mechanisms established in all pilot countries to track the social and biodiversity impacts of this project and serve as a baseline for monitoring other threats or conservation actions within the KBAs."***

TARGET EXCEEDED.

- **The project produced detailed biodiversity monitoring plans for the offshore islands of Antigua and Saint Lucia**, tailored to suit local needs and capacity, and reflecting where possible the methods used in previous surveys in these areas.
- **Biodiversity monitoring took place in Antigua and Saint Lucia throughout both years of the CEPF project**, with detailed baseline data collected on plants, mammals, birds and reptiles (especially globally threatened species including the Critically Endangered Antiguan racer *Alsophis antiguae* and Vulnerable Saint Lucia whiptail *Cnemidophorus vanzoi*).
- **Short technical reports have been prepared on findings to date.** Social data (including visitor numbers and expenditures) were also collected through site visits and interviews with tour operators and other local stakeholders.
- **Even during this short two-year project period, promising changes have been detected** (see below, and Long-term Impact indicator # 1 above).

Short Term Impact 6. ***"Evidence of increases in wildlife populations on project islands by project end include at least 10% increase in key species for which baseline population data are available for 2011, including the Antiguan racer (CR) and Endangered lizards in Saint Lucia. Other globally threatened species that will directly benefit from this project include: Saint Lucia racer (EN), hawksbill turtle (CR), green turtle (EN), leatherback turtle (CR), West Indian whistling duck (VU) and lignum vitae (EN)."***

TARGET ACHIEVED/ EXCEEDED.

- In Antigua's Offshore Islands KBA, the annual census of the **Critically Endangered Antiguan racer *Alsophis antiguae*** showed a >20% increase in global population between 2011 and end 2013 from 824 to at least 1,016 individuals, and the population is projected to exceed 1,090 individuals by end 2014.
- **Least terns *Sternula antillarum*** (specifically the regionally threatened subspecies *antillarum*) re-colonized Pelican Island, within months of the island being cleared of rats and mongooses in Year 2. Whereas previous surveys failed to find any seabirds nesting on this island when it had alien mammals, at least 30 pairs of these terns were observed nesting on Pelican Island in 2014.
- Also in Antigua's Offshore Islands KBA, monitoring of **Critically Endangered hawksbill turtles *Eretmochelys imbricata*** showed >11% increase in nesting females and neonates between 2011 and 2012. Data for the current (2014) turtle nesting season are currently being collected by a collaborating agency, the Jumby Bay Hawksbill Project. Removal of rats and mongooses serves to reduce predation of sea turtle eggs and juveniles. Live traps purchased by the CEPF project are currently being deployed around other turtle nesting areas in the KBA to curb predation by mongooses.

- Also in Antigua's Offshore Islands KBA, the **golden talinum *Talinum cf. fruticosum*** is considered by botanists to be a species endemic to this KBA. This herbaceous flowering plant has continued to rise in number and range on the rat-free islands, with more sites confirmed to be occupied by this species in 2014 than 2012. On the rat-free Great Bird Island, for example, this species was found to be at least 10% more widespread than at the start of this project, with individuals recorded on almost every part of the island. We anticipate islands cleared of rats in Year 2 will soon be naturally repopulated by this beautiful plant.
- In Saint Lucia's KBAs, the **Vulnerable Saint Lucia whiptail lizard *Cnemidophorus vanzoi*** has increased by at least 5% since the last census (2007), thanks to alien species control and an ongoing reintroduction program, and its total population could increase by >20% when the species is reinstated on Dennery Island in the very near future. (Dennery is Saint Lucia's second largest island, restored by the CEPF project, and will boost this species' range in the KBAs by 24%. The reintroduction will take place once the island's vegetation cover and invertebrate populations are deemed to have sufficiently increased).
- The Field Monitors reported more sightings of the **(Critically) Endangered Saint Lucia racer *Erythrolamprus [Liophis] ornatus***, the world's rarest snake, on Maria Major in Year 2 than in any years previously. An action plan was developed by a participatory process in 2013 to aid its recovery, setting a goal of increasing its global population from the estimated 20 individuals on Maria Major to at least 500 individuals in three sites.

Short Term Impact 7. ***"At least $100,000 leveraged by the end of the grant period to support recurrent management and monitoring costs of Antigua's and Saint Lucia's offshore islands for two more years."***

TARGET EXCEEDED.

- Funds have been secured to continue biosecurity and monitoring activities on the offshore islands in Antigua and Saint Lucia well into 2015. The following were confirmed in the second half of Year 2:-
    - $17,000 was secured from the **Net Trust** by Durrell to support the EAG to manage Antigua's offshore islands.
    - EAG secured $15,000 from the **Conservation Leadership Programme** (administered by FFI, CI and other INGOs) to support conservation work on the resident Vulnerable West Indian whistling ducks *Dendrocygna arborea*, including invasive species control in the Offshore Islands KBA.
    - FFI secured $50,000 from **Halcyon Land & Sea** to strengthen the capacity of the Saint Lucia Forestry Department to manage terrestrial biodiversity, including the KBAs.
    - The **Saint Lucia National Trust** secured funds for key staff, including Field Monitor Saphira Hunt, and approximately $5,000 per year for boat transport.

    In addition

FFI has applied for a further $25,000 from **Disney Wildlife Conservation Fund** (for offshore islands in both countries). A decision is expected in September 2014.

- A proposal to **GEF** has been developed by the Government of Saint Lucia, which includes developing a business plan for creating the alien-free 'mainland island' within Saint Lucia's North East Coast KBA (see CEPF project Component 2 below).

- Thus the project has **levered over $100,000** to continue important elements of this conservation program. This sum is in addition to matched funds secured during the project development stage and the other substantial in-kind costs committed by EAG, SLNT, Durrell, Syngenta, Complete Marine Services and other partners and collaborators during and after the grant period.

Describe the success or challenges of the project toward achieving its short-term and long-term impact objectives.

As noted above, the project has largely exceeded its short-term impacts and is well on track to deliver the intended long-term impacts. To a large extent, this reflects the project team's knowledge and prior experience of working in the Lesser Antilles, which allowed us to set targets that we knew to be both useful and achievable. The project also benefitted from other factors including:

- **The project had highly committed and hard-working National Coordinators in each country**. Ms. Natalya Lawrence (EAG) and Mr. Matthew Morton (Durrell) are permanently based in Antigua and Saint Lucia respectively and were able to meet all the key players regularly to ensure the project ran smoothly. FFI is very grateful to these individuals for their outstanding efforts.

- **Island ecosystems, and many island species, are capable of responding remarkably swiftly** to the removal of critical threats, including the eradication of invasive alien species. Furthermore, these systems are often easier to monitor and measure than continental ecosystems, partly because many species are approachable and conspicuous.

- **FFI and our implementing partners, notably the Environmental Awareness Group, Saint Lucia National Trust and Durrell, have a long history of working together** on various conservation projects, and benefit from good working relationships with government agencies and other key stakeholders, including local landowners.

However, there were a number of unexpected challenges during the course of this project. Including:

- **The unexpected incursion of black rats on Green Island** – one of Antigua's largest offshore islands – at the very start of this project absorbed a lot of valuable personnel time and funds (the rat operation cost approximately US$50,000 in total and forced both EAG and FFI to scramble to find extra funds). However, the incursion of rats on Green Island did have several very positive consequences, including educating the EAG Field Officers why the offshore islands need tight biosecurity measures to prevent such incursions, and rapidly building EAG's experience in how to plan and implement a rat eradication operation. This experience undoubtedly aided

the success of the multiple eradication operations that were carried out in Antigua in Year 2, as well as the successful termination of an incursion of rats on York Island (also in the Offshore Islands KBA) in Year 2.

