Darwin Initiative: Final Report

*To be completed with reference to the "Writing a Darwin Report" guidance: (http://www.darwininitiative.org.uk/resources-for-projects/reporting-forms). It is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)*

Darwin Project Information

Project reference	23-003
Project title	Eradicating invasive species from the highest priority Caribbean island
Host country(ies)	Antigua and Barbuda (with Montserrat)
Lead organisation	Fauna & Flora International
Partner institution(s)	Department of Environment (Government of Antigua and Barbuda), Environmental Awareness Group, British Mountaineering Council, Wildlife Management International Ltd.
Darwin grant value	£ 285,000
Start/end dates of project	Apr 2016 – Mar 2019
Project leader's name	Dr Jenny Daltry
Project website/blog/Twitter	e.g. https://www.facebook.com/RedondaRestoration/ ; https://www.faunaflora.org/projects/redonda-restoration-programme; https://environment.gov.ag/news-events#news/article/41
Report author(s) and date	Dr Jenny Daltry and Shanna Challenger, July 2019

1 Project Rationale

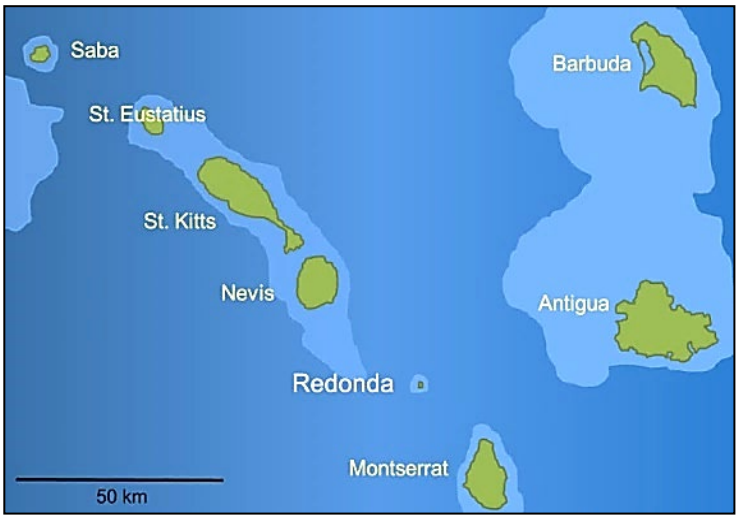
Caribbean islands cover only 0.15% of the Earth's land surface yet have accounted for 10% of the world's bird extinctions, 38% of mammal extinctions, and >65% of reptile extinctions since 1500. At least two-thirds of extinctions on islands have been attributed to invasive alien species, especially rats, mongooses and other mammals from the Old World.

This was the first Darwin Initiative project to address such species on a Caribbean island outside of the UK Overseas Territories. Redonda is a small island 56 km Southwest of Antigua and 23 km Northwest of Montserrat. The urgent need to save its biodiversity from invasive alien mammals was confirmed through regional workshops attended by governments, NGOs and academics from 23 Caribbean nations in 2009 and 2015, which identified Redonda as the top priority for restoration due to its critically endangered wildlife and excellent prospects of success. Redonda was prized by Britain for its seabird guano until the outbreak of World War I forced its mining community to leave. Redonda has been a dependency of Antigua & Barbuda since 1967 but has been uninhabited for more than a century and rarely visited, except by a handful of artisanal

fishers and British volcanologists who use the island as a fixed observation point for Montserrat. It is a difficult island to get to, being remote and encircled by high, crumbling cliffs and scree slopes.

Although only 1.5km long and less than 80 hectares in surface area, Redonda supports rare and important biodiversity. These include five endemic reptile species— four of them Critically Endangered— and an uncertain number of endemic invertebrates and plants. The island has been designated an Important Bird Area because of its globally significant, but dwindling, seabird colonies. Pre-project surveys by FFI and our partners confirmed that the diversity and abundance of the island's native fauna and flora were still in sharp decline due to feral goats *Capra hircus d.* (an unusual, long-horned breed of Spanish origin) and over 5,000 black rats *Rattus rattus*. By 2016, the island had become so severely deforested and eroded that even the surrounding reefs were choked and broken by heavy soil run-off and falling rocks (see photographs in Annex 7).

This Darwin project aimed to eradicate the rats, translocate the goats to Antigua (where the Department of Agriculture could study and preserve this rare and drought-adapted breed for the benefit of local farmers), and expedite the recovery of native species and habitats. From the start, this project had firm backing from civil society and the governments of Antigua & Barbuda and Montserrat, who shared a common vision for Redonda as an internationally recognised centre for island restoration, conservation and research.



(Above) Aerial photo of Redonda showing its badly deforested and eroded state at the project start. **(Left) Map showing the location of Redonda.** Pale blue indicates land bridges during the Pleistocene. Redonda has always been isolated**.**

2 Project Partnerships

From the start, this Darwin project was coordinated by Fauna & Flora International (FFI) with the four core partners named on the proposal: the Department of Environment (DoE, the lead agency representing the Government of Antigua & Barbuda), the Environmental Awareness Group (EAG, lead local NGO), Wildlife Management International Ltd (WMIL, New Zealand-based company specialising in invasive species eradications) and British Mountaineering Council (BMC, which provided technical support for work on cliffs). FFI had collaborated with all four organisations previously, including more than five years working together to research and develop this exceptionally challenging island restoration project, which stemmed out of requests from both national government and EAG staff.

The project's core management team comprised Dr Jenny Daltry (FFI) and three senior Antiguans: Dr Helena Jeffery-Brown (DoE), Natalya Lawrence (EAG) and the Project Coordinator, Shanna Challenger. Ms Challenger was jointly employed by FFI, DoE and EAG: a novel arrangement that worked in the project's favour by enabling her to readily access facilities and support from all three institutions whenever needed. This all-female core team was further supported by the Project Steering Committee: a body of 23 expert advisers, including representatives from all the partners

and other key stakeholders, such as the Fisheries Division, Forestry Unit, National Parks Authority and the private sector (see Annex 7 for details). The Project Steering Committee met every quarter throughout the Darwin grant period to review project progress, resolve problems and discuss upcoming activities. The main contents of this final report, and indeed all previous annual reports, were compiled from presentations and discussions at the steering committee meetings.

This arrangement worked very well throughout this project, and we were fortunate to be able to draw on such a wide range of willing hands, expertise and influence. All the agencies and stakeholders willingly pulled together to keep the programme running as smoothly as possible, including raising funds and leveraging additional sources of support and expertise where needed through our wide network of contacts, both nationally and internationally. For example, towards the end of Year 3, funding from a regional GEF project was secured by the DoE to support and strengthen biosecurity and wildlife monitoring on Redonda for a further two years.

In Year 1, more than a dozen Britons were heavily involved in fieldwork for many months, but by Years 2 and 3, national partners handled a far greater proportion of day-to-day activities, especially biosecurity, biodiversity surveys and monitoring, and outreach, with only occasional inputs of advice and assistance from international members of the project team. This marked a very welcome progression in both the local capacity and local ownership of this project.

Although the Darwin grant ended in March 2019, FFI and its partners are continuing to work together to implement the new Redonda Ecosystem Reserve Management Plan (developed under Output 3). This includes a variety of actions, including establishing the protected area governance bodies, biosecurity, biodiversity monitoring and trialling nature tours. The project steering committee that was established at the inception workshop in 2016 is now evolving into the Management Board and Technical Advisory Committee for the Redonda Ecosystem Reserve, and continues to meet at least once every quarter. Resources to continue to manage and monitor Redonda have been committed by the Government of Antigua & Barbuda, EAG and sources indicated in section 8.2, and additional funding has been applied for.

3 Project Achievements

3.1 Outputs

Output 1: Alien invasive vertebrates (rats and goats) successfully removed from Redonda, with systems in place to prevent (re)invasions

This output was achieved in full, with not only the mammals removed but also three invasive alien species of plants.

At the start of this project, the primary threats to Redonda were the presence of a small but highly destructive herd of feral goats (around 60 confirmed in pre-project survey) and at least 5,000 black rats. The operations to remove both species were fully successful, and the project indicators and means of verification remained applicable (Annexes 1 and 2). No goats or rats remain on Redonda, based on the best available evidence (indicators 1.1 and 1.3). The rare breed goats removed from the island were rehoused on enclosed farmland on Antigua in Year 1 (indicator 1.2), apart from some unweaned juveniles placed in the care of veterinarian Dr Fiona Francis. In Year 3, the goats and their progeny were spread across an additional two locations to give the animals access to more grazing and reduce the risk of disease. The last known rats died in March 2017.

Since the end of Year 1, the island has been diligently surveyed at least once a quarter by trained field personnel for any signs of rats or other harmful aliens. In accordance with international best practice, however, Redonda was not officially declared rat-free until an even more comprehensive check had been conducted. The “Final Check” was completed in mid-2018 by the rat eradication expert Elizabeth Bell (WMIL) with two skilled rope-access climbers from BMC and additional

persons from EAG and FFI, and the operation was declared successful in a media release issued by FFI and its partners in July 2018: https://api.fauna-flora.org/wp-content/uploads/2018/07/Redonda-recovery-press-release-international-version.pdf

Thirty-nine permanent bait stations were installed by the project team in March and April 2017 to help prevent reinvasions by rodents (see example in Annex 7b). Since then, all stations have been checked and replenished at least once a quarter, with no problems encountered. Other aspects of the biosecurity plan that have been implemented to safeguard the island from invaders include stringent inspections of all personnel and gear for seeds, insects, etc. before departure, and training field personnel on how to detect and act on alien incursions. The Caribbean Helicopters Limited company, which handles almost all visitors to Redonda, has posted the protocols at its helipad and refuses to accept charters to Redonda without the project coordinator or another member of the team being on board to ensure the biosecurity protocols are heeded.

While this output and its indicators speak to the removal of rats and goats and preventing incursions by alien vertebrates, the biosecurity programme also covered invertebrates and plants. In Year 1 the project field team killed the island's non-native *Casuarina equisetifolia* tree to prevent the spread of this notorious alien and no sign of this species has persisted. In Years 2 and 3, the project biosecurity team discovered, and promptly destroyed, a small number of alien plants *Leucaena leucocephala* seedlings and approximately 20 clumps of Guinea grass *Megathyrsus maximus*. Thanks to swift action, we think we have been successful in eradicating the plants but will continue to monitor the island in case any were overlooked or have persisted in less accessible parts of the island. Guinea grass is of greatest concern because it not only takes over the habitats of other plants but poses a fire hazard. In Year 3, Steering Committee member and renowned Antiguan botanist Kevel Lindsay taught team members how to distinguish Guinea grass from other, native grasses.

Output 2: Monitoring system established to measure the responses of fauna, flora and ecological processes to the removal of alien invasive vertebrates

This output was achieved in full, and includes marine as well as terrestrial variables.

At the start of the project, limited baseline data were available on the ecology of Redonda other than the approximate size and location of nesting seabird colonies, the density of two endemic lizard species, and a preliminary checklist of land birds, vascular plants and invertebrates (Bell, E.A. & Daltry, J.C. 2012. *Feasibility Study for the Eradication of Black Rats* Rattus rattus *From Redonda, with New Observations on the Island's Biodiversity and Ecology*. WMIL and FFI, Offshore Islands Conservation Programme, St John's, Antigua). The project indicators and means of verification proved valid (Annexes 1 and 2). Rapid methods were established for monitoring short- and long-term changes in major taxa and abiotic characters (indicator 2.1) and the status of major taxa and soil composition was monitored before and after removing the goats and rats (indicator 2.2). These data have already revealed substantial ecological improvements during the grant period.

Almost all of the terrestrial monitoring methods that were collaboratively designed and implemented in Year 1 were repeated in Year 2 and Year 3 for birds (diversity and abundance of seabirds and land birds), lizards (abundance), invertebrates, plants (diversity and abundance) and soils (moisture, structure and chemical properties). However, monitoring of ambient temperature and relative humidity ended prematurely when all eight data-loggers were destroyed by Hurricane Maria in September 2017. With support from the Waitt Institute in Year 2, the project biologists also established methods and baseline data on the marine fish and coral reefs around Redonda to determine whether restoring the island would affect the health of its nearshore biodiversity (studies in other parts of the world have found that curbing erosion and increasing seabird colonies are very beneficial for fringing reefs, e.g. Graham *et al.* 2018. Seabirds enhance coral reef productivity and functioning in the absence of invasive rats. *Nature*, 559, 250–253).