- **Lack of transparency over the ownership and development plans for Antigua's offshore islands** unfortunately resulted in some wasted efforts in Year 2. A feasibility study and operational plan for Crump Island had to be ditched when it emerged that the island had been sold to Chinese developers, forcing our team to switch to restoring other islands (Pelican, Codrington and Guardhouse islands were cleared of rats and mongooses instead). There is probably no way this could have been avoided, given that even senior contacts in key government agencies were oblivious to the development plans, but it set the project schedule in Antigua back by approximately one month and delayed the completion of several other outputs. On the plus side, FFI, EAG and our partners have gained a better knowledge of the ecology of Crump Island and are considering the possibility of collaborating with the developers to incorporate biodiversity conservation measures into their resort plans. Furthermore, the feasibility studies and operational plans were finished to a high standard and are now being circulated as case studies for conservationists planning other eradication operations in this region.

Were there any unexpected impacts (positive or negative)?

While building the capacity of CSOs was one of the core objectives of this project, **the impact of this CEPF project upon the Saint Lucia National Trust was even more positive than hoped**: the SLNT has eagerly seized all of the training and learning opportunities and its capacity has grown by leaps and bounds. According to their Civil Society Tracking Tool forms, the SLNT's capacity score has jumped by more than a dozen points, from 66.5/100 at the start of the project to 79/100 by the project's end.

This is especially remarkable because during the years prior to this project, SLNT focused mainly on heritage conservation and managing visitors to its properties, and had almost zero involvement in conserving biodiversity. Even on its own lands (26 sites, half of them islands), the Trust had left any wildlife-management actions to the Saint Lucia Forestry Department's Wildlife Unit. Today, however, as a result of the training, experienced and confidence gained from this project, SLNT now employs two Field Monitors to look after the offshore islands (Ms. Saphira Hunt, Mr. Lance Peterson) in addition to a full time Conservation Officer (Ms. Shirlene Simmons) and an Assistant Conservation Officer (Ms. Murlina Murray), who have been very actively involved in all aspects of this project. Also during this project, the SLNT recruited Mr. Craig Henry to manage the Point Sable Environmental Protected Area (a priority KBA), who has also become a skilled and active member of the project team. Thus, the SLNT has gained five committed individuals with new knowledge and skills for conserving biodiversity, both in and outside of the lands vested in the Saint Lucia National Trust. This has added to, rather than replaced, the human resources of the Saint Lucia Forestry and Land Use Department: The SLNT has gained a closer working relationship with the Department, and technical staff from both agencies have declared their intent to continue collaborating on conservation actions.

This striking increase in the SLNT's human resources and their capacity should be sustainable, as the SLNT is able to support and build on this growth through its annual subvention and fundraising. The SLNT Conservation Manager has confirmed that the SLNT will continue funding the Field Monitors and can absorb many of the recurrent costs of managing the offshore islands (e.g. $5,000 per year for boat travel) for the foreseeable future. In 2014, the SLNT also secured a

GEF Small Grant to develop a new project to improve the management of the endemic (and now Endangered) Saint Lucia fer de lance *Bothrops caribbaeus* and has submitted a large grant proposal to support the conservation management of the Pointe-Sable KBA. The enthusiasm and heightened capacity of this CSO bode very well for the future of both this organization and Saint Lucian wildlife.

It must of course be noted that the **capacity of the Environmental Awareness Group in Antigua also improved very significantly**. The Environmental Awareness Group's Civil Society Tracking Score rose by more than 10 points between the start and end of this project. This improvement is also a very great credit to this organization and its hard-working staff, especially the Offshore Islands Conservation Programme Coordinator Ms. Natalya Lawrence. However, as the EAG was well known to have a strong interest in and commitment towards biodiversity conservation prior to this project, their very positive response was not unexpected.

Project Components

Project Components*: Please report on results by project component. Reporting should reference specific products/deliverables from the approved project design and other relevant information.*

Component 1 Planned: CIVIL SOCIETY ORGANIZATIONS LEARN KEY PRINCIPLES AND METHODS OF ERADICATING INVASIVE ALIEN SPECIES, PREVENTING INVASIONS, AND MONITORING IMPACTS

Component 1 Actual at Completion:

This overall component was achieved. Below are some comments on each activity in turn.

Activity 1.1 ***CSO baseline existing capacity and training needs evaluated at start and end of project. Capacity of Saint Lucia National Trust and Environmental Awareness Group is shown to have been strengthened by this project, based on the CEPF Civil Society Tracking Tool.***

This activity was completed. FFI, Durrell and partners jointly conducted a training needs analysis of the Environmental Awareness Group and Saint Lucia National Trust in early Year 1, focusing on skills required to identify, monitor and eradicate invasive species from small islands, and SLNT and EAG assessed their capacity against the CEPF Civil Society Tracking Tool. The findings were used to guide the development of the training programs under 1.2 and 1.3. At the end of the project, capacity in Antigua and Saint Lucia was re-assessed using the CEPF Civil Society Tracking Tool. The SLNT's score was found to have soared from 66.5 at the project start (June 2012) to 79.0 out of a maximum 100 by the project end (June 2014). The EAG's score rose by a very similar degree, from 67.0 to 77.5, during the same period.

Activity 1.2 ***At least 15 nationals trained on invasive alien species control to the level where they can implement the biosecurity and eradication activities under Components 2 and 5. Workshop and trainer reports detail the names of trainees, subjects covered, progress made and key observations and conclusions*****.**

This activity was completed. In fact well over 30 West Indian nationals were trained (and evaluated by the FFI and Durrell trainers), many of whom participated in relevant activities under Components 2 and 5. Fifteen days of training workshops and classes on invasive alien species control were conducted for CSO staff, volunteers and their associates on the main principles and

methods for eradicating and controlling invasive alien mammals, from initial planning/stakeholder consultation through to completion and post-eradication monitoring. Follow-up mentoring and support was provided by FFI and Durrell invasive species experts (Dr. Jenny Daltry, Elizabeth Bell, Dr. Nik Cole, Matthew Morton) throughout this project. As part of these workshops, trainees were introduced to existing online tools (e.g. Pacific Invasives Initiative tool kit), essential references and the global networks of experts who can provide technical support (e.g. IUCN/SSC Invasive Species Specialist Group and Island Eradication Advisory Group).

Activity 1.3 ***At least 10 nationals trained to the level where they can implement biodiversity monitoring activities (2.4 in Saint Lucia and 5.5 in Antigua). Workshop and trainer reports detail the names of trainees, subjects covered, progress made and key observations and conclusions*****.**

This activity was completed. In fact more than 20 nationals were trained (and evaluated by their FFI and Durrell trainers), most of whom participated in Activities 2.4 and 5.5. Both classroom and on-the-job training encompassed standardized monitoring techniques for birds, reptiles, vegetation and invertebrates in accordance with each country's biodiversity monitoring plans (see Activities 2.4, 3.3 and 5.5 below), although the training approaches and subjects differed somewhat between the two countries in accordance with their needs, interests and initial levels of capacity. Training encompassed species identification and other field survey methods, correct use and maintenance of equipment, data management and analysis, and report writing. Follow-up mentoring and support was provided by FFI and the National Coordinators in both countries (Dr. Jenny Daltry, Natalya Lawrence, Matthew Morton) and other experts affiliated to this project (e.g. botanist Roger Graveson and herpetologist/ invasive species expert Dr. Nik Cole).

Component 2 Planned: INVASIVE ALIEN MAMMAL ERADICATION AND BIOSECURITY ACTIONS DESIGNED AND IMPLEMENTED IN SAINT LUCIA

Component 2 Actual at Completion:

This overall component was achieved. Below are some comments on each activity in turn.

Activity 2.1 ***In early Year 1, Goat Eradication Operational Plan completed and successfully implemented for Dennery Island [Saint Lucia: Mandele Dry Forest KBA]*****.**

The operational plan to remove goats (and sheep) from Dennery Island was devised in the first quarter of Year 1 and agreed with the owners of both the island and the livestock. Every goat and sheep on Dennery Island was captured on foot and translocated by fishing boat to farmland on Saint Lucia in September and October 2012. This activity involved a large number of people from the local Dennery Village and went a long way to building the community's interest and understanding of the need to restore this island for the purposes of nature restoration.

Activity 2.2 ***Four priority islands within the Mandele Dry Forest KBA and Pointe Sable KBA are effectively kept free from invasive alien mammals by local groups implementing an improved biosecurity system*****.**

Completed. Four islands (Dennery and Praslin islands in Mandele Dry Forest KBA and Maria Major and Maria Minor in Pointe Sable KBA) were successfully kept free from invasive alien mammals, and the project put in place mechanisms (notably including the new Biosecurity Plan and Protocols) and the necessary human and material resources to safeguard these islands for the foreseeable future. The improved biosecurity system in Saint Lucia covers alien mammals (rats, mongooses, opossums, livestock, etc.) and other taxa, such as alien reptiles, invertebrates and plants. Field Monitors and other staff from the Saint Lucia National Trust and Saint Lucia

Forestry Department visited the islands every three weeks to maintain the biosecurity equipment and identify and remove any aliens. Importantly, a number of exotic seeds and seedlings were removed by the Field Monitors from Maria Major and Praslin Island in Years 1 and 2 before they had a chance to become established, including *Carica papaya* and the first record of Asian *Nypa fruticans* palms in Saint Lucia.

Activity 2.3 *By end Year 2, report on the Invasive Alien Mammal Eradication Feasibility Study completed for a priority site in Saint Lucia's North East Coast KBA [Implementation scheduled to take place after CEPF project ends].*

Completed. A feasibility study for eradicating Invasive Alien Species was led by Alien Invasive Species Adviser Elizabeth Bell in a priority site within Saint Lucia's North East Coast KBA, and the findings and recommendations were discussed with stakeholders at a national workshop in Year 2. The feasibility study entailed field studies to assess current densities of invasive alien mammals (rats, mongooses, opossums) and survey non-target native biodiversity, and a review of the options, with a budget. The strategy of creating an enclosed, alien-free 'mainland island' was shown to be significantly more effective (in terms of cost and conservation benefit) than attempting to suppress the numbers of aliens using long term control in a non-enclosed area. The study met with a very positive response from most stakeholders, who recognized that this could have substantial benefits for endemic and threatened species (e.g. the Endangered white-breasted thrasher *Ramphocinclus brachyurus*) and could also create economic opportunities in the form of a new community-based tourist attraction. The only major reservation expressed by stakeholders was how to sustainably cover the costs of maintaining the pest-proof fence. The Government of Saint Lucia, in collaboration with the Saint Lucia National Trust, has since developed a new GEF grant proposal for Northeast Saint Lucia which includes developing a more detailed business plan for the mainland island.

Activity 2.4 *Project impacts on biodiversity on 4 priority islands in the Pointe Sable KBA and Mandele Dry Forest KBA measured and evaluated by local biologists with FFI and Durrell support, in accordance with Biodiversity Monitoring Plan (3.2).*

A plan and protocols for monitoring biodiversity on the Pointe Sable KBA and Mandele Dry Forest KBA islands was written up by Matthew Morton under the Subgrant to Durrell (Component 3) after consulting other members of the project team. A major purpose of the monitoring system is to measure and demonstrate the effects of eradicating invasive alien mammals. In both years, local biologist obtained baseline data on vegetation (using plots and fixed point photographs), lizards (using transects and innovative 'lizard hotels'), birds (point counts and species inventories) and certain invertebrates (crabs and ants). Short technical reports on vegetation, birds and reptiles were prepared by the participating biologists and field personnel, including Matthew Morton, Roger Graveson, Adams Toussaint and Saphira Hunt, and the data have been entered into simple Excel databases.

Component 3 Planned: BIOSECURITY AND BIODIVERSITY MONITORING PROGRAMMES ON SAINT LUCIA'S OFFSHORE ISLANDS DESIGNED THROUGH A SUB-GRANT TO DURRELL

Component 3 Actual at Completion:

This overall component was achieved. Below are some comments on each activity in turn.

Activity 3.1 ***In Year 1, detailed Biosecurity Plan developed for Maria Islands [Pointe Sable KBA], Dennery and Praslin islands [Mandele Dry Forest KBA] using a participatory process*****.**

A series of technical workshops and field surveys were completed to review existing biosecurity measures on Saint Lucia's offshore islands (Maria Islands, Praslin and Dennery), and an improved biosecurity strategy and protocols were devised to safeguard these islands from being (re)colonized by rodents and other alien invasive animals and plants. This activity was largely led by Dr. Nik Cole and Matthew Morton, although FFI's Invasive Species Adviser Elizabeth Bell notably led the development of an incursion response plan for Maria Major (a contingency plan in the event of rodents invading this island). The biosecurity protocols that have been established or enhanced comprise: (1) Permanent, locked bait stations containing rodenticide and/or other lures, situated at least every one every 50 meters along the coasts of all four islands; (2) Deployment of locally made monitoring devices to test for rodent presence, checked by local trained staff or volunteers every 3–5 weeks (these devices include tracking tunnels and chocolate-scented plastic); (3) A public education campaign to enlist cooperation in keeping islands free of rodents, mongooses, goats and other aliens (e.g. not leaving waste food and other litter on offshore islands), which includes press coverage, theatre shows, television and signage; (4) Routine surveillance of boats that go to the offshore islands, and, in particularly, the establishment of strict quarantine procedures for all persons and vessels that visit the Maria Islands Nature Reserve; (5) Development of simple databases to store biosecurity monitoring data, including a Dropbox facility to enable all partner organizations to access and download data. Training of Field Monitors and other persons in Saint Lucia to implement the Biosecurity Plan was successfully completed under Component 1.

Activity 3.2 ***Biodiversity Monitoring Plan for the Maria Islands [Pointe Sable KBA], Dennery and Praslin islands [Mandele Dry Forest KBA] designed in consultation with FFI and local biologists*****.**

A scientifically robust but easily sustained biodiversity monitoring system for Saint Lucia's offshore islands was developed by Durrell's Dr. Nik Cole and Matthew Morton through consultation with FFI, Saint Lucia National Trust and local biologists. The methods were compiled into a simple manual. Where possible, the new monitoring system includes activities that can be carried out by Field Monitors during their routine biosecurity visits (every 3-5 weeks), such as standardized counts of lizards, snakes, ants, crabs and scorpions inside or while walking between the permanent bait stations. Lizards are also being monitored with the aid of innovative wooden 'lizard hotels' and burlap 'traps' (sacking cloth loosely tied around trees to attract arboreal lizards). In addition, the project established annual standardized monitoring of vegetation (plot and fixed point photographs) and birds (species inventories, land bird point counts and seabird colony counts). Simple databases have been established using MS Excel, and a Dropbox facility is used by the SLNT Field Monitors to share data, including photographs, after every visit. The Field Monitors and other persons in Saint Lucia were trained to implement the monitoring methods under Component 1.

Activity 3.3 ***Throughout this project, the Saint Lucia National Coordinator supervises and facilitates delivery of biosecurity and biodiversity monitoring activities in Saint Lucia, and facilitates other key project activities and outputs on request*****.**

Matthew Morton (Durrell) served as the project's National Coordinator in Saint Lucia, including developing and managing a work plan for project activities in Saint Lucia in consultation with FFI, SLNT and other local partners. Mr. Morton ably handled local logistics, liaised with and reported to local stakeholders and national media, and trained and supervised locally-appointed

consultants and volunteers in Saint Lucia. He also provided GIS support on behalf of both pilot countries (e.g. preparing maps of the project areas and establishing a geo-referenced database for the ongoing biosecurity and biodiversity monitoring programs) and assisted local field personnel with analyzing data and writing up reports.

Activity 3.4 ***The performance of this sub-grantee is well documented, and monitored and evaluated*****.**

As the National Coordinator for Saint Lucia, Matthew Morton produced progress reports at least once a quarter (typically one a month), detailing project activities and results in Saint Lucia. In most cases, these reports were generated from monthly coordination meetings in Saint Lucia with Focal Points from the Saint Lucia National Trust and Forestry Department. At least once a month, the FFI Project Manager and Saint Lucia National Coordinator met or talked by Skype to discuss progress and resolve any problems encountered. The Saint Lucia offshore islands Biosecurity Plan (output from 3.1) and Biodiversity Monitoring Plan (output from 3.2) were peer-reviewed for quality control. Monthly accounts of expenditure were submitted by the Sub-Grantee to FFI and closely followed the agreed budget.