The monitoring programme was designed to be relatively rapid and inexpensive to make it easier for local personnel to sustain over the long term, and has already proved effective in demonstrating a diverse array of changes in the ecosystem since the project began, including statistically significant increases in native wildlife populations (see section 3.3). Among the simplest but most effective methods established are fixed point photographs, taken every year at 33 locations spread across the island. These have proved very valuable for not only recording but also communicating the rapid increase in vegetation (see before-and-after images in Annex 7c).

The project field team – including members from DoE, EAG and FFI – intend to continue monitoring the biotic variables for the foreseeable future, as we anticipate even greater changes as the island's forests regrow and native species rebound and find a new balance in the absence of rats and goats. To supplement our rapid monitoring programme with more in-depth research, the project team has also developed close collaborations with herpetologists from Harvard and the national natural history museum in Paris on a long term study of status and evolution of the Critically Endangered lizards (entailing at least 10 days on Redonda every few years), lichenologists from the Natural History Museum in London to survey and monitor the island's rare and endemic lichens, and marine biologists from the Waitt Institute to survey and monitor marine biodiversity. We have also been approached by scientists from the University of the West Indies interested in research opportunities for West Indian postgraduate students. While great care must be taken to ensure all visiting scientists abide by biosecurity protocols, the future of Redonda as an important ecological research facility looks assured.

Output 3: Redonda becomes a protected area in accordance with the Sustainable Island Resource Management Zoning Plan for Antigua & Barbuda, with an effective structure to manage its ongoing ecological recovery and sustainable use

This output was achieved in full, albeit with the new protected area being vastly larger than originally anticipated.

At the project start, Redonda was fully state-owned but not really managed by Antigua & Barbuda, aside from occasional circuits by the Coastguard. The project indicators and means of verification have stood (Annexes 1 and 2): A committee with a clear management role has been established (indicator 3.1), the Cabinet of the Government of Antigua & Barbuda has formally approved the designation of Redonda a protected area, encompassing the land and surrounding sea (indicator 3.2), and the management plan for the protected area has been prepared (indicator 3.3).

To achieve this output, the project team has conducted a series of surveys, consultations and workshops over the past two years to plan the new protected area, with expert guidance from government legal specialists and international protected area specialist Mike Appleton. A complicating factor was that the 2015 Environmental Protection and Management Act – the preferred legislation under which the area would be protected as a biodiversity reserve – contained some important gaps. This led on to the act being amended (the revised act was passed in early 2019) to enable the Government to proceed with gazetting the new protected area (a process that is expected to be completed by October 2019).

The notion of protecting Redonda and establishing a biodiversity reserve met with universal enthusiasm at all levels from the beginning, and the area swelled in size to 24,159 hectares: an area almost as big as Antigua. It includes not only the whole of Redonda island (approx. 65 hectares, planar area) but the little-known 180km^2 coral bank that our team discovered to the North and South. See map in Annex 7d. No sooner had the project team presented the proposal, the national press announced that Redonda was being designated as a reserve: https://antiguaobserver.com/redonda-to-be-designated-a-nature-reserve/

The stated Vision of the protected area directly reflects the goal of the Darwin project "*Significant recovery and regeneration of threatened species and habitats on and around Redonda is a source*

of national pride and directly informs and inspires other Caribbean nations to eliminate harmful invasive species". To help achieve this vision, the costed management plan for the Redonda Ecosystem Reserve was developed through a participatory process in Year 3. Key elements are already being implemented or about to begin, such as more detailed archaeological surveys, and research into suitable remote surveillance devices for monitoring and enforcement purposes. The new protected area will soon come under the overall direction of a Management Board chaired by the DoE with support from the Technical Advisory Committee (the new name of the Redonda Steering Committee, established in Year 1). Thanks to highly collaborative approaches taken by the Darwin project over the past three years, the DoE, Fisheries Division, EAG and other agencies have developed excellent working relationships that stand the new protected area in good stead.

Output 4: National capability to plan, manage and implement and monitor invasive species projects is raised, supported by enhanced technical skills and greater public awareness and cooperation

This output was achieved as planned.

At the start of this project, there was of course some relevant capacity among a small pool of Antiguans— chiefly staff and volunteers of the EAG, with whom FFI has worked on previous projects to remove rats and mongooses from offshore islands and monitor birds and reptiles. The indicators and means of verification still stand (Annexes 1 and 2). The project team has to date trained more than 30 persons from Antigua on invasive species control (more than the target of 20 by Year 2, indicator 4.1) and more than 30 on ecological monitoring (more than the target of 20, indicator 4.2). Two local students have begun working towards their postgraduate degrees (indicator 4.3) and 17 persons from Antigua have gained increased skills and experience in managing projects and conservation sites, including training on protected area management planning (more than the target of 5 persons, indicator 4.4). Considering that some individuals participated in more than one area of activity, we identify 42 persons who received training from this project (38 Antiguans, 1 Vincentian, 1 St Kittian and 2 Anguillians). Most beneficiaries are national NGO staff, government staff, and local volunteers.

The core group of 20 Antiguans who have participated in the project steering committee and/or major training activities since Year 1 were asked to evaluate the project's impact on their competences, using a simple scoring system from 0 (no impact) to 10. The greatest areas of improvement were reported in skills and knowledge relating to:

- Impact of goats on island biodiversity: *Mean improvement score 10.0*
- Redonda's history and wildlife: *Mean improvement score 10.0*
- Impact of rats on island biodiversity: *Mean improvement score 9.1*
- Methods for eradicating invasive species: *Mean improvement score 8.8*
- Ecosystem recovery: *Mean improvement score 8.8*
- Protected area management planning: *Mean improvement score 8.6*
- Surveying and monitoring wildlife: *Mean improvement score 8.1*

By the project end, almost all reported that they had already found the new competences directly beneficial in their jobs. Examples given included "*My increased knowledge of wildlife has impacted my teaching of science to students and student teachers*", "*Using this great example of how restoration can have such as great effect on many species of flora and fauna [to] generate more support for other invasive species projects in Antigua*", "*It has helped to identify issues in public awareness and outreach, and ensuring a message is crafted appropriately*" and even "*I have learned a lot more about my colleagues… It has been a positive experience in all aspects*".

As evidence of rising national capacity, EAG staff successfully planned and implemented a project to eradicate rats from Maiden Island (off the West coast of Antigua) in Year 3 and taught local island owners how to keep islands pest-free using some of the tools and techniques learned from Redonda. DoE staff are similarly building on the experience and skills developed through this project to develop a management plan for Mount Obama (Boggy Peak) National Park on Antigua.

More widely, the public questionnaire survey that was implement in Year 1 was repeated at the end of Year 3 with 150 members of the public. This found 100% knew about the project and over 95% could explain why Redonda merits conservation (the project target was at least 75% of the population, indicator 4.5). Furthermore, 80% correctly answered every question about Redonda's rare and endemic wildlife, and the percentage who could describe the harmful impacts of invasive species had risen from 40.9% (Year 1) to 70.9% (Year 3). Almost every respondent (98%) concurred that the island and its surrounding seas should be designated as a protected area. Although we realise this sample would ideally be much larger to adequately represent the national population, it is genuinely difficult to find anyone in Antigua or Montserrat who has not heard that work is taking place to restore Redonda. Comments received from local citizens in response to updates from the project point to a strong sense of pride and ownership of these achievements. For example, some of the comments received from local residents on online articles and social media include:-

- "*So inspiring what your team is doing*" (Nicole J.)
- "*I am truly excited about this project guys, I have always wondered about our little island neighbor, now you guys are really enlightening us*" (Patrick C.)
- "*This Is Soo Awesome, Great Job This Is Amazing How Antiguans Are Doing Bigger And Better Things And Front Runners Of The Caribbean*" [sic] (Sonia A.)
- "*Great news and a heart felt thank you... Just look at what we can do once we work together*" (Vasky S.)
- "*Kudos to the dedicated professional workers on their accomplishment of so much. From interviews I have heard with the folks actually involved in the restoration it is indeed a success*" (Pumpkin)
- "*The greening of Redonda is a fantastic achievement! Congratulations to all involved*" (T. Diamond)
- "*This is absolutely phenomenal work. A true success story that should help motivate and guide similar initiatives needed on other islands suffering from invasives*" (J. Proctor)
- "*REDONDA needs to be added to the National Anthem!*" (Smood).

3.2 Outcome

The project Outcome is "*The permanent removal of harmful invasive species triggers the recovery of endemic species, habitats and ecological processes on Redonda, and enhances Antigua & Barbuda's natural capital and conservation capacity*".

We are delighted to report this Outcome has been achieved. All three indicators have been reached, if not greatly exceeded:

0.1 *No invasive mammals remain on Redonda by project end*: The last known rat was killed in early March 2017, and intensive surveys in July 2018 confirmed the island to be rat free. The last goats were removed in April 2017. Intensive surveys in March 2019 (end of Year 3) found no signs of either species. In addition, the project team removed three invasive alien plant species (*Casuarina equisetifolia*, *Leucaena leucocephala* and *Megathyrsus maximus*).

0.2 *Net increase by at least 10% in abundance of fast-breeding native species by Year 3:* Monitoring using point count methods, validated by more detailed mark-recapture studies, have shown many species have increased by considerably more than 10%. Notably:

- 840% increase in the Critically Endangered Redonda ground lizards *Pholidoscelis atratus* (from 111.7/ ha in Year 1 to 935.3/ha by end of Year 3).
- 320% increase in the Critically Endangered Redonda tree lizards *Anolis nubilus* (from 795.5/ ha in Year 1 to 2,545.7/ha by end of Year 3).
- >800% mean increase in beetles, crickets and other terrestrial invertebrates sampled in pitfall traps every March from Year 1 to Year 3.
- Vast increase in native fig trees *Ficus citrifolia* on parts of the island accessible on foot, from only three elderly trees with no saplings at the start of Year 1 (zero sign of recruitment) to many hundreds of healthy saplings by the end of Year 3.

0.3 *Net increase by at least 10% in vegetation cover by Year 3.* Analysis of 33 fixed point photograph sites points to a 50-fold increase in vegetation cover during the peak dry season from only about 1% cover in 2016 to nearer 50% cover by March 2019 (see examples of before-and-after photographs in Annex 7c, all taken during the dry season). Most areas that were bare soil at the start of the project are now fully covered in grasses, cacti, herbaceous plants and some woody plants all year round. Plants include a rising number of native shrubs and trees, believed to be the first to successfully germinate and grow here in many decades. Many of the new *Ficus citrifolia* trees (indicator 0.2) are over 1 metre tall; some more than 2 metres.

The project has thus been successful in accomplishing its intended outcome. Having eliminated the main threats to biodiversity on Redonda, native species have increased far more quickly than originally predicted. It has been especially exciting to see natural recolonization of the island by native birds, and the reappearance of plant species that had survived in the seed bank or been reintroduced by birds (some seedlings were observed growing from the droppings of zenaida doves and scaly-naped pigeons, which could have flown in from Montserrat and other islands).

In hindsight, the indicators were too conservative and underestimated both the impacts of the invasive mammals and the capacity of Redonda's native wildlife to rebound in their absence. When the proposal was prepared, however, we allowed for the possibility of needing more time to remove all the rats and goats, thereby delaying these improvements in native species and their habitats. Also, while all of the indicators in the logframe pertain to changes in terrestrial biodiversity, had the Darwin grant period had been longer we could have defined marine indicators as well: We have begun monitoring the reefs and their fish stocks to determine whether they too have been affected by the changes on the land and/or the establishment of the ridge-to-reef protected area (Output 3).

3.3 Impact: achievement of positive impact on biodiversity and poverty alleviation

While this ecosystem is still undergoing rapid changes now that alien rats and goats have been removed, the project has achieved its proposed impact: "*Significant recovery and regeneration of threatened species and habitats on Redonda is a source of national pride and directly informs and inspires other Caribbean nations to eliminate harmful invasive species*".