Component 4 Planned: FIELD OFFICERS IN SAINT LUCIA IMPLEMENT BIOSECURITY PROGRAMME ON OFFSHORE ISLANDS THROUGH A SUB-GRANT TO SAINT LUCIA NATIONAL TRUST

Component 4 Actual at Completion:

This overall component was achieved. Below are some comments on each activity in turn.

Activity 4.1 ***At least two local community members appointed as Field Officers for Saint Lucia's offshore islands [Mandele Dry Forest KBA and Pointe Sable KBA]. By the second half of Year 1, Field Officers are well skilled and equipped to implement the biosecurity programme on the offshore islands with minimal supervision*****.**

In Year 1, the terms of reference and desired qualifications and qualities for two Field Monitors were developed jointly by Saint Lucia National Trust, FFI and Durrell. Local residents Ms. Saphira Hunt and Mr. Lance Peterson were appointed at the beginning of 2013 using a transparent recruitment process. The Field Monitors participated in all project planning and training activities in Saint Lucia, and two exchange visits to Antigua. They were provided with field boots, special SLNT shirts, GPS, cameras and other essential equipment, procured via FFI. Ms. Hunt and Mr. Lawrence have proved to be highly committed and capable staff. They implemented, and will continue to implement, routine biosecurity measures on Saint Lucia's offshore islands every 3-4 weeks.

Activity 4.2 ***The Field Officers' line managers also develop an in-depth understanding of the biosecurity programme and facilitate additional support from other Trust staff and members*****.**

The Manager of the Pointe Sable EPA (Mr. Craig Henry) and Conservation Manager (Ms. Shirlene Simmons) at the Saint Lucia National Trust actively participated in the design of the biosecurity program [Activity 3.1] and supervised the work carried out by the Field Monitors, with additional support and participation from the Assistant Conservation Manager (Ms. Murlina Murray), who was also appointed and trained in Year 1. Additional Trust staff and members have been involved in biosecurity tasks when necessary, e.g. education officer Ms. Karetta Crooks-Charles ably spearheaded the development of an outreach program for local communities using theatre shows and two television documentaries.

Activity 4.3 ***Saint Lucia National Trust work plans and contracts demonstrate Field Officer jobs and activities will be sustainably funded after CEPF project ends by means of the Trust's subvention or other sources*****.**

The Field Monitor posts are sustainable. While the CEPF grant has ended, Ms. Hunt is now on a full-time SLNT staff contract and has wider responsibilities for the Pointe-Sable KBA as well as continuing to serve as a Field Monitor. Mr. Lawrence is employed by a pest control agency during the week and gives his time at weekends to serve as a Field Monitor. Ms. Murray, another full time SLNT staff, also serves as a Field Monitor, spending several days a week in the field. Biosecurity activities on the offshore islands will certainly continue even though the CEPF project has ended, and are factored into the SLNT's subvention and operational budgets. Linked to this, Syngenta plc confirmed it will continue to donate bait free of charge to help keep Saint Lucia's offshore islands pest-free.

Activity 4.4 ***The performance of this sub-grantee is well documented, and monitored and evaluated*****.**

The activities and findings of the Field Monitors were reported every 3-4 weeks (usually following visits to the islands) and summarized in the near-monthly progress reports prepared by the Saint Lucia National Coordinator. At least once a quarter (and more usually every month), the FFI Project Manager (Dr. Daltry) and/or Saint Lucia National Coordinator (Mr. Morton) met with the Saint Lucia National Trust leaders and Field Monitors to discuss progress and jointly resolve any problems encountered. In addition, spot-checks were conducted by the Saint Lucia National Coordinator, FFI Project Manager and Invasive Species Advisers (Dr. Cole and Ms. Bell) on permanent bait stations and other biosecurity equipment to ensure they were being maintained and operated correctly [see also Component 6]. Monthly accounts of expenditure were submitted by the Saint Lucia National Trust to FFI.

Component 5 Planned: INVASIVE ALIEN MAMMAL ERADICATION AND BIOSECURITY ACTIONS DESIGNED AND IMPLEMENTED IN ANTIGUA AND BARBUDA

Component 5 Actual at Completion:

This overall component was achieved (even exceeded). Below are some comments on each activity in turn.

Activity 5.1 ***By the end of Year 1, Rat Eradication Feasibility Study completed in Antigua, and target islands identified (Smith plus Codrington or Pelican Islands) [Antigua: Offshore Islands KBA]. [ref 2.1in EAG proposal #60933]*****.**

FFI's invasive alien species experts, Dr. Daltry and Ms. Bell, mentored Environmental Awareness Group staff to research and develop Feasibility Studies for eradicating rats from four islands in the Offshore Islands KBA (Crump, Codrington, Smith and Pelican) and mongooses from three islands (Crump, Codrington and Pelican). The methods used were influenced by the CEPF-funded toolkit from the Pacific Invasives Initiative, but tailored to this local context. More feasibility studies were carried out that originally intended due to uncertainties over which islands may be earmarked for development.

Activity 5.2 ***Detailed Rat Eradication Operation Plan finalized for the priority islands chosen in 5.1 [ref 2.2 in EAG proposal #60933]*****.**

Invasive alien species experts Dr. Daltry, Ms. Bell and Ms. Karen Varnham mentored Environmental Awareness Group staff to develop Operational Plans for eradicating rats and

mongooses from Green, Crump, Codrington, Smith, Guardhouse and Pelican islands. Green Island was cleared of rats in Year 1, and Codrington, Guardhouse and Pelican islands were cleared of rats and mongooses in Year 2. Crump Island was rejected following press reports that the island was being sold to developers, and we decided to postpone plans to restore Smith until after the CEPF project ended. (In any case, this project exceeded its target of eradicate rats from two islands in the Offshore Islands KBA – see below).

Activity 5.3 ***By end of Year 2, rats successfully eradicated from the pair of islands chosen in 5.1 by personnel trained by FFI [ref 2.3 in EAG proposal #60933]*****.**

This target was greatly exceeded, as our team eradicated rats from a total of four islands (Green Island in Year 1 and Pelican, Codrington and Guardhouse in Year 2) and mongooses from two (Pelican and Codrington: the other aforementioned islands did not have mongooses). Field costs for implementing the eradications were included in the EAG's budget #60933, and additional costs were contributed by FFI. All persons involved in the eradications received training and expert supervision. In accordance with the operational plans, rats were eradicated by ground-based deployment of Klerat™ (bait containing the active ingredient brodifacoum) at 30-40 meter intervals for 3-4 weeks, while mongooses were caught in live traps and euthanized. Most persons who worked on the eradication operations were Antiguans, with trainers from the UK, but the teams also included persons from St Vincent, St Kitts and Saint Lucia (the latter including Field Monitors from the Saint Lucia National Trust as part of their training) and some international volunteers.

Activity 5.4 ***At least 10 priority islands within the Offshore Islands KBA effectively and permanently kept free from invasive alien mammals by EAG implementing an improved Biosecurity Plan. [ref 1.1 in EAG proposal #60933]*****.**

From the beginning, FFI invasive alien species experts, including the Project Manager, tested and reviewed biosecurity measures in the Offshore Islands KBA and advised EAG on useful improvements to the biosecurity strategy, equipment and protocols. This led to upgrading and implementing monitoring systems on 13 islands, including all of the islands that were cleared of rats and mongooses (Activity 5.3). The biosecurity systems were tailored to local needs and capacity and include a combination of:- (1) Permanent, locked bait stations containing rodenticide and other lures, situated along the coasts of target islands; (2) Deployment of locally made monitoring devices to test for rodent presence, checked by local trained EAG staff or volunteers at least every 5 weeks (including chocolate-scented plastic cubes— a project innovation that has proved to be highly effective in detecting rodents); (3) Enhancement of the EAG's public education materials and approaches to enlist cooperation in keeping islands free of rodents, mongooses, goats and other aliens (e.g. not leaving waste food and other litter on offshore islands); (4) More effective surveillance of boats that go to the offshore islands, including vessels used by project staff.