Recovery and regeneration of threatened species and habitats: Since the invasive alien rats and goats were removed in early 2017, we have witnessed significant increases in native flora and fauna and dramatic improvements in the overall habitat (see images in Annex 7c). For example, we have documented: 8.4-fold increase in the density of Critically Endangered Redonda ground lizards *Pholidoscelis atratus* (from 111.7/ ha in Year 1 to 935.3/ha by end of Year 3); 3.2-fold increase in the density of Critically Endangered Redonda tree lizards *Anolis nubilus* (from 795.5/ ha in Year 1 to 2,545.7/ha by end of Year 3); A more than eight-fold increase in beetles, crickets and other invertebrates sampled since Year 1; Over 20-fold increase in vegetation cover and biomass, including the first new trees to have grown on Redonda in many decades (even at the height of the dry season, the area of substrate covered by vegetation has increased from barely 1% to more than 50%); First record of bats (albeit seen in flight only, and the species has not been identified yet);

Number of bird species on the island has increased from 9 species (seven species of seabirds, plus peregrines and zenaida doves) in Year 1 to 23 species recorded by the end of Year 3 (the 14 colonizers being Audubon's shearwater, Caribbean elaenia, pearly-eyed thrasher, bananaquit, yellow warbler, American kestrel, scaly-necked pigeon, Caribbean martin, grey kingbird, American oystercatcher, white egret, barn swallow, an unidentified hummingbird, and a small finch tentatively identified as the Lesser Antillean bullfinch, all of which are native to this region); Where there are trees, a layer of leaf litter is now forming, and annual soil monitoring data shows soils in these areas are rapidly changing in structure and chemistry, and retaining more moisture. All but the steepest parts of the island are now rapidly transforming from "moonscape" to grassland to forest. Looking ahead, the island could soon be in a fit state for reintroducing Montserratian iguanas, burrowing owls (the original endemic subspecies is extinct but another subspecies could be a suitable analogue), various dry forest trees, agaves and other species that occurred here historically, thereby re-establishing more of the food chains and ecological functions that existed before the guano miners came in the 19th century.

A source of national pride: The project has become widely known in the Eastern Caribbean, and Antiguan team members have been eager to communicate the project's achievements in regional magazines and at regional conferences and forums (see examples in Annex 5). In 2018, Redonda was notably presented by the Government of Antigua and Barbuda as an example of the Caribbean Community's progress in the 2018 report "*The State of Biodiversity in the Caribbean Community: A Review of Progress Towards the Aichi Biodiversity Targets*" (https://caricom.org/documents/16630-un_environment_-_the_state_of_biodiversity_in_the_caribbean_community_b5....pdf). Comments from government leaders shows a high level of pride in these achievements. For example, Honourable Molwyn Joseph, Minister of Health and the Environment said: "*I am immensely proud that my ministry has been a driving force in the development of this major initiative. Restoring Redonda to its full glory will be a great achievement for our country*", and many members of the public have expressed very positive sentiments through social media (see quotes in section 3.1, Output 4). Although Redonda is officially part of Antigua & Barbuda, it appears that many people on the neighbouring island of Montserrat also share delight in the island's recovery. *The Montserrat Reporter* said "*Just reading of the successes made possible by the restoration programme is heartwarming and it is something of which the sponsors and the project and the participants should be quite proud. It is a clear demonstration that when we work together towards a common goal, we can achieve great things*" (17 August, 2018).

Directly informs and inspires other Caribbean nations to eliminate harmful invasive species: Experiences and new partnerships gained from this project are already being transferred to restoring other islands, including the Turks & Caicos (eradicating black rats from the Pine Cays in 2019) and three in Anguilla (eradicating brown rats from the Prickly Pear Cays in 2018 under Darwin Plus project DPLUS060 and mice from Sombrero in 2020 under DPLUS086). Our team has also received requests for advice and assistance from other parts of this region, including the Bahamas, British Virgin Islands and the Grenadines, which also have islands overrun by rats, goats and other aliens.

Regarding the question "For all projects, what contribution did your project make to human development (poverty alleviation) and wellbeing?", the primary focus of this project on Redonda was on urgent biodiversity conservation rather than poverty alleviation. Nobody lives on the island and very few fishers or other people come here, other than those who can afford the relatively high cost of transport. However, the project has laid the foundations for some very positive benefits for people. The rare-breed goats that have been relocated to Antigua are now being studied, bred, and been spread across four locations. Some of the billies from Redonda have been deliberately crossed with the local goats on Antigua to determine whether they produce hardier, more drought-resistant goats (the need to introduce new genes into Antigua's culturally and economically important goat herds was identified by the Department of Agriculture's National Livestock Project, before the Darwin project began). Their total numbers are still low (c. 40 at the

last count, not including hybrid offspring), but the government still intends to distribute the offspring in due course to more farmers in Antigua, Barbuda, Montserrat and other countries that wish to have them.

Furthermore, as part of the new protected area management plan (Output 3), there will be more opportunities for people to benefit from Redonda and this project in other ways. The marine surveys conducted in Year 3 highlighted the potential for dive tourism here (the marine landscape is striking, with a healthy populations of sea turtles, sharks and other wildlife), while boat tours around Redonda could be another excellent way to generate revenue from tourists interested in seeing the spectacular seabird colonies. Tourism is the largest employer and contributor to GDP in Antigua, and both the Ministry of Tourism and several private operators (including dive operators in Montserrat) have expressed great interest in collaborating with the Redonda Ecosystem Reserve to trial specialist tours for a restricted number of visitors in 2020.

4 Contribution to Darwin Initiative Programme Objectives

4.1 Contribution to Global Goals for Sustainable Development (SDGs)

This project principally addressed SDG 15 (*Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss*), and the permanent removal of highly destructive goats and rats from Redonda (Output 1) is already serving to directly combat desertification, halt and reverse land degradation and biodiversity loss, and re-establish forests. Parts of the island that resembled the surface of the moon in 2016 are becoming covered in young trees through natural recruitment (see images in Annex 7) and we have shown striking increases in the number of land birds, reptiles and invertebrates on Redonda since the project began (see statistics in section 3).

This project also contributed to SDG 14 (*Conserve and sustainably use the oceans, seas and marine resources for sustainable development*) through alleviating threats to marine life, especially close to shore, and bringing over 24,000 hectares of Caribbean Sea under protection. Marine surveys in Year 1 confirmed fears that the nearshore reefs have been severely impacted by erosion from the island, but this threat is diminishing as, in the absence of rats and goats, vegetation is rapidly growing back to stabilize the steep slopes. Furthermore, by eradicating rats and enabling seabird colonies to increase, guano from seabirds is expected to boost the natural productivity of coral reefs (see Graham *et al.* 2018. Seabirds enhance coral reef productivity and functioning in the absence of invasive rats. *Nature*, 559, 250–253). The marine protected area is yet to be zoned, but this is envisaged to include certain areas for sustainable fishing and tourism.

4.2 Project support to the Conventions or Treaties (CBD, CITES, Nagoya Protocol, ITPGRFA)

The Darwin project has notably addressed CBD Article 8(h) "*Each contracting Party shall, as far as possible and as appropriate, prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species*". This project has removed five highly damaging invasive alien species from Redonda (*Rattus rattus, Capra hircus d., Casuarina equisetifolia, Leucaena leucocephala, Megathyrsus maximus*) and is transferring the necessary knowledge, skills and contacts to more local persons to support biosecurity for this and other key sites.

The project also helped to deliver Article 8(a,d,f), including eliminating the main threats to, and protecting the entire range of, Redonda's Critically Endangered endemic reptiles (which have already more than tripled in abundance), and Articles 7, 12 and 13. Redonda is biogeographically unique and this project is working towards safeguard a significant proportion of Antigua & Barbuda's biodiversity. In a regional Caribbean Community forum in January 2018, the Darwin project was highlighted as an important example of progress against the Aichi Biodiversity Targets (Annex 4), and cited in the 2018 report "*The State of Biodiversity in the Caribbean Community: A*

Review of Progress Towards the Aichi Biodiversity Targets" (https://caricom.org/documents/16630-un_environment_-_the_state_of_biodiversity_in_the_caribbean_community_b5....pdf as an clear example of achievements under Target 9 (invasive alien species).

This project has also honoured the Nagoya Protocol on ABS. For example, we have repatriated goats from Redonda to Antigua where this rare breed— which is inferred to be more drought-tolerant than other local breeds—is being conserved and bred as a genetic resource for livestock farmers. We also ensured all collectors and recipients of scientific specimens from Redonda have permits and signed agreements with the DoE, as required by the Section VIII (Access to genetic resources and the sharing of benefits) of the 2015 Environmental Protection and Management Act.

The national Focal Point for the CBD, ABS and CITES Management Authority is the Director of Environment, Diann Black-Layne. The DoE was the lead government partner in this project, and our Project Coordinator was based at the DoE head office. Ms Black-Layne provided a letter of support for the Darwin proposal and was always kept abreast of project activities and outputs. As further evidence of her interest and support, the DoE secured new GEF funding (2019–2021) to support ongoing management of Redonda, including the Project Coordinator's salary.

4.3 Project support to poverty alleviation

Poverty alleviation was not a major goal of this Darwin project because, as explained in the proposal, Redonda is uninhabited and remote and relatively few fishers and other persons have the means to travel there. Furthermore, Antigua & Barbuda and its neighbours are now ranked as Upper Middle Income countries. Our proposal was submitted for Defra funding, rather than under the DfID funding stream, because poverty alleviation was not a major objective.

However, the reviewer of our first annual report remarked that "*The long term goal of establishing the island as a showcase for ecological protection and recovery will require the support and infrastructure of Antigua & Barbuda thereby bringing socio-economic benefits*". There is truth in this. As well as hosting research visits by ecologists, archaeologists and volcanologists, the new protected area management plan (Output 3) makes provision for trialling high-value, small group tours from to Redonda from Antigua. Operators in Montserrat have also requested permission to bring dive tours, which may be possible once the new protected area management structure is fully operational.

Furthermore, the rare-breed goats that have been relocated to Antigua are now being studied and crossed with local goats on Antigua in an effort to produce hardier, more drought-resistant goats (the need to introduce new genes into Antigua's goat herds was identified by the Department of Agriculture's National Livestock Project before the Darwin project began). Total numbers are still low, but the government intends to distribute the offspring in due course to more farmers in Antigua, Barbuda, Montserrat and other countries that wish to have them. In the future, the Redonda goat bloodlines may well prove invaluable to many farmers, particularly considering climate change and the predicted increase in droughts.

4.4 Gender equality

The project was successful in ensuring local women were actively involved in all aspects of project planning and implementation. For example,

- All four members of the core project management team are women (including the Project Coordinator and the lead representatives from FFI, DoE and EAG);
- The Project Steering Committee comprises 9 women and 14 men;
- The Goat Removal Team comprised 2 women and 1 man;
- The Rat Eradication Team comprised 3 women and 6 men;
- The protected area management planning team comprised 4 women and 2 men; and

- Most of the ongoing biodiversity monitoring and biosecurity fieldwork has been implemented by 5 women and 3 men.

Across all 40+ participants in this project – including the 38 Antiguans who received training – the gender ratio is close to 50:50. While the project team can take some credit for ensuring women had equal opportunities to participate in this project, it should be noted that there is a fairly high frequency of women in the environmental sector in Antigua & Barbuda, especially in the Department of Environment (led by Dr Diann Black-Layne) and Environmental Awareness Group (led by Ms Arica Hill), the main national hosts and partners in this project. Thus, in truth, it was not difficult to encourage and enable women to participate and be treated as equals by their peers.

Both Redonda and this Darwin project has gained a high profile nationally and regionally, however, and by shining the spotlight on the female Project Coordinator, rope-climbers, goat catchers, marine biologists and other women who took part, we have helped demonstrate to other, male-dominated sectors of society what women can do. Feedback received from the Antiguan public, from other government agencies and from other islands has been immensely positive, albeit sometimes incredulous that women would want to camp and work on such a hostile-looking place!

4.5 Programme indicators

- **Did the project lead to greater representation of local poor people in management structures of biodiversity?**

Yes. From the start of the Darwin project we strongly encouraged open dialogue (e.g. through public meetings, phone-in-radio shows, Redonda-on-the-Road events) to enable citizens from all backgrounds to share information and have a voice in how Redonda is managed – even those who may never be able to visit the island themselves. Redonda has had little economic significance since guano mining ended a century ago, but it remains an important and fascinating part of local history and culture, as was clear from the high turnout to project events and consultations on Antigua and Montserrat. Importantly, the new Redonda Ecosystem Reserve management plan (Output 3) was developed by a participatory process and the team members took special care to reach out to all fishers who may use the seas around Redonda to better understand their needs and any customary user rights, regardless of nationality. More formally, local fishers, as well as the Fisheries Division, will soon be represented on the Technical Advisory Committee to advise and maintain a direct link to the management of the Redonda Ecosystem Reserve.

- **Were any management plans for biodiversity developed and were these formally accepted?**

Yes. The most important plan to be developed and submitted was the nomination for establishing the 24,159-hectare Redonda Ecosystem Reserve which was approved by Cabinet at the end of Year 3 (Output 3). The new management plan for the protected area is currently undergoing the final stages of public review before being published (although key elements are already being implemented, including biosecurity protocols to protect Redonda from invasive alien species).

- **Were they participatory in nature or were they 'top-down'? How well represented are the local poor including women, in any proposed management structures?**

Yes. The plans for establishing and managing the Redonda Ecosystem Reserve were developed by a participatory process involving all stakeholders. Few stakeholders may be described as poor, but certainly women have had a very prominent role in the development of the management plan (almost all of the lead authors were local women) and in the new Management Board (chaired by a woman) and Technical Advisory Committee (50% of the members are female). The park manager role is currently being filled by a young local woman, Shanna Challenger (although a replacement will be sought when she leaves Antigua in September to complete her Masters in the UK).

- **How did the project positively influence household (HH) income and how many HHs saw an increase?**
- **How much did their HH income increase (e.g. x% above baseline, x% above national average)? How was this measured?**

Not measured or applicable. The project site is uninhabited.

4.6 Transfer of knowledge

This Darwin project has generated novel and valuable information on the impacts of black rats and feral goats on Caribbean ecosystems, methods for eradicating these invasive aliens and for biosecurity, and ecosystem recovery after the aliens are removed. Redonda is around the 45th Caribbean island to be cleared of black rats, and the 11th cleared of feral goats, and we believe it is the most intensively monitored in terms of its soils, reptiles, birds, invertebrates, plants and surrounding marine life. The remarkable changes observed only two years after removing rats and goats (section 3.3) are transforming our understanding of the capacity of island ecosystems and their wildlife to recover from invasions.

The project has already generated a slew of scientific reports and publications (Annex 5: 59% of lead authors are female), and several more papers are under development. In our experience, however, scientific papers are not widely read by practitioners in this region, and exchange visits and oral presentations at regional conferences are often a more effective way to share project methods and results. To date, team members have presented papers to more than 250 biodiversity managers and researchers from more than 20 countries across the Greater and Lesser Antilles at eight regional conferences in Jamaica, Cuba, Dominican Republic, Trinidad, Montserrat, St Kitts and Guadeloupe. A further two papers are being presented at the 2019 BirdsCaribbean conference in Guadeloupe at the time of writing. These regional engagements included a meeting of the Caribbean Community (CARICOM) attended by government and civil society representatives, including the Project Leader, in January 2018 to evaluate the region's progress in reaching Aichi targets, ahead of developing post-2020 targets. Redonda was subsequently presented as an example of progress on Target 9 in the 2018 report "*The State of Biodiversity in the Caribbean Community: A Review of Progress Towards the Aichi Biodiversity Targets*" (see section 4.2).

Two talented Antiguan ecologists are conducting research on Redonda for higher degrees. Antiguan Shanna Challenger (female) has begun studying the behavioural ecology of seabirds for her Master of Science degree at the University of Kent with support from seabird specialists at the University of Roehampton (to be completed by end 2020), and Antiguan Ruleo Camacho (male) is developing his PhD study on corals. These are in addition to the external scientists and students from Harvard, Waitt Institute and the natural history museums in Paris and London, who have begun conducting research on Redonda in collaboration with the Darwin project team.

Further to these, the project has generated a very large number of popular articles in the traditional and online media, focusing especially on national and regional audiences under Output 4. These include numerous tv and radio interviews and articles in national and regional papers, including illustrated features in the inflight magazines of the regional airlines LIAT and Caribbean Airlines: a particularly effective way of reaching government leaders travelling between islands.

4.7 Capacity building

Capacity building was a major objective of this project, especially focusing on nationals of Antigua & Barbuda. Our recent survey of 20 nationals who participated in the project steering committee and/or major training activities reported significant increases in capacity, and most of them have already applied knowledge and experiences from this project to their jobs (see details in section 3.1, Output 4). Many of these individuals are currently transitioning onto the Redonda Ecosystem Reserve's Management Board and Technical Advisory Committee (which are to be fully launched

once the new protected area is gazetted later this year) and thus will continue to be actively involved in the management and sustainable use of Redonda's biodiversity.

It is not easy to keep track of all the other committees and panels the project's many beneficiaries now belong to – and even harder to determine whether these can be attributed to the Darwin project. To give some recent examples, Dr Helena Jeffery-Brown now represents Latin America and the Caribbean at the CBD Bureau of the Conference of the Parties, Ms Natalya Lawrence became Treasurer of the Marine Ecosystem Protected Area (MEPA) Trust in Antigua, Mr Ruleo Camacho has been promoted to Natural Resource Officer at the Department of Environment, and Ms Arica Hill has become the national focal point for the regional project Powering Innovations in Civil Society and Enterprises for Sustainability in the Caribbean (PISCES). But there is no doubt that it was largely because of the expertise and reputation she had gained from the Darwin project that Ms Shanna Challenger was recognised as a "Caribbean Under-25's Achiever" by Caribbean Airlines in 2017 – the only awardee to be recognised for environmental achievements – and awarded a Chevening Scholarship for her postgraduate degree in 2019. On balance, women are taking more prominent roles than men in the environmental sector in Antigua: A trend that was apparent even before the Darwin project began (see 4.4), but further aided by the training and other opportunities this project has provided.

5 Sustainability and Legacy

The project has become widely known in Antigua and Barbuda as well as Montserrat, Nevis and other islands thanks to widespread media coverage (starting with the press release in Year 1), social media updates, meetings, events and word-of-mouth. Because the public survey in Year 1 revealed many misconceptions about Redonda – most people described it only as a rock inhabited by goats – concerted work took place under Output 4 in Years 2 and 3 to raise awareness of the island's unique and remarkable native wildlife and history. This diverse campaign included the *Redonda on the Road* show, in which team members took a galley of enlarged high-quality photographs of Redonda's wildlife to a range of public venues around Antigua to stimulate discussion (Activity 4.2). The extensive media coverage, as well as individual and group meetings, also proved invaluable for communicating with the project's main target audiences – the public and decision makers in Antigua and neighbouring islands. As a result of this, the project has ridden a wave of support to establish Redonda as a biodiversity reserve (our surveys show that by Year 3, 98% of the public agreed that Redonda and the surrounding sea should be protected). The Redonda Ecosystem Reserve was approved by Cabinet at the end of Year 3 to one of the biggest areas in the Caribbean: a great testament to Antigua & Barbuda's commitment to the CBD. To help sustain the outreach programme, the EAG is now working with the Ministry of Education to include Redonda, and its restoration story, in the national school syllabus, starting at primary level.

We also recognised the need to share our technical methods and results with ecologists and conservation practitioners more widely. Between 2016 and 2019 we presented our work at eight regional meetings and conferences, including those of Caribaea Initiative, BirdsCaribbean, Latin American and Caribbean Congress of Conservation Biology, Critical Ecosystem Partnership Fund and CARICOM. Our technical reports have been widely shared and more will be posted online once they have been copy-edited. Several peer-reviewed publications are already in the public domain, including our contributions to the *IUCN Red List of Threatened Species* (the species accounts for the endemic lizards *Pholidoscelis atratus* and *Copeoglossum redondae*, with the revised account for *Anolis nubilus* ready to be uploaded). The project has already helped inform other restoration and protected area planning projects in this region (including DPLUS060 and DPLUS086 in Anguilla and the present Pine Cay restoration work in Turks & Caicos, both UK Overseas Territories). Judging from the many enquiries we have received (e.g. Bahamas, British Virgin Islands, St Vincent & the Grenadines, the French Antilles), this project has also prompted several other Caribbean countries to investigate whether they too could restore wildlife and ecosystems by eradicating invasive rats and goats.

The Darwin project's exit strategy was valid. The permanent removal of destructive alien mammals from Redonda (Output 1) will surely stand as the greatest legacy of the Darwin Initiative's investment, having been the biggest threat to the biodiversity of a unique ecosystem. Removing both goats and rats has already triggered remarkable increases in native wildlife populations and improvements in habitat quality on this degraded and unique site within 24 months (see 3.2 and 3.3), and undoubtedly these improvements will continue in the years to come. Thanks to Redonda being remote, uninhabited and difficult to access by boat, the risk of (re-)invasions by aliens is low and relatively easy to manage through the biosecurity systems established under Activity 1.4.

To see such swift results from conservation activities within such a short time is tremendously rewarding for everyone involved, and our local partners are proud of their parts in this and determined to continue building on this success. This is demonstrated by project's success in securing Cabinet approval for establishing the Redonda Ecosystem Reserve (Output 3) and the successful efforts of the DoE to secure funding from GEF to continue the project for two more years (section 8.2) while at the same time identifying sustainable national sources of support, e.g. through the new Sustainable Island Resource Framework (SIRF) Fund and MEPA Trust. The EAG meanwhile has been restoring additional, smaller islands around Antigua, using some of the skills and experiences gained from Redonda: Maiden island was cleared of rats in 2018, and Smith Island is scheduled for 2019.

Although the Darwin grant has come to an end, this project and its partnerships have not ground to a halt, but rather entering a new phase of activities to implement the new protected area management plan for the Redonda Ecosystem Reserve. Equipment for monitoring wildlife, camping, etc., purchased under the project remains in Antigua and will continue to be used in the area's management. Priorities over the coming years include zoning the marine area, installing remote surveillance technology, planning the reintroduction of owls, iguanas and other keystone species to Redonda, and placing Redonda on the tentative list of World Heritage Sites. The Secretary General of UNESCO Antigua, who sits on the Redonda Steering Committee, has offered to nominate Redonda under both cultural and natural criteria, and as an outstanding example of ecosystem restoration.

6 Lessons learned

Overall the project went very well, and has accomplished highly ambitious targets, including the major operations to eradicate rats from Redonda and relocate the feral goats (completed by the start of Year 2). These were considerable feats given that the project site is remote, extremely arid, and much of it is very steep and prone to rock falls. Our endeavours to establish the Redonda Ecosystem Reserve as the largest nature reserve in the Eastern Caribbean, spanning 24,159 hectares, was also very ambitious but has been warmly received by the Government of Antigua & Barbuda and all stakeholders. Technical details of the work carried out have been presented in reports and manuals and disseminated through eight regional conferences. We intend to publish more of this work soon. Lessons of possible use to other conservation practitioners include:-

Management

- ✓ At the early stages of a complex project, developing Memorandums among collaborating organizations is very useful for clarifying roles and responsibilities, and managing expectations from the start, especially for any groups that have not worked together before.
- ✓ This ambitious project could not have been possible without having invested in more than five years of research, planning and relationship-building to design the project, recruiting very dedicated and experienced persons, and paying serious attention to health and safety. We understood that our hosts were nervous about permitting work in this remote area, and a major, avoidable mistake or accident could have caused the work to stall or be cancelled.
- ✓ Probably the most important factor in project success was that this project was genuinely wanted by both government and non-government agencies in the host country from the start.

Having strong national ownership has enabled the project team to secure permits and overcome what could have been insurmountable obstacles, such as the complicated import of over two tonnes of rodenticide. For other Darwin projects that are planning to tackle invasive aliens on this scale, it may pay to wait until the team is confident that such support is in place.

- ✓ Most invasive species projects in Small Island States depend on international volunteers, due to limited availability of local persons who can or want to spend many weeks in the field. However, encouraging and enabling local people to take part, if only for a weekend, is crucial for building ownership as well as the necessary know-how for future projects. On Redonda, we deliberately established a 'visitor trail' along the easiest route across the island to enable local novices to safely take part in deploying bait and monitoring rat activity.
- ✗ The fall in the pound sterling almost led to the project being cancelled. By the end of 2016, the Darwin grant was worth around EC$ 220,000 less than originally budgeted. Our request for an emergency top-up was rejected. The Project Leader and colleagues therefore worked very hard to raise additional funds, even at the height of the busy eradication operations. Fortunately, we secured additional funds in time, but in hindsight, we should have requested a larger grant to allow contingency – and indicated the exchange rate as an assumption on the logframe.