Activity 5.5 ***Project impacts on the biodiversity of at least 10 priority islands within the Offshore Islands KBA measured and evaluated by local biologists with FFI support, with special attention to globally threatened species. [ref 1.6 in EAG proposal #60933]*****.**

Throughout the project, local biologists systematically monitored biodiversity on the Offshore Islands KBA to measure and demonstrate the effects of eradicating invasive alien mammals. The monitoring system was developed through consultation with the Environmental Awareness Group staff and associates, and tailored according to their particular interests and likely future capacity. For every island, the monitoring system includes: (1) Fixed point photographs to monitor changes in vegetation before and after eradicating aliens; (2) Annual counts of seabirds; (3) Standardized point counts of land birds and lizards; (4) More intensive monitoring of other priority species of

conservation interest (e.g. the Critically Endangered Antiguan racer, Vulnerable West Indian whistling duck and Near-Threatened white-crowned pigeon). We chose methods that take little time or specialist equipment or expertise to sustain, and simple (MS Excel) databases were developed to store biodiversity monitoring data.

Component 6 Planned: PROJECT COMPLIES WITH CEPF-APPROVED PEST MANAGEMENT PLAN

Component 6 Actual at Completion:

This overall component was achieved. Below are some comments on each activity in turn.

Activity 6.1 ***All team members in Antigua and Saint Lucia who are involved in handling, storage and disposal of rodenticide understand and apply the project Pest Management Plan. National reports confirm high level of compliance with pest management plan*****.**

The CEPF Pest Management Plans for Antigua and Saint Lucia were disseminated and discussed with all team members involved in rat control in both countries, and the FFI Project Manager and National Project Coordinators in both countries conducted random checks to ensure field personnel abided by these protocols. The CEPF-approved protocols included, for example, wearing gloves while handling bait and ensuring all bait was stored in locked depots. No major problems were detected except in Year 1, when it was discovered that the locking devices on some old bait stations in Saint Lucia were broken and there was a suspicion that a member of the public was stealing bait (if only a small quantity). This problem was effectively solved by installing new bait stations with a more robust locking mechanism. Reports from these compliance checks can be viewed at:
https://www.dropbox.com/sh/vgao07rij8sqs2n/AAB1CorJwYVxw7F4viZslaIka?dl=0

Activity 6.2 ***Independent verification that the use of rodenticide in this project follows safe and effective practices*****.**

All of the Eradication Feasibility Plans, Operational Plans, Biosecurity Protocols and other technical outputs from this project have been peer-reviewed by independent experts, most of them members of the IUCN/SSC Invasive Species Specialist Group. For example, the Biosecurity Plan for Antigua's Offshore Islands KBA was circulated to several experts in Island Conservation.

Component 7 Planned: METHODS, IMPACTS AND LESSONS LEARNED FROM THIS PROJECT ARE DISSEMINATED REGION-WIDE TO ENCOURAGE AND INFORM INVASIVE ALIEN SPECIES CONTROL

Component 7 Actual at Completion:

This overall component was achieved. Below are some comments on each activity in turn.

Activity 7.1 ***Conservation technicians throughout the Caribbean and globally have access to key project plans and reports detailing the project methods and results (at least 2,000 hits before project end)*****.**

A selection of project outputs, including Eradication Feasibility Study Reports, Operational Plans and Final Eradication Reports will be posted on the websites of Fauna & Flora International, Environmental Awareness Group and Saint Lucia National Trust, once approved by CEPF. Many of these were circulated in draft form to key individuals in government, university and NGO agencies for peer review.

Activity 7.2 *Conservation technicians throughout the Caribbean and globally have open access to published peer-reviewed papers detailing the project methods and results*.

Several technical and semi-technical articles and papers have been published or presented:

Daltry, J.C., James, K.J., Otto, A. & Ross, T.N. (2012) Evidence that eradicating black rats has boosted the recovery of rare reptiles and seabirds on Antiguan islands. In *Biodiversité Insulaire: la Flore, la Faune et l'Homme Dans les Petites Antilles* (eds J.L. Vernier & M. Burac), pp. 141-145. Direction de l'Environnement, de l'Aménagement et du Logement de Martinique et Université des Antilles et de la Guyane, France.

Daltry, J.C. (2013) Pariah rats of the Caribbean. *Fauna & Flora*, 17, 14-17.

Daltry, J.C. (2013) Repelling boarders: how to guard important Caribbean islands against alien invaders. *Program and Abstracts: Society for the Conservation and Study of Caribbean Birds, 19th Regional Meeting, July 26-31, Georgetown, Grenada*.

Daltry, J.C. (2013) Islands without aliens - building regional civil capacity to eradicate invasive alien species. *Capacite*, 4, 4-5. [*Article about this project, especially the use of fixed point photographs to monitor ecosystem recovery*].

Lawrence, N., James, K., Otto, A., Ross, T.N. & Daltry, J.C. (2013) Is eradicating rats worth it? impacts observed on Antigua's offshore islands. *Program and Abstracts: Society for the Conservation and Study of Caribbean Birds, 19th Regional Meeting, July 26-31, Georgetown, Grenada*.

Daltry, J.C. (2014) Help for herps: Turning the spotlight on reptiles and amphibians. *Fauna & Flora*, 18, 10–13.

Lawrence, N. (2014) A win in the battle against invasive species on Antigua and Barbuda's offshore islands. *Capacite*, 9, 12–13. [*Article about the eradication of rats and mongooses from three islands in 2014*].

Daltry, J.C. (2014) Making pictures that speak a thousand words. *Capacite*, 9, 4–5. [*Article about this project, especially the use of fixed point photographs to monitor ecosystem recovery*].

Activity 7.3 *Conservation practitioners from other Caribbean civil society organisations gain new skills and experience from visiting and participating in fieldwork in the pilot countries*.

Nationals from several other Caribbean countries (notably Barbados, St Kitts and St Vincent) visited our project sites in Saint Lucia and Antigua, and participated in certain training and implementation activities. There was some evidence of these persons teaching others in turn: e.g. a Barbadian national who participated in training in Saint Lucia in 2013 and subsequently led the first island rat eradication operation in Barbados, which raised the skills and knowledge of a further 10 persons in Barbados (most of them staff and students from the University of West Indies). The CABI UNEP-GEF project "*Mitigating the Threats of Invasive Alien Species in the Insular Caribbean*" also helped to share methods and lessons learned in Year 1 to other countries. We also completed several exchange visits for the Antiguan and Saint Lucian beneficiaries of this project, to share knowledge and skills gained through this project, which proved to be particularly well received.

Activity 7.4 *At least 3 additional newspaper articles and/or radio features further raise regional awareness of the project methods and results. [NB this target does not include national press articles in Antigua, which are covered under EAG's proposal to CEPF]*.

Two national press releases were produced in Saint Lucia (specifically, announcing the removal of goats and sheep from Dennery Island in Year 1 and the jetty for Dennery Island in Year 2) and around a dozen articles published in national media (e.g. '*The Voice*' newspaper, *St Lucia News Online* and newsletters of the Saint Lucia National Trust) concerning the project and highlighting the importance of control invasive alien species. Currently nearing completion are four community theatre shows and two television documentaries about this project and the offshore islands, which will also be accompanied by national press coverage. A selection of media reports and presentations given can be viewed at: https://www.dropbox.com/sh/dt5f6jtot4kkkom/AADmE46UlzkiXRJOhGUJ7amOa?dl=0 (Please check this for further updates). Media coverage in Antigua will be reported in more detail in the EAG's report for grant # 60933.

Were any components unrealized? If so, how has this affected the overall impact of the project?

Almost all Component-level targets were completed before 30th June. The exception being that some outputs have not been posted online yet (under Component 7). They have been prepared, but we understand that in accordance with the grant agreement they need to be approved by CEPF before being formally published and shared online (see list below).

Please describe and submit (electronically if possible) any tools, products, or methodologies that resulted from this project or contributed to the results.

A selection of publications from this project will be sent to CEPF via Dropbox. The most notable and useful outputs are:-

- ANTIGUA 1. Green Island Operational Plan 2012
- ANTIGUA 2. Feasibility Study for Crump Island
- ANTIGUA 3. Operational Plan for Crump Island
- ANTIGUA 4. Biosecurity Plan for Offshore Islands, Antigua
- ANTIGUA 5. Technical Report for Pelican, Codrington and Guardhouse Eradications
- ANTIGUA 6. Biodiversity Monitoring Plan for Offshore Islands
- SAINT LUCIA 1A. Saint Lucia Biosecurity Plan for Offshore Islands - Main Plan
- SAINT LUCIA 1B. Saint Lucia Biosecurity Plan for Offshore Islands - Annexes
- SAINT LUCIA 2. Maria Islands Rodent Incursion Plan
- SAINT LUCIA 3. Saint Lucia Mainland Island Feasibility Study
- SAINT LUCIA 4. Biodiversity Monitoring Protocols for Saint Lucia's Offshore Islands
- CARIBBEAN 1. Caribbean Feasibility Study Guidelines and Template
- CARIBBEAN 2. Caribbean Operational Plan Guidelines and Template

These are currently available at https://www.dropbox.com/sh/sd502dzlujo5ycq/AACckN4bqxVk2uC8tCaaD5SDa?dl=0

All of these plans and reports credit CEPF, using the logo and text provided, and we would be grateful for CEPF's approval to post most of them online. There are in addition a number of short reports on the findings from biosecurity monitoring and biodiversity monitoring, which we expect to incorporate into scientific papers in due course.

Please note that while most of these plans and reports can be freely shared, a minority must be treated as internal because they contain sensitive information concerning the locations of

threatened species. The biodiversity monitoring plan “ANTIGUA 6”, for example, details how to find and catch the Critically Endangered Antiguan racers and it is important this manual does not fall into the wrong hands.

Lessons Learned

Describe any lessons learned during the design and implementation of the project, as well as any related to organizational development and capacity building. Consider lessons that would inform projects designed or implemented by your organization or others, as well as lessons that might be considered by the global conservation community.

Project Design Process: (aspects of the project design that contributed to its success/shortcomings)

Positive:

- **This project benefitted from the expertise and prior working relationships that FFI and Durrell have developed in this region over many years**, as well as our long history of working with the Environmental Awareness Group (since 1995) and a number of stakeholders in both countries. Thus we entered into this project with a clear understanding of the local needs, constraints, solutions and realistic costs.
- **The technology for eradicating rats has been thoroughly tested on well over 150 islands worldwide** (at least 40 in the Caribbean to our knowledge), and the project team included several persons (notably Elizabeth Bell, Dr. Nik Cole, Dr. Jenny Daltry and Matthew Morton) who have led or been involved in more than 35 island rat eradication operations worldwide.
- **The host small island nations are politically stable, safe and committed to environmentally responsible development**, including biodiversity conservation and the control of invasive alien species (e.g., both Antigua and Saint Lucia are Parties to the Convention on Biological Diversity and St George’s Declaration).
- **The FFI Project Leader and other key members of the implementing team were accustomed to adaptive management** and sufficiently flexible to respond swiftly to unexpected new problems and opportunities.

Negative

- **We underestimated the amount of time it would take to complete all of the technical reports**, especially the review stages. As we could not afford to pay peer-reviewers, there was no incentive for them to respond quickly. However, the main outputs have been completed.
- **We underestimated the cost of constructing a jetty on Dennery Island.** Despite being close to the mainland, this island is fully exposed to the Atlantic Sea and naturally lacks safe landing areas for fieldworkers to access the island for essential conservation work. We originally proposed a simple wooden jetty, but marine surveys in early Year 1 revealed that a more robust steel structure would be needed to withstand the rough seas, especially during hurricanes. CEPF kindly granted permission to reallocate $4,000 from boat travel to support construction in Year 2 and FFI secured additional funds and in-kind support. The new boat landing structure is a lasting asset that will enable the Saint Lucia

National Trust and other local persons to continue to work safely on Dennery Island and reintroduce and conserve rare endemic wildlife. The jetty has an anticipated lifespan of 50 years, after which it may require some of the more wave-battered parts to be replaced.

- **It did not entirely work in this project's favor that all operational costs in Antigua were allocated to a separate grant.** While FFI was the lead grantee for #60908 and therefore responsible for implementing this project in two countries, our grant contained operational costs (travel, accommodation, etc.) for Saint Lucia only. Operational costs for Antigua were incorporated into a grant to the Environmental Awareness Group (#60933). Consequently, when the EAG (understandably) needed more operational funds to tackle an incursion of rats to Green Island in 2012, FFI had to find other means of covering our costs to carry out our tasks in Antigua. This put a great deal of stress on our personnel to achieve the planned results on a very tight budget.

Project Implementation: (aspects of the project execution that contributed to its success/shortcomings)

Positive

- **Frequent and frank communication among the project implementing partners was key.** In Saint Lucia, the practice of holding monthly coordination meetings with focal points from the Saint Lucia National Trust, Forestry Department and Durrell proved to be a very productive way of managing project activities in Saint Lucia. The FFI Project Manager and the National Coordinators in Antigua and Saint Lucia communicated in person or by Skype almost every week.
- **The Sub-grantees and Consultants proved able to handle their responsibility (and their accounts) in an efficient, timely and professional manner,** for the most part. None exceeded or altered their budgets or work plans without first consulting FFI.
- **The project benefitted from the training and sharing of technical knowledge with external advisers from other parts of the world**, especially Dr. Nik Cole (Durrell Wildlife Conservation Trust, based in Mauritius) and Ms. Elizabeth Bell (contracted by FFI from Wildlife Management International Ltd, based in New Zealand). Invasive species control is a rapidly developing field in conservation, especially on island states, and their involvement helped our beneficiary CSOs to learn from the very best practices used on islands in the Indian Ocean, Pacific and Europe. As part of this project, for example, the Saint Lucia National Trust adopted methods from Mauritius for detecting invasive alien ants, and both the Saint Lucia National Trust and Environmental Awareness Group now follow biosecurity strategies and protocols that reflect the recommendations of the CEPF-funded Pacific Invasives Initiative.

Negative

- **The tight turnaround on generating quarterly financial reports within 30 days of the quarter** was very challenging, especially given the fact that this project had two Sub-grantees and, furthermore, the CSO staff and the FFI Project Manager were frequently in the field or travelling. We did manage to submit almost every report on time, but this was not easy.
- **In Antigua, several weeks of hard work were lost in developing plans to eradicate rats and mongooses from Crump Island**, which had to be cancelled following reports

that Guiana and Crump Islands (two of the largest islands in the Offshore Islands KBA) had been sold to a Chinese development company to build a tourism resort and luxury villas. Guiana Island has in fact been earmarked for development since the mid-1990s, and there have been rumors circulating Crump Island for more than 10 years. Fortunately, we were able to focus on restoring other islands instead (Pelican Island and the state-owned Codrington and Guardhouse islands were successfully cleared of rats and mongooses in Year 2).