Technical

- ✓ The project camp was able to house up to 14 fieldworkers for extensive periods without a generator. All electronic equipment, including laptop computers, walkie-talkies, phones, head torches and VHF radios, were successfully powered using portable solar panels alone. This is thanks to recent improvements in solar technology and the rising availability of equipment that can be charged via a USB cable.
- ✗ We learned even good quality tents cannot survive more than two months on Redonda without being destroyed by UV light and the scouring action of wind-blown volcanic dust. We experimented with rigging up shade cloths and screens to shield the tents but struggled with the strong winds. Additional funds therefore had to be sought to replace at least some of the tents that were destroyed in Year 1.
- ✓ Captive goats proved invaluable for capturing more goats, as the animals more readily approached the corral when other goats were inside. This also helped to alleviate stress among the wild animals: The newly captured goats became calmer and fed more readily when enclosed with other goats than when kept in isolation.
- ✗ The livestock spear gates we imported from Australia to form the self-mustering corral on Redonda proved futile: It seems it never occurred to these goats to push the gates to gain entry to the corral (probably because they had never needed to push through vegetation or other obstacles on the denuded island). With hindsight, and a bigger budget, we should have spent more time studying the goats and testing a variety of capture methods in advance, because they did not behave as other feral goats have done on other islands.
- ✓ Ground-based baiting and aerial drops of bait can be combined successfully in the same rat eradication operation. Even where bait is dropped by helicopter, it is very useful to have skilled persons on the ground to thoroughly monitor the distribution and uptake of bait, clear up rat carcasses, and deploy monitoring tools to ensure no rats survive.
- ✓ The main bait used in this operation, Klerat®, again proved excellent for Caribbean islands. Acceptance by rats was high, the bait was completely ignored by non-target vertebrates, and the waxy bait was easy to handle and coped well with very high temperatures. We also learned their angular shape 'stuck' more easily to cliffs when broadcast from the air.
- ✓ Plastic tubes recycled from ordinary 1.5-litre water bottles are a useful alternative to commercial bait boxes when eradicating rats from areas with livestock. They are light and easy to transport, and cost nothing. Furthermore, this helped local citizens to feel part of the project by donating their bottles.

- ✓ The rat eradication was carried out in the dry season, when the rats had fewer alternative foods available and when there was no danger of hurricanes. Although this coincided with the breeding seasons of frigatebirds, boobies and tropicbirds, these colonies showed remarkably little sign of being disturbed by the rat eradication workers. Even seabirds nesting on well-used trails raised young successfully.
- × The project generated so many technical reports (see Annex 5) that it proved difficult to keep up with reviewing and copy-editing them. In hindsight, it would have been helpful to have budgeted for an editor rather than doing this in-house.

M&E

- ✓ Caribbean wildlife can rebound incredibly quickly on islands cleared of rats and goats. This project certainly shows the value of gathering ample baseline data *before* eradicating invasive alien species, and to monitor the island regularly after the aliens have been eradicated.
- ✓ Fixed point photographs have again proved to be a simple yet very powerful way of monitoring the changing landscape and conveying this to the public, decision makers and other audiences. Annex 7 includes a few examples of the 'before-and-after' photographs taken in fixed points around the island.
- × The growth in vegetation presents an additional challenge for monitoring the island's biodiversity, however, because visibility distance is falling (e.g. lizards and ground-nesting birds are harder to see among undergrowth than on the previously bare ground). Some of the animal survey methods that had worked perfectly in Year 1 therefore had to be adjusted in Year 2.
- ✓ Regular monitoring enabled us to quickly detect and act on new problems. The team discovered some invasive alien *Leucaena leucocephala* seedlings in Year 2 and clumps of Guinea grass *Megathyrsus maximus* in Year 3 which had not been encountered during previous visits (although there are historical records of Guinea grass on Redonda). Both invasive plants were probably present on Redonda before this project began but suppressed by rats and goats. It is not uncommon for the removal of a major alien to create a 'release effect' for another alien, and this is a good reminder of the importance of monitoring islands closely after removing alien invasive species. We believe we have been successful in removing the plants but will continue to monitor the island in case any were missed.

6.1 Monitoring and evaluation

The only significant (and approved) change to the logframe was Indicator 3.2: Our deadline for Redonda designated as an Environmental Protected Area, encompassing the land and surrounding sea was pushed back from Year 2 to the end of Year 3. This postponement was requested initially because of uncertainty over how long the Cabinet would take to approve the protected area but proved invaluable in allowing more time to research and incorporate marine areas and amend the 2015 Environmental Protection and Management Act. The extra time was also especially helpful because of the major hurricanes that struck this region in September 2017 (Year 2), which caused some delays to project activities as project team members scrambled to assist with emergency aid and impact assessments in Barbuda. Happily, the Cabinet of the Government of Antigua and Barbuda approved the new protected area in full at the end of Year 3.

Regular monitoring and reflection proved very valuable to help this project operate effectively and capture the lessons learnt. The Project Steering Committee (aka the Redonda Ecosystem Reserve Technical Advisory Committee) met every quarter throughout the project to review project progress, help to resolve any problems and discuss upcoming activities, and formed smaller technical working groups to discuss and review specific aspects of the project, such as the marine surveys conducted by FFI, Fisheries Division and DoE in 2018. Progress against all four project outputs was monitored throughout. Naturally, special attention was paid to monitoring whether any rats or goats remained on Redonda (Output 1), with frequent surveys (at least once every

quarter, for up to one week per visit, plus a major three-week survey in 2018) to search for the animals and their droppings, tracks and other signs, employing various detection tools such as the permanent bait stations, tracking plates, non-toxic lures and camera traps. The eradication operation was formally confirmed a success in July 2018. Considerable effort was also devoted to measuring project's impacts on the island's wildlife and habitats (Output 2). In Year 1, and even during the project planning stages, we established measures and protocols for monitoring the flora, fauna and their changing environment, including standardised measurements of soil, microclimate, plants, invertebrates, reptiles and birds (Activities 2.1 and 2.2), and repeated them in Years 2 and 3. The indicators for Outputs 1 and 2 also form the basis of the three main indicators for the overall Outcome, because the removal of invasive alien mammals (indicator 0.1) was recognised as key to the recovery of the native wildlife and their habitat (indicators 0.2 and 0.3). Routine biosecurity monitoring and monitoring of native wildlife and the wider ecosystem will continue as part of the island's ongoing management as a protected area (Output 3). At the last Committee meeting, it was agreed that biodiversity monitoring should increase from annually to twice a year. This demonstrates that the committee members – who include senior representatives from various government agencies and civil society – recognise and appreciate the value of monitoring and demonstrating the project's impact on biodiversity, particularly because the changes have been so dramatic since the restoration project began (section 3.3).

Progress against Output 4 was measured mainly in terms of the numbers of people trained or taught, according to the indicators on the logframe, but the project team also solicited feedback from the people involved, including comments received after training workshops and public events, and in response to media articles. The success and usefulness of the outreach programme, training exercises and exchange of knowledge was tested by repeating the Year 1 public questionnaire survey and with competence self-assessment questionnaires. With more resources, this monitoring could have been more extensive, but perhaps the best proof of impact lies in the fact that by Year 3 almost all of the project operations were implemented by project-trained nationals and the overwhelming support from the public and decision-makers alike for establishing Redonda as a major protected area.

6.2 Actions taken in response to annual report reviews

The reviews of our Years 1 and 2 reports were very complimentary about the project design and progress to date, and did not appear to require any changes. Our team greatly appreciate the encouraging remarks.

When the grant was awarded, however, the cover letter pointed out that "*currently few of the indicators have baselines - these will need to be added to allow verification of evidence presented in the first Annual Report*". We duly included the baseline information (chiefly sourced from the ecological surveys by Bell & Daltry, 2012) as footnotes to the logframe in our Annual Reports and repeat them again in the logframe (Annex 1) of the present report.

7 Darwin identity

The Darwin Initiative name and, where appropriate, logo have been used extensively to date, including on the widely disseminated media interviews and articles, on all project reports, PowerPoints, and other project documents such as agendas and minutes of Steering Committee meetings. Wherever possible, we have included the full clause "with support from Darwin Initiative through UK Government funding". In fact the 'standard acknowledgements clause' FFI and our partners insert in all materials associated with this project is: "*The Redonda Restoration Programme is a collaborative programme of the Government of Antigua & Barbuda, Environmental Awareness Group (EAG), Fauna & Flora International (FFI), British Mountaineering Council (BMC), Global Wildlife Conservation (GWC), Wildlife Management International Ltd (WMIL) and Island Conservation, with support from Darwin Initiative through UK Government funding, National Fish & Wildlife Foundation, Global Wildlife Conservation, Betty Liebert Trust, Taurus Foundation, US Fish &*

Wildlife Service, Caribbean Helicopters Ltd and Syngenta Crop Protection AG". While some editors unfortunately refused to include the complete list, we have been persistent and for the most part successful at ensuring that the Darwin Initiative was named in the most prominent outputs, such as the *BBC Wildlife* magazine article published in Year 2, most of our social media channels (including the Redonda Restoration Programme Facebook page), and all conference presentations. Where we have fallen short is on linking our social media updates back to the Darwin social media accounts.

To further reinforce local recognition of Darwin Initiative, stickers with the Darwin logo were fixed to all equipment purchased using grant funds, including the project laptop, GPS units, walkie-talkies, etc. This project is well understood by the host organisations (including the Department of Environment), other departments of the Government of Antigua & Barbuda and other participating organisations to be a UK Government-funded project, and that the Darwin Initiative has been the single largest funding source to date.

8 Finance and administration

8.1 Project expenditure

Project spend (indicative) since last annual report	2018/19 Grant (£)	2018/19 Total actual Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)			0.9	
Consultancy costs			0.0	
Overhead Costs			0.7	
Travel and subsistence			1.5	
Operating Costs			-6.0	
Capital items			0.0	
Others (see below)			-4.0	
TOTAL				

Staff employed (Name and position)	Cost (£)
Project Leader: Dr Jenny Daltry	
Project Coordinator: Ms Shanna Challenger	
Finance Administrator: Ms Isabel Vique	
Community Liaison: Ms Natalya Lawrence	
Wildlife Officer: Ms Andrea Otto	
Biosecurity Officer: Mr Tahambay Smith	
Biosecurity Officer: Mr Sean Lee	
TOTAL	

Capital items – description	Capital items – cost (£)
TOTAL	

Other items – description	Other items – cost (£)
Monitoring and Evaluation Other consumables	
TOTAL	

8.2 Additional funds or in-kind contributions secured

Source of funding for project lifetime	Total (£)
National Fish & Wildlife Foundation (grant to FFI, 2016-2018, US$ 99,999)	
Taurus Foundation (grants to FFI, 2017 and 2018)	
Disney Conservation Fund (part of two grants to FFI, 2016-2019, US$ 8,344)	
Waitt Foundation (grant to FFI, 2017-2018, US$ 14,955)	
Private donors (gifts to FFI, 2017-2019)	
Global Wildlife Conservation (grant to EAG, US$ 87,510)	
USFWS NMBCA (part of grant to EAG, 2017-2019, US$ 50,000)	
TOTAL	

Source of funding for additional work after project lifetime	Total (£)
GEF (part of grant to Department of Environment, US$ 152,948)	
Taurus Foundation (grant to FFI, 2019-)	
USFWS (grant to FFI, 2019-2021, US$ 101,875, provisionally approved)	
Private donors (gifts to FFI, 2019-)	
TOTAL	

In kind contributions are *not* included in the totals above, because they include a vast amount of personnel time donated by FFI, its partners and volunteers, and use of office facilities, meeting venues, vehicles and field equipment, which are hard to place a monetary value on. Some of the more easily quantifiable donations include Klerat™ bait from Syngenta Crop Protection plc for the rat eradication operation and subsequent biosecurity (2.4 tonnes, valued at £20,000) and a new drone from Global Wildlife Conservation (worth £ 1,700).

8.3 Value for Money

This project successfully leveraged the combined skills, equipment, staff time and other resources of many interested parties, including the Government of Antigua & Barbuda, EAG, INGOs and businesses to restore and permanently protect the globally important biodiversity of an entire, biogeographically unique ecosystem from ridge to reef.

Eradicating harmful invasive aliens is more cost-effective and ultimately more successful than trying to suppress them indefinitely. Removing goats and rats from Redonda demanded significant time and funding, including helicopter hire, but was fully achieved by the start of Year 2, and the far-reaching benefits of this investment are already emerging (section 3.3) and will continue to grow. These benefits include saving Redonda's remaining endemic animals and plants from extinction (including Critically Endangered reptiles that occur nowhere else), enabling globally important seabird colonies to recover, achieving significant reforestation and reduction in soil erosion, and even creating new nature-based tourism opportunities. The recurrent costs of protecting and monitoring the island are relatively low, and the tasks will be sustained by the increasingly skilled and confident technicians in the government and NGO sectors.

Considerable cost-savings were achieved by using existing facilities and equipment provided by project partners and by capitalising on existing relationships and the very high level of national interest in Redonda. For example, the helicopter company charged almost half their standard rate ($750 rather than $1,450 per hour), all import duty on project equipment was waived by the government, and even local taxi drivers frequently gave free rides to project staff. Many suppliers donated free or heavily discounted equipment during the project, such as Syngenta Crop Protection plc (free rodenticide and shipping), Enhanced Protection Systems (PETT toilet system) and a local metal workshop (water storage and troughs for goats). The Darwin grant also helped

leverage additional funds, including a new GEF grant managed by the Department of Environment (for island invasive species projects), a USFWS NMBCA grant awarded to the EAG (which required 3:1 matched funding) and several grants awarded to FFI, including funds to survey and protect the seas around Redonda (see section 8.2).

Furthermore, this project has many multiplier effects, because methods, skills and connections developed by the host country beneficiaries can help advance the restoration of other Caribbean sites. For example, the EAG successfully eradicated rats from Maiden Island (Antigua) in 2018, and the Anguilla National Trust has applied training from this project to develop a management plan for the Prickly Pear Marine Park.

Annex 1 Project's most recently approved logframe, including indicators, means of verification and assumptions.

Note: Insert your full logframe. If your logframe was changed since your Stage 2 application and was approved by a Change Request the newest approved version should be inserted here, otherwise insert the Stage 2 logframe.

Project summary	Measurable Indicators[1]	Means of verification	Important Assumptions
Impact: Significant recovery and regeneration of threatened species and habitats on Redonda is a source of national pride and directly informs and inspires other Caribbean nations to eliminate harmful invasive species.			
Outcome: The permanent removal of harmful invasive species triggers the recovery of endemic species, habitats and ecological processes on Redonda, and enhances Antigua & Barbuda's natural capital and conservation capacity.	0.1 No invasive mammals remain on Redonda by project end. 0.2 Net increase by at least 10% in abundance of fast-breeding native species by Year 3.[2] 0.3 Net increase by at least 10% in vegetation cover by Year 3.[3]	0.1 Biosecurity monitoring datasheets and quarterly reports. 0.2 Biodiversity monitoring data and reports. 0.3 Fixed point photographs and vegetation plots.	Recent scientific research is correct in identifying rats and goats as the primary drivers of biodiversity loss on Redonda, and that at least some of these changes are reversible if the aliens are removed.

[1] The following notes have been inserted in response to the reviewer requesting more details of the pre-project baselines for the project indicators (see section 10) when the grant was approved. We recognised the importance of this request, but most of the following details were too cumbersome to insert into the logframe cells above. We hope presenting more detailed information in footnotes is an acceptable solution:

[2] Comparisons are made to the pre-project baseline data in Bell & Daltry (2012) and baseline data collected in Year 1, which included: (i) Density estimates of the endemic Redonda ground lizard *Pholidoscelis atratus* (111.7 per hectare) and Redonda tree lizard *Anolis nubilus* (795.5 per hectare) obtained from point counts in the 'safe zone' at the top of the island; (ii) Total numbers of nesting seabirds (West Indian red-billed tropic bird: 30 pairs; bridled tern: 41 pairs; brown noddy: 31 pairs; brown booby: 774 pairs; masked booby: 164 pairs; red-footed booby: 150 pairs; magnificent frigatebird: 119 pairs); (iii) Total number of land bird species (2 species only) and pairs (peregrine falcon: 1 non-resident pair; and zenaida doves: 2 pairs). For invertebrates and other taxa that hadn't been surveyed before, net changes in abundance and diversity were measured by comparing samples from Years 1 and 3 (Activity 2.2).

[3] Pre-project satellite images and photographs showed less than 1% of the island had permanent vegetation cover (mainly trees *Ficus citrifolia* and small patches of cacti *Opuntia* spp. and *Aloe vera*), while ephemeral weedy herbs and grasses formed a thin layer across 10-20% of the island after rain. Changes were measured by comparing fixed point photographs in Years 1 and 3 (Activity 2.2).

Outputs: 1. Alien invasive vertebrates (rats and goats) successfully removed from Redonda, with systems in place to prevent (re)invasions.	1.1 No goats on Redonda by end of Year 2.[4] 1.2 Rare breed goats from Redonda housed on enclosed government farmland on Antigua by end Year 1.[5] 1.3 No rodents on Redonda by end of Year 2.[6]	1.1 Monitoring reports and site visits by project biologists and biosecurity personnel. 1.2 Photographs and stock books. 1.3 Monitoring reports and site visits by project biologists and biosecurity personnel.	Rats on Redonda are susceptible to the same bait and baiting methods that have been successfully used on other Caribbean islands. No unusual and severe weather events during critical stages (this project will avoid conducting important activities during the hurricane season, especially August through October).
2. Monitoring system established to measure the responses of fauna, flora and ecological processes to the removal of alien invasive vertebrates.	2.1 Rapid methods devised and established for monitoring short- and long-term changes in major taxa and abiotic characters (in Year 1, tested and refined by Year 3).[7] 2.2 Status of major taxa and abiotic characters monitored as per 2.1 before and after removing the goats and rats (every year).	2.1 Biodiversity monitoring manual. 2.2 Data and annual monitoring reports.	Long term monitoring strategy accurately predicts the future human and other resources available to implement it.
3. Redonda becomes a protected area in accordance with the Sustainable Island Resource Management Zoning Plan for Antigua & Barbuda, with an effective structure to manage its ongoing ecological recovery and sustainable use.	3.1 Management committee established and operational by end Year 2. 3.2 Redonda designated as an Environmental Protected Area, encompassing the land and surrounding sea by end Year 3.	3.1 Redonda Management Committee ToR and meeting minutes. 3.2 Official designation of the protected area. 3.3 Redonda Management Plan (to at least final draft form).	Continued cooperation among stakeholders. Government willingness to protect Redonda, in accordance with its own national land use plan and legislation.

[4] Pre-project baseline of an estimated 62–65 feral goats present on Redonda (Bell & Daltry, 2012).

[5] Pre-project baseline of zero goats of this breed being kept on government land at the project start.

[6] Pre-project baseline of an estimated 5,500 black rats present on Redonda at the project start (Bell & Daltry, 2012, 2016).

[7] No previous monitoring programme was prescribed or implemented for any aspect of Redonda's biodiversity.

	3.3 Management plan prepared (Year 3).		
4. National capability to plan, manage and implement and monitor invasive species projects is raised, supported by enhanced technical skills and greater public awareness and cooperation.	4.1 At least 20 persons from Antigua trained on invasive species control and apply their skills towards Output 1 (by Year 2).[8] 4.2 At least 20 persons from Antigua trained on ecological monitoring and apply their skills towards Output 2 (by end Year 2).[9] 4.3 At least 1 local student studies Redonda for postgraduate degree (Years 2 and 3). 4.4 At least 5 persons from Antigua gain increased skills and experience in managing projects and conservation sites (by Year 3). 4.5 At least 75% of Antiguans, Barbudans and Montserratians know about the project and are able to explain why Redonda merits conservation (end Year 2).[10]	4.1 Training workshop and field reports. Names of trainees participating in fieldwork. Self-assessment competence questionnaires by the trainees, and appraisals by trainers and field team leaders. 4.2 As 4.1. 4.3 Student research thesis/ theses. 4.4 Before and after self-appraisals by participating government and NGO staff. 4.5 Interviews of representative samples of general public (out of the total of approximately 90,000 on Antigua, Barbuda and Montserrat).	Trained expertise remains in Antigua & Barbuda. Increased knowledge results in positive attitudes and behaviours.
Activities (each activity is numbered according to the output that it will contribute towards, for example 1.1, 1.2 and 1.3 are contributing to Output 1) 1.1 Complete Operational Plan and SOPs to remove goats and eradicate rats 1.2 Capture and transfer goats from Redonda to enclosed government farmland on Antigua.			

[8] At the project start, only five local persons (all affiliated to the EAG) had previous experience of conducting rat eradications and/or rodent biosecurity in natural landscapes.

[9] At the project start, around 8 persons (most of them EAG staff or volunteers) were known to have had previous experience of surveying and monitoring wildlife on offshore islands.

[10] Based on the questionnaire survey conducted in Year 1, most persons knew little about Redonda at the start of this project (e.g. far fewer than half were aware it has endemic reptiles and supports breeding colonies of the national bird, the magnificent frigatebird). We assume 0% of the population knew of this project prior to 2016.

1.3 Establish baiting grid on Redonda and eradicate rats.

1.4 Establish biosecurity surveillance system to prevent incursions, and monitor Redonda every 2 months to verify no invasive vertebrates remain

1.5 Publish technical report(s) detailing the methods, results and any lessons learned from Output 1.

1.6 Incorporate biosecurity system into the costed management plan for Redonda (re: 3.4)

2.1 Project scientists design and agree standardised methods to monitor birds, reptiles, bats, invertebrates, plants, soil and microclimate.

2.2 Conduct monitoring as per 2.1 during the grant period (before and after removing the goats and rats).

2.3 Finalise manual detailing the monitoring methods, incorporating lessons learned from 2.2.

2.4 Publish technical reports detailing the results and lessons learned from Output 2

2.5 Incorporate ecological monitoring plan into the costed management plan for Redonda (re: 3.4)

3.1 Complete stakeholder consultations in Antigua and Montserrat.

3.2 Prepare and submit technical proposal to Cabinet to designate the Redonda Environmental Protected Area (EPA)

3.3 Quarterly management meetings of the Redonda EPA Management Committee.

3.4 Develop a costed 10-year management plan for the protected area using a participatory process.

4.1 Plan multi-media campaign to communicate project to the public on Antigua and Barbuda and neighbouring states

4.2 Implement campaign, including media releases, signage and phone-in radio shows, and evaluate impact on public

4.3 Analyse training needs of field personnel.

4.4 Conduct training classes and on-the-job mentoring for local personnel participating in eradication and biosecurity activities (re Output 1)

4.5 Conduct training classes and on-the-job mentoring for local personnel participating in biodiversity monitoring (re Output 2)

4.6 Local technicians participate in project meetings and key field activities with FFI training and mentoring where needed.