Other lessons learned relevant to conservation community:

- **Small CSOs can successfully manage complex eradication operations and post-eradication biosecurity programs.** It is important to ensure that the individuals responsible for biosecurity take an active part in the eradication operations to build their technical knowledge and sense of ownership in keeping the sites pest-free afterwards.
- **International volunteers can be an invaluable source of labor in certain operations.** Even on small offshore islands, rat eradication operations typically take 6 weeks or longer to complete and require almost daily, intensive work by teams of skilled workers. In Small Island Developing States, it may be difficult to find, or afford to pay, enough persons to work on such projects every day for weeks or months: most suitably skilled and interested persons have other jobs after all. However, there is a large pool of overseas graduates who are willing to work in the Caribbean gratis, often as part of their work experience. The four rat eradication operations in Antigua in Years 1 and 2 involved around 10 volunteers from the UK, most of them qualified biologists, who worked tirelessly alongside local CSO staff, government personnel and short-term local volunteers. Thus, while we believe it is important to build local capacity and to pay field personnel where possible, CSOs should be aware that they can draw on international volunteers for certain tasks when funds are limited and additional human resources are needed urgently.
- **Permanent bait stations help to prevent alien rodent invasions as part of wider biosecurity systems.** Our efforts to improve the biosecurity of important KBA offshore islands was put to the test and proved to work. On York Island (Antigua), the teeth marks of one rat were detected in a bait station in late 2013. Not only did our new monitoring device (chocolate-scented plastic) detect the rat but the rodenticide in the bait station killed the rat; and no more rats have been found on the island since November 2013. This finding demonstrates that all offshore islands are vulnerable to reinvasion by rats— even islands as remote and little-visited as York Island— and permanent bait stations are cost effective tool to halt incursions. York Island was first cleared of rat by FFI and our partners in 2006, and now supports 20% of the world population of Critically Endangered Antiguan racers. Similar permanent bait stations have now been installed on 15 islands in KBAs in Antigua and Saint Lucia.
- **Chocolate-scented polyurethane plastic** was a completely new invention developed as part of this project to detect rodents even at low numbers. This proved to be very successful in trials on Antigua, Saint Lucia and Europe – it is irresistible to rats and mice, waterproof, heat resistant, largely ignored by crabs and other non-target animals, retains its scent for at least a year, and is light and easy to transport and install. This new tool is now being rolled out to other projects in this region that are working to keep islands rat-free (e.g. the 207-hectare Dog Island in Anguilla). The recipe for chocolate-scented polyurethane cubes is in several of our technical reports, including both Biosecurity Plans

for the offshore islands of Antigua and Saint Lucia. Other conservationists are welcome to replicate this tool as long as FFI is acknowledged.

- **Mongooses can be eradicated relatively easily using live trapping.** A significant lesson learned in Year 2 was how to survey and eradicate small Asian mongooses from islands, with eradications completed on Pelican and Codrington Islands in 2014. Being the first time mongooses had been tackled on this scale in Antigua, we consulted a number of experts on trapping and euthanizing small Asian mongooses to identify suitable equipment and to implement the eradication as swiftly and humanely as possible. Our methods and results are described in three project outputs: the Operational Plans for eradicating rats and mongooses from Crump, Pelican and Codrington Islands, the technical report from the eradication operations, and the overarching Biosecurity Plan for the Offshore Islands in Antigua.
- **'Mainland Islands' are a feasible and relatively cost-effective approach for biodiversity conservation.** From Activity 2.3 we learned and demonstrated that using fences to exclude specific aliens would be a feasible approach for Saint Lucia and would likely work in other Caribbean states as well. No mainland island has even been established in this region, and Saint Lucia stakeholders expressed great interest in developing this approach in the near future: the next step will be to develop a business plan to determine whether the recurrent management costs could be sustainably met through tourism. Our findings indicate this could become a very valuable strategy for conservation in countries that either lack large offshore islands or have threatened species on the mainland that could not be expected to survive on offshore islands. In the case of Saint Lucia, for example, a mainland island in the North East Coast KBA could benefit such species as the Endangered white-breasted thrasher and the rare endemic Saint Lucian iguana, both of which are critically threatened by invasive alien mongooses, green iguanas, feral dogs and rats.

Additional Funding

Provide details of any additional funding that supported this project and any funding secured for the project, organization, or the region, as a result of the CEPF investment in this project.

Donor	Type of Funding*	Amount	Notes
Balcombe Trust (to Durrell) (2012–2014)	Project co-financing	$ 21,040	For project activities in Saint Lucia.
BBC Wildlife Fund (to FFI) (2012)	Project co-financing	$ 4,875	For project activities in Antigua, chiefly biosecurity and monitoring of Antiguan racers.
CABI GEF grant (to Saint Lucia Forestry Department) (2012–2013)	Project co-financing	$ 9,071	Covered some travel costs, community consultations and development of site management plans for Dennery and Praslin Islands

Donor	Type of Funding*	Amount	Notes
Conservation Leadership Programme (to EAG) (2014–2015)	Grantee and Partner leveraging	$15,000	For conservation actions for the West Indian whistling duck in Antigua (including biosecurity and monitoring on Offshore Islands KBA)
Disney Worldwide Conservation Fund (to FFI) (2012–2014)	Project co-financing	$ 71,655	A further $25,000 applied for (2014-2015). Funded wildlife monitoring and outreach, but not actions on alien species.
Durrell Wildlife Conservation Trust (2012–2014)	Project co-financing	$19,200	For training, outreach and biodiversity monitoring activities.
Environmental Awareness Group (2012–2014)	Project co-financing	See EAG report	Contributions from EAG will be reported under their sister grant (#60933)
Fauna & Flora International (2012–2014)	Project co-financing	$36,808	Estimated value of staff time, insurance, office costs, and travel not otherwise covered by the CEPF or other grants.
Halcyon Land & Sea (to FFI) (2014–2015)	Grantee and Partner leveraging	$ 50,000	To develop Saint Lucia's National Forest Management Plan, incorporating all KBAs and the site plans and protocols developed by GEF project.
Ministry of Agriculture, Forestry and Fisheries and Ministry of Sustainable Development, Environment, Science and Technology (Govt of Saint Lucia)	Project co-financing	$ 20,000	Conservative estimate of the value of staff time, boat transport, workshop venues and other costs related to this project.
Net Trust (to Durrell) (2014–2015)	Grantee and Partner leveraging	$ 17,000	To continue conservation work in Antigua's Offshore Islands KBA after CEPF project ends
Saint Lucia National Trust (2012–2014)	Project co-financing	$ 20,000	Conservative estimate of the value of staff time, travel and other costs related to this project.
Syngenta plc	Project co-financing	$ 8,000	Conservative estimate of the value of rodenticide (including shipping) provided gratis to this project.
US Fish and Wildlife Service Critically Endangered Animals Conservation Fund (to FFI) (2013–2014)	Grantee and Partner leveraging	$24,990	For actions to support the Saint Lucia racer, including biosecurity on Maria Islands and Dennery Island.

Additional funding should be reported using the following categories:

- ***A*** *Project co-financing (Other donors or your organization contribute to the direct costs of this project)*
- ***B*** *Grantee and Partner leveraging (Other donors contribute to your organization or a partner organization as a direct result of successes with this CEPF funded project.)*

C *Regional/Portfolio leveraging (Other donors make large investments in a region because of CEPF investment or successes related to this project.)*

Sustainability/Replicability

Summarize the success or challenge in achieving planned sustainability or replicability of project components or results.

Sustainability

This project contained several elements that were designed to promote sustainability in terms of institutional commitment, lasting conservation benefits and affordable costs:

- **Important elements of this project have been assimilated, where possible, into national policies and plans to encourage and ensure their continuation.** This was especially well advanced in Saint Lucia, where conservation activities established or enhanced by this project were incorporated into the site management plans for Dennery Island (owned by Saint Lucia National Trust) and Praslin Island (owned by DCG Properties Ltd), and are now being incorporated into the new Strategy and Management Plan of the government's Forestry and Land Use Department. In Antigua, management of the offshore islands was built into the new strategic plan of the Environmental Awareness Group.
- **Whole-island eradications of alien mammals are almost invariably more cost-effective, more effective for native wildlife, and more sustainable than chronic suppression of populations.** This project eradicated rats from four islands in Antigua, mongooses from two islands in Antigua, and goats and sheep from one island in Saint Lucia. While such eradication operations are not cheap, these should not need to be repeated as long as safeguards are put in place to prevent the animals from re-invading.
- **The eradication and post-eradication biosecurity protocols and tools used by this project were tailored to suit local needs and locally-available resources.** This project established biosecurity methods that can be managed by local persons on a part-time basis (usually around one day per week in both Antigua and Saint Lucia). Where possible, this project made use of locally available materials that are much cheaper and easier to obtain than commercial products. For example, we recycled waste plastic water bottles as anti-crab guards to minimize the loss of rat bait to crabs; we made tracking plates by using a mixture of vegetable oil and poster paint on card or by using candles and ceramic tiles; and we made mammal hair traps from pvc tubes and sticky tape. Such devices work well and avoid the need to procure the commercial alternatives from the US, Europe or New Zealand.
- **Biodiversity monitoring protocols and tools were also tailored to be relatively easy and affordable to sustain.** Fixed point photographs, for example, are a very good and rapid means of monitoring habitat recovery without requiring specialist botanical knowledge. In our experience, monitoring systems that do not require much time, use basic equipment and have been designed jointly with the individuals who will implement them are much more likely to be sustained. Where possible, the monitoring activities were designed to fit in with the ongoing routine visits to the islands to service the rodent bait stations and other purposes. On Saint Lucia, for example, the Field Monitors routinely monitor the Vulnerable Saint Lucia whiptail lizards along transects while walking from one bait station to the next.