4.7 Evaluate impact of 4.4–4.6 on the competences of local personnel in government and NGO sectors.

4.8 Student research on Redonda's biodiversity and management for postgraduate degree(s).

Other Project Management activities:-

X.1 Project inception meeting

X.2 Project Steering Committee established and meets regularly to oversee project activities

X.3 Project biannual reports/ donor technical and financial reports

X.4 Monthly financial accounts

X.5 End of project Audit

Annex 2 Report of progress and achievements against final project logframe for the life of the project

Project summary	Measurable Indicators	Progress and Achievements
Impact **Significant recovery and regeneration of threatened species and habitats on Redonda is a source of national pride and directly informs and inspires other Caribbean nations to eliminate harmful invasive species.**		Compelling signs of ecosystem recovery since Year 1, including: • 8.4-fold increase in the density of Critically Endangered Redonda ground lizards *Pholidoscelis atratus* (from 111.7/ ha in Year 1 to 935.3/ha by end of Year 3), and 3.2-fold increase in the density of Critically Endangered Redonda tree lizards *Anolis nubilus* (from 795.5/ ha in Year 1 to 2,545.7/ha by end of Year 3). • A more than eight-fold increase in butterflies, moths, beetles, crickets and other invertebrates sampled since Year 1. • Over 20-fold increase in vegetation cover and biomass, including hundreds of healthy new tree saplings – the first new trees to have grown on Redonda in many decades. Even at the height of the dry season, the area of substrate covered by vegetation has increased from barely 1% to more than 50%. • First record of bats (species seen in flight only and not yet identified) • Number of bird species on the island has increased from 9 species (seven species of seabirds, plus peregrines and zenaida doves) in Year 1 to 23 species recorded by the end of Year 3. The 14 colonizers being Audubon's shearwater, Caribbean elaenia, pearly-eyed thrasher, bananaquit, yellow warbler, American kestrel, scaly-necked pigeon, Caribbean martin, grey kingbird, American oystercatcher, white egret, barn swallow, an unidentified hummingbird, and a small finch tentatively identified as the Lesser Antillean bullfinch, all of which are native to this region. • Where there are trees, a layer of leaf litter is now forming, creating important microhabitats for invertebrates and the rare Redonda pygmy gecko (*Sphaerodactylus* sp. nov.). Annual soil monitoring data shows soils in these areas are rapidly changing in structure and chemistry and retaining more moisture. Feedback from the public and decision makers shows a high level of pride in these achievements. For example, Honourable Molwyn Joseph, Minister of Health and

Project summary	Measurable Indicators	Progress and Achievements
		the Environment said: "*I am immensely proud that my ministry has been a driving force in the development of this major initiative. Restoring Redonda to its full glory will be a great achievement for our country*", and many members of the public have expressed very positive sentiments through social media (see quotes in section 3.1, Output 4). The rat eradication, biodiversity monitoring and protected area management planning methods from this project are being cited and emulated by other projects, e.g. • Darwin Plus project DPLUS060 on Prickly Pear Cays, Anguilla (rat eradication, biodiversity monitoring and protected area planning) • Mount Obama National Park on Antigua (protected area management planning) • Pine Cays Rat and Cat Eradication, Turks & Caicos (rat eradication and biodiversity monitoring).
Outcome **The permanent removal of harmful invasive species triggers the recovery of endemic species, habitats and ecological processes on Redonda, and enhances Antigua & Barbuda's natural capital and conservation capacity.**	0.1 No invasive mammals remain on Redonda by project end. 0.2 Net increase by at least 10% in abundance of fast-breeding native species by Year 3. 0.3 Net increase by at least 10% in vegetation cover by Year 3.	0.1 The last known rats on Redonda died in early March 2017, and the last goats were removed in April 2017. No invasive mammals have been detected on the island since then, in spite of many surveys (at least once every quarter, for up to one week per visit, plus a major three-week survey in 2018 to search for the animals, their droppings, tracks and other signs, and use detection tools such as permanent bait stations, tracking plates, non-toxic lures and camera traps). 0.2 Monitoring using point count methods from 2016 through 2019, validated by more detailed mark-recapture studies in 2017 and 2018, has shown that the density of the endemic Redonda ground lizard *Pholidoscelis atratus* and Redonda tree lizard *Anolis nubilus* (both Critically Endangered) has increased by more than eight-fold and three-fold respectively in the two years since rats and goats were removed (see above). Invertebrate monitoring data from indicate a more than eight-fold increase since Year 1. There were only three fig trees *Ficus citrifolia* at the start of Year 1 (all three being extremely old, severely cropped by goats, and showing zero sign of recruitment) on parts of

Project summary	Measurable Indicators	Progress and Achievements
		the island accessible on foot, and, by the end of Year 3, these had been joined by many hundreds of healthy saplings. 0.3 Fixed point photographs show vegetation cover has increased by more than 20-fold: Most areas that were bare at the start of the project are now covered in grasses, cacti herbaceous plants and other plants, even at the height of the dry season. One of the most remarkable changes has been in the appearance of hundreds of new native tree saplings in many parts of the island: the first trees to have successfully germinated and grown here in decades. In addition to removing invasive mammals, the project team removed three harmful invasive alien plant species. The Australian casuarina tree *Casuarina equisetifolia* was ring-barked and injected with glyphosate to prevent the spread of this invasive alien. *Leucaena leucocephala* seedlings and clumps of Guinea grass *Megathyrsus maximus* were manually uprooted. No more individuals were found on the last survey in March 2019, but surveillance is ongoing.
Output 1. **Alien invasive vertebrates (rats and goats) successfully removed from Redonda, with systems in place to prevent (re)invasions.**	1.1 No goats on Redonda by end of Year 2. 1.2 Rare breed goats from Redonda housed on enclosed government farmland on Antigua by end Year 1. 1.3 No rodents on Redonda by end of Year 2.	All three indicators were achieved in Years 1 and 2. 1.1 Goats were removed from Redonda in Year 1, and Redonda was confirmed to be goat free in May 2018. 1.2 By the end of Year 1, over 40 goats were housed at the fully enclosed Veterinary & Livestock Division facility on Antigua. (NB In Year 3, most of the goats and their progeny were spread across an additional two locations to give the animals access to more grazing and reduce the risk of disease outbreaks). Blood samples tested in Year 2 confirmed that the breed is of Spanish origin, and closely related to those of the Canaries and Cape Verde islands. 1.3 The rat eradication operation in Year 1 was fully successful, with the last know rats killed in March 2017. In Year 3, the project's rat eradication experts undertook the 'final check' - an intensive island-wide survey for three weeks - that verified the island is rodent-free. This was in line with international best practice to wait at least 12 months in the Tropics before declaring a rat eradication successful (on the grounds that this gives enough time for any

Project summary	Measurable Indicators	Progress and Achievements
		survivors to multiply and become more readily detected). Redonda was officially declared rodent-free at the end of that final check, in July 2018.
Activity 1.1 Complete Operational Plan and SOPs to remove goats and eradicate rats.		Completed. Operational plans for removing the feral goats and for eradicating rats, as well as associated SOPs, were produced in Year 1, through a series of field visits and consultations led by the project's invasive species specialists and advisers. The technical reports were peer-reviewed by other specialists, including the Islands Eradication Advisory Group: • Campbell, K., Daltry, J.C. *et al.* (2016) *Redonda Feral Goat Rescue: Operational Plan*. Redonda Restoration Programme, St John's, Antigua. • Bell, E.A. & Daltry, J.C. (2016) *Operational Plan for the Eradication of Black Rats* Rattus rattus *From Redonda (Antigua and Barbuda)*. Redonda Restoration Programme, St John's, Antigua. As part of the invasive species eradication planning process in early Year 1, the project also developed guidelines and protocols for ensuring the safety of all persons required to work on Redonda. The health and safety plan was peer-reviewed by the UK-based Expedition Care Programme, and all fieldworkers have been required to read and abide by it: • Bell, E.A (2016) *Health and Safety Plan for Fieldworkers on Redonda*. Redonda Restoration Programme, St John's, Antigua.
Activity 1.2 Capture and transfer goats from Redonda to enclosed government farmland on Antigua.		Completed. Over 40 goats were captured alive on Redonda in Year 1. Unweaned kids were hand-reared by local veterinarian Dr Fiona Francis while the rest were transferred to the new Veterinary and Livestock Division facility on Antigua. Animals that could not be moved (e.g. old males in obviously poor health) were humanely shot by Peter Haverson, with permission. Mr Haverson conducted a final search of Redonda in Year 2 Q1 and concluded no goats remained.
Activity 1.3 Establish baiting grid on Redonda and eradicate rats.		Completed. A grid of 469 bait stations was established at 30-m intervals across all accessible areas in Year 1 Q4. Klerat bait was deployed across the island for 7 weeks in the bait stations and by aerial drops from helicopter in areas that could not be accessed safely. Up to a dozen field staff and trained volunteers worked on

Project summary	Measurable Indicators	Progress and Achievements
		the operation at any one time. The last two known rats on Redonda were detected and killed in the second week of March 2017. The total quantity of bait consumed by the rat population was 170 kg.
Activity 1.4 Establish biosecurity surveillance system to prevent incursions and monitor Redonda every 2 months to verify no invasive mammals remain.		Completed (but ongoing indefinitely, post-project). Biosecurity plan and protocols were developed in Years 1 and 2 and continued to be implemented. Biosecurity surveillance visits were conducted at least once every quarter to search the island for invasive mammals, plus additional checks were conducted by team members whenever visiting Redonda for wildlife surveys or other purposes. 39 permanent bait stations were installed on Redonda at the end of Year 1 to help detect and kill rodents (and remain in active service).
Activity 1.5 Publish technical report(s) detailing the methods, results and any lessons learned from Output 1.		Completed. The project has produced a suite of illustrated technical reports during the grant period, as well as weekly progress updates during the rat eradication operation. The final technical reports are: • Bell, E.A., Ibbotson, J., Challenger, S. & Daltry, J.C. (2017) *Technical Report on the Eradication of Black Rats* Rattus rattus *from Redonda (Antigua and Barbuda)*. Report from Wildlife Management International Ltd and Fauna & Flora International to the Redonda Restoration Programme, St John's, Antigua. • Haverson, P.J. & Janzan, S. (2017) *Technical Report on the Removal and Relocation of Feral Goats* Capra hircus *From Redonda (Antigua and Barbuda).* Report to the Redonda Restoration Programme, St John's, Antigua. • Bell, E.A. & Challenger, S. (2018) *Technical Report on the Final Check Following the Eradication of Black Rats* Rattus rattus *From Redonda (Antigua and Barbuda), June-July 2018*. Report from Wildlife Management International Ltd and Fauna & Flora International to the Redonda Restoration Programme, St John's, Antigua. Several of the above contain confidential information, however, so will not be posted online in full. The project's methods for eradicating rats and removing goats have also been published in a peer-reviewed journal and various conference proceedings:

Project summary	Measurable Indicators	Progress and Achievements
		• Challenger, S., Camacho, R., Daltry, J.C. & Hill, A. (2019) Redonda reborn: The impact of invasive species removal on a Caribbean island ecosystem. *Paper presented at the 4th Conference of the Caribaea Initiative, Dominican Republic.* • Daltry, J.C. & Bell, E.A. (2018) Can brodifacoum save endangered species? Recent experiences from the West Indies. *Outlooks on Pest Management*, 18, 80–85. • Herrel, A., Losos, J., Daltry, J., Challenger, S. & Donihue, C. (2018) Recovery of an island ecosystem after eradication of rats and goats: the lizards of Redonda. *Paper presented at the 3rd Conference of the Caribaea Initiative, Guadeloupe.* • Challenger, S., Steele, S., Daltry, J., Lawrence, N. Bell, E., Jeffery Brown, H. & Haverson, P. (2018) Early impacts of invasive species removal on a remote Caribbean island ecosystem. *Paper presented to the Latin America and Caribbean Conference on Conservation Biology, Trinidad.* • Lawrence, S.N., Challenger, S., Bell, E.A., Daltry, J.C. & Steele, S.M. (2017) Relocating feral goats and eradicating Eurasian ship rats to save Redonda's birds. *Program and Abstracts: BirdsCaribbean, 21st Regional Meeting, Cuba.*
Activity 1.6 Incorporate biosecurity system into the costed management plan for Redonda (re: 3.4).		Completed. Biosecurity objectives, key tasks and costs were developed in Years 1 and 2 and incorporated into the management plan in Year 3 as part of Activity 3.4.
Output 2. **Monitoring system established to measure the responses of fauna, flora and ecological processes to the removal of alien invasive vertebrates.**	2.1 Rapid methods devised and established for monitoring short- and long-term changes in major taxa and abiotic characters (in Year 1, tested and refine by Year 3). 2.2 Status of major taxa and abiotic characters monitored as per 2.1 before and after removing the goats and rats (every year).	Both indicators were achieved: 2.1 Rapid monitoring methods were developed in Year 1 and further re-evaluated and refined during Years 2 and 3. These cover a wide range of taxa, both terrestrial and marine, as well as their habitats. 2.2 The third round of annual terrestrial surveys was conducted in Q4 using standardised methods. These data are being compared to the baselines in Year 1 (and pre-project records where available) to measure changes. Note that although marine monitoring was not factored into the original proposal, the project team secured additional support from Waitt Foundation to conduct transects and photo-quadrats of coral reefs and marine fish near to the island.