- **Building the capacity of local personnel helps to reduce dependency on foreign expertise.** By the project end, both the Environmental Awareness Group and Saint Lucia National Trust have gained the know-how to manage the eradication of certain alien mammals, maintain biosecurity on offshore islands, and monitor the effects upon native species. This project, together with grant #60933, also increased the equipment and other resources available to these organizations, including live mammal traps, permanent bait stations, cameras, GPS units, binoculars, 'lizard hotels' and many other tools that should serve both countries for many years to come.
- **FFI has removed one of the biggest recurrent costs in rodent control by negotiating a free supply of rodenticide** for our partners' conservation needs, courtesy of the manufacturer. This contribution is worth over US$5,000 per year.

Despite these and other measures to reduce costs, **both countries require approximately $30-40,000 per year to prevent alien mammals from (re)invading their most important offshore islands—**the main costs being boat travel and the employment costs of part-time field officers or wardens. While not insignificant, these sums can be realistically met through small grant proposals and, in the case of the Saint Lucia National Trust, their annual subvention from the Government. The National Trust has already confirmed it will support field staff salaries and has secured funds for boat costs. Even beyond this, however, our in-country partners are keen to proceed with restoring more islands in the future, both inside and outside of KBAs, by applying the skills and equipment they gain during the CEPF project. Clearing rats and other alien species from even a small island typically costs well over US$20,000 in materials, transport and labor, requiring additional fund-raising. FFI and Durrell have assisted, and will continue to support, the EAG and SLNT with their fundraising efforts. (As part of Component 3 of the EAG's proposal to CEPF, #60933, FFI provided advanced training to EAG staff and members in grant proposal writing, and facilitated the EAG's business plan).

Finally, during the design of this project, CEPF reviewers enquired whether **revenue from tourism can help sustain invasive alien species management activities in these countries in the future**. In Saint Lucia, the offshore islands currently receive only a handful of visitors, but the Saint Lucia National Trust has begun piloting nature tours to Maria Major Island as a source of revenue for the management of Pointe Sable KBA. In Antigua, the offshore islands attract over 70,000 visitors annually (2013 estimate), most of whom pay between $100 and $150 per head for boat transport. The Fisheries Division— the authority responsible for managing the North East Marine Management Area that includes most of the Offshore Islands KBA— is working on establishing user fees to help pay for the area's upkeep. They have assured both FFI and the EAG they intend to allocate a portion of the revenue to enable the Offshore Islands Conservation Programme to manage the terrestrial areas, which is in line with the government-endorsed management plan for this area and could generate sufficient funds for invasive alien species control. However, establishing user fees first requires new legislation to be passed and investment in new staff and infrastructure to collect the fees. The Environmental Awareness Group and Fisheries Division have developed a new project to work on these needs, which is expected to be launched before the end of 2014.

Replicability

Our team has already seen **great interest in replicating the methods that this project has developed**, because many countries now recognize that alien mammals, including rats, are among the greatest threats to their native biodiversity. The fact that this project has worked on some 17 offshore islands with varying sizes, topography and native species gives confidence that the methods we have found to be effective are likely to work for many other islands in this region.

Even during the project lifespan, other countries have begun applying techniques and tools that we have developed or refined in Antigua and Saint Lucia. Specific examples include:-

- **Anguilla**: Chocolate-scented polyurethane plastic cubes, invented by this project as a means of detecting rodents at low densities (e.g. during the early stages of an incursion), have been adopted by the Anguilla National Trust as part of their biosecurity monitoring system for Dog Island. Island Conservation and RSPB have also requested the recipe for use on other Caribbean Islands.

- **Barbados**: The University of the West Indies conducted the country's first island rat eradication operation in 2013, following methods and protocols taught by this project, including our template for conducting a feasibility study.

- **St Kitts & Nevis:** the Project Leader advised on the development of a rodent survey and eradication plan for Booby Island.

Even outside of this region, a tourism company in Indonesia is planning to eradicate rats from an important seabird island, citing the feasibility study reports and operational plans produced by this project.

Many of the planning, implementation and evaluation principles and processes that we applied to rats, mongooses, goats and other aliens could be applied in other countries. We anticipate that a number of other organizations and countries will be interested in downloading some of the plans and reports from this project, as models to adapt for their own needs. There is especially high interest in creating **pest-free mainland islands**: an approach that our project demonstrated to be feasible and cost-effective (Activity 2.3). Other countries that have expressed interest in this approach include Barbados, Grenada and Jamaica: it is possible that there could be important cost-savings, especially in terms of importing materials, if several countries in this region work together.

Nevertheless, we must caution against taking the methods we have developed and applying them to other islands or countries without **first consulting their stakeholders and investigating the risks to their local non-target wildlife.** For example, while none of the native vertebrates in Antigua and Saint Lucia would eat the Klerat bait we used to eradicate rats, we cannot guarantee that reptiles, birds or other animals in other countries will behave in exactly the same way. We trust it is clear from our reports and manuals that every island and target species must be treated on a case by case basis.

Summarize any unplanned sustainability or replicability achieved.

Taking advantage of opportunities, we **exceeded the planned number of targets in many components**. For example, rats were eradicated from four islands in Antigua instead of the two planned (Activity 5.1), and furthermore mongooses were eradicated from two of these islands. This project also trained considerably more West Indian nationals (>40) than originally proposed (25), and expanded the range of harmful invasive alien species that are being directly addressed: notably rats, but also goats, sheep, mongooses, alien lizards, exotic plants and cane toads. Exchange visits and learning opportunities were also expanded to involve representatives from St Kitts, Barbados and St Vincent, in addition to nationals from the pilot countries of Antigua and Saint Lucia. Persons from Barbados who had attended our training classes in Saint Lucia subsequently conducted the first successful rat eradication operation in Barbados, on Culpepper Island.

Safeguard Policy Assessment

Provide a summary of the implementation of any required action toward the environmental and social safeguard policies within the project.

This project necessarily uses rodenticide to eradicate rats and prevent incursions. At CEPF's request, detailed **Pest Management Plans** were developed for both Saint Lucia and Antigua in 2012. All team members involved in the handling, storage and disposal of rodenticide became familiar with important biosecurity protocols described in the plans and their adherence was good (in accordance with Deliverable 6.1). Throughout the performance period, random spot checks were carried out in the field by Dr. Jenny Daltry and Elizabeth Bell (Antigua and Saint Lucia), Natalya Lawrence and Sophia Steele (Antigua only) and Matthew Morton (Saint Lucia only). Ms. Loiza Rauzduel from CANARI also conducted three site visits to evaluate the project. In Years 1 and 2, four islands in Antigua (Green, Pelican, Codrington and Guardhouse) were cleared of rats using the rodenticide Klerat. No problems were encountered: the protocols were followed correctly (e.g. signs posted on the islands warning visitors not to tamper with the poison; intensive, daily monitoring of wildlife during and after the eradications) and there were zero indications of people or native wildlife being negatively affected.

Additional Comments/Recommendations

FFI and our partners wish to express our thanks to CEPF and CANARI for supporting this project.

Information Sharing and CEPF Policy

CEPF is committed to transparent operations and to helping civil society groups share experiences, lessons learned, and results. Final project completion reports are made available on our Web site, www.cepf.net, and publicized in our newsletter and other communications.

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*****If your grant has an end date other than JUNE 30, please complete the tables on the following pages*****

Project end date was 30 June 2014.