Project summary	Measurable Indicators	Progress and Achievements
		The project team conducted the first round of marine surveys in Year 1 and a second, longer round of marine surveys in Year 3.
Activity 2.1 Project scientists design and agree standardised methods to monitor birds, reptiles, bats, invertebrates, plants, soil and microclimate.		Completed. Methods were developed in consultation with local scientists and refined through Activities 2.2 and 2.3. The monitoring programme covers a range of taxa and other components of this ecosystem including: Birds (whole colony seabird counts, five permanent seabird transects, species checklist, and land bird point counts, conducted at least once a year); Reptiles (over 100 point counts for lizards conducted at least once a year, with more intensive mark-recapture studies every 5 years); Invertebrates (using 14 pitfall traps and 2 malaise nets in fixed locations, conducted at least once a year); Plants (compilation of a species checklist and fixed point photos taken from 20 sites at least once a year); Marine fish (using 8 transects at 10-metre depth); Coral reefs (using 8 fixed photo quadrats); and Soil properties (evaluated in 11 fixed locations once a year using a professional field testing kit). The project was also gifted a drone from Global Wildlife Conservation to monitor changes in vegetation and birdlife across the island, including areas too dangerous to access on foot.
Activity 2.2 Conduct monitoring as per 2.1 during the grant period (before and after removing the goats and rats).		Completed (but ongoing indefinitely, post project). Using the agreed standardised methods (2.1), data were collected in Years 1, 2 and 3 on the diversity and abundance of birds, reptiles, invertebrates (terrestrial and marine), plants and reef fish. Soil properties were also monitored annually. However, monitoring of microclimates ceased after Hurricane Maria destroyed the dataloggers in September 2017. In early 2017, and again in early 2018, we hosted a team of herpetologists from Harvard and the National Museum of Natural History in Paris to study how removing invasive mammals affects the population sizes, ecology and even evolution of the island's endemic and Critically Endangered lizards: They plan to return every few years. MS Excel files have been developed to store and share data, and all georeferenced data were entered into EIMAS, the national DoE database, to support decision making. The manual of the monitoring methods used on Redonda has been updated to support consistency in the methods used from one year to the next, even if field personnel change over time. The field personnel

Project summary	Measurable Indicators	Progress and Achievements
		learned and adopted the KOBO Toolbox to streamline the routine collection and storage of standardized field data.
Activity 2.3 Finalise manual detailing the monitoring methods, incorporating lessons learned from 2.2.		The manual of methods was prepared in Year 1: • Janzan, S. (2017) *Biodiversity Monitoring Manual: First Edition*. Prepared for the Redonda Restoration Programme by Fauna & Flora International, Cambridge, UK. We made some adjustments in Years 2 and 3, including the addition of some birds and invertebrates that had not been recorded in previous years.
Activity 2.4 Publish technical reports detailing the results and lessons learned from Output 2.		The project has produced a suite of illustrated technical reports during the grant period (but several of these need to be copy-edited before being posted online): • Lindsay, K, Daltry, J.C., Challenger, S., Otto, A., Lawrence, S.N. (2019) *Assessment and Survey of the Flora of Redonda Two Years Post-Rat Eradication and Feral Goat Removal.* Report from Natural Resources Management Initiatives to the Redonda Restoration Programme, St. John's, Antigua. • Steele, S. & Camacho, R. (2018) *Baseline Survey of Redonda's Nearshore Marine Environment*. Fauna & Flora International, Cambridge, UK. • Thomas, C. (2018) *Redonda Plant Survey*. Report from the Environmental Awareness Group to the Redonda Restoration Programme, St John's, Antigua.
Activity 2.5 Incorporate ecological monitoring plan into the costed management plan for Redonda (re: 3.4).		Completed. The monitoring objectives, key tasks and costs were incorporated into the management plan as part of Activity 3.4.
Output 3. **Redonda becomes a protected area in accordance with the Sustainable Island Resource Management Zoning Plan for Antigua & Barbuda, with an effective structure to**	3.1 Management committee established and operational by end Year 2. 3.2 Redonda designated as an Environmental Protected Area,	The indicators have been achieved: 3.1 The Redonda Steering Committee, established in Year 1, is working well, and, as predicted, evolving into the protected area Technical Advisory Committee and Management Board for Redonda, chaired by the Department of Environment. FFI and other partners and stakeholder representatives will continue to serve on the committee for the foreseeable future.

Project summary	Measurable Indicators	Progress and Achievements
manage its ongoing ecological recovery and sustainable use.	encompassing the land and surrounding sea by end Year 3. 3.3 Management plan prepared (Year 3).	3.2 The project team submitted the proposal to Cabinet to establish the Redonda Ecosystem Reserve, which was approved unanimously at the end of Year 3. At the time of writing, the new reserve is being officially gazetted, with a view to legal completion within the next 2-3 months (i.e. well before the end of 2019). At 24,159 hectares, this is believed to be the largest actual biodiversity reserve in the Eastern Caribbean [although the French Antilles have on paper a larger sanctuary for marine mammals, there appears to be no restrictions on activities and its main purpose is awareness raising]. The national press leaked the announcement that Redonda is becoming a reserve: https://antiguaobserver.com/redonda-to-be-designated-a-nature-reserve/ The Cabinet furthermore approved some necessary amendments to the 2015 Environmental Protection and Management Act to facilitate the new ridge-to-reef protected area: the first of its kind in Antigua and Barbuda. While some regulations remain to be developed, Redonda is already being treated by the government and stakeholders as a strict nature reserve (e.g. it is necessary to seek permission to go to the island or collect specimens, and permission is granted only if the visitors are supervised by a member of the project team). 3.3 Completed. The management plan has been prepared following a highly participatory process guided by Protected Area Management Expert Mike Appleton, incorporating data, consultations and the various plans (biosecurity plan, biodiversity monitoring plan) from other outputs. The plan is already being implemented by the Department of Environment, EAG, FFI and our partners.
Activity 3.1 Complete stakeholder consultations in Antigua and Montserrat.		Completed. Although the work plan in the proposal indicated consultations would cease after Year 1, this was an ongoing activity to solicit cooperation on the biosecurity measures (Activity 1.6), foster support for protecting Redonda (Activity 3.2) and to engage stakeholders in management planning (Activity 3.4). The project team conducted five visits to Montserrat during the grant period and held numerous small and large meetings with stakeholders on Antigua. All the consultations were very informative and positive, with all stakeholders expressing support for the protection of Redonda and its waters. The project team also conducted two visits to consult stakeholders in St Kitts and Nevis (also close to Redonda) and two visits to Barbuda in Years 2 and 3.

Project summary	Measurable Indicators	Progress and Achievements
Activity 3.2 Prepare and submit technical proposal to Cabinet to designate the Redonda Environmental Protected Area (EPA).		Completed. The nomination document for proposing Redonda as a protected area (as the "Redonda Ecosystem Reserve") was submitted to Cabinet in Year 3 and approved in full. This was viewed by the ministers as an excellent way to demonstrate and deliver its commitments to CBD and other conventions, especially in light of the very high level of public support for protecting Redonda (even in Year 1, a public poll by the EAG found over 96% of citizens approved of the idea of establishing a nature reserve). The development of the nomination document took a year longer than originally anticipated due to the Steering Committee's decision to take the opportunity to protect more of the seas around Redonda, as well as the island. Because very little was known about the marine area at the start of the project, the project team conducted more extensive surveys in Year 3, assisted with a drop camera, and were able to demonstrate the national and global significance of the surrounding marine ecosystem. In total, 30 Globally Threatened, 12 Near Threatened species and 19 Data Deficient species have been found in the project site, and more are expected with further research. The new ridge-to-reef Redonda Ecosystem Reserve is vastly larger than originally anticipated, at 24,159 hectares, including a newly discovered and seemingly relatively pristine 180 km^2 coral bank to the north of the island.
Activity 3.3 Quarterly management meetings of the Redonda EPA Management Committee.		Completed (and ongoing). As anticipated, the Project Steering Committee that was established in Year 1 has evolved into the protected area Technical Advisory Committee and Management Board to run the Redonda Ecosystem Reserve. The committee meets every quarter and includes senior representatives from all the government agencies, NGOs and key stakeholders (see Annex 4), chaired by the Department of Environment.
Activity 3.4 Develop a costed 10-year management plan for the protected area using a participatory process.		Completed (but as a 5-year management plan). The management plan was prepared using a highly participatory process in Year 3, drawing on the findings and outputs from other project activities, including the biodiversity monitoring plan and biosecurity plan. It proved too difficult to plan for the next *10* years, however, because (a) the terrestrial ecosystem is changing so rapidly that

Project summary	Measurable Indicators	Progress and Achievements
		management needs and opportunities are liable to change accordingly, and (b) There are still large gaps in our knowledge of much of the marine area that need to be addressed before prescribing how to manage the whole reserve.
Output 4. **National capability to plan, manage and implement and monitor invasive species projects is raised, supported by enhanced technical skills and greater public awareness and cooperation.**	4.1 At least 20 persons from Antigua trained on invasive species control and apply their skills towards Output 1 (by Year 2) 4.2 At least 20 persons from Antigua trained on ecological monitoring and apply their skills towards Output 2 (by end Year 2). 4.3 At least 1 local student studies Redonda for postgraduate degree (Years 2 and 3). 4.4 At least 5 persons from Antigua gain increased skills and experience in managing projects and conservation sites (by Year 3). 4.5 At least 75% of Antiguans, Barbudans and Montserratians know about the project and are able to explain why Redonda merits conservation (end Year 2).	The indicators have been achieved, indeed exceeded: 4.1 Approximately 35 nationals trained in total (18 women and 17 men): • 20 Antiguans government and NGO technicians learned and participated directly in the removal of goats and/or rats in Year 1 (listed in Year 1 Annual Report). • Further meetings and workshops led by the project team throughout Year 2 introduced more than 30 Antiguan government and NGO technical staff to practical methods for preventing, detecting and eradicating invasive alien species. • Three Antiguans participated in the Darwin Plus project DPLUS060 in Anguilla at the end of Year 2 to help acquire and exchange more skills regarding eradicating rats and island biosecurity • In Year 3, more than 20 government and NGO technicians took part in workshops and hands-on work to monitor and maintain the permanent bait stations on Redonda (Activity 1.4) and other islands around Antigua. Twelve of them learned how to identify and remove the invasive alien Guinea grass, that was discovered on Redonda in March 2019. • The training and experience gained from the Darwin project was applied to other sites in Antigua: For example, several of the EAG staff and volunteers planned and successfully implemented the eradication of rats from Maiden Island, a small islet off the West coast of Antigua, in Year 3. 4.2 Approximately 32 nationals (many of them the same individuals as in 4.1) gained increased knowledge and skills in monitoring wildlife and ecosystems, with technical support from FFI. • 12 nationals participated in the Year 1 workshop to design the monitoring programme. This included exercises to predict the ecological impacts of

Project summary	Measurable Indicators	Progress and Achievements
		eradicating alien species before identifying robust but rapid methods to measure and monitor them. • 15 staff and volunteers from the DoE, Fisheries Division, EAG and other organisations participated in the terrestrial and marine data collection on Redonda in Years 2 and 3. • In Year 2, Ms Challenger received training on drone use from Global Wildlife Conservation. • 12 staff and volunteers also learned and practised monitoring birds and reptiles on offshore islands closer to Antigua in Year 3. • Two persons undertook a training course in Jamaica in Year 3 to further advance their shorebird identification and survey skills. • Training and experience gained from the Darwin project was applied to other sites in Antigua: For example, several of the EAG and DoE staff and volunteers planned and successfully implemented a post-hurricane impact assessment of the endemic Barbuda warbler and magnificent frigatebird colony on Barbuda in Year 3. 4.3 Two students studied Redonda in Year 3. • Antiguan Shanna Challenger (female) has begun studying the behavioural ecology of boobies on Redonda for her Master of Science degree, with support from seabird specialists at the University of Roehampton, and • Antiguan Ruleo Camacho (male) started collecting data for his PhD study on the corals around Redonda in early Year 3. 4.4 Since the start of this project, FFI staff have worked alongside more than 40 Antiguans from government agencies, NGOs and the private sector, 16 of whom are members of the Project Steering Committee and most are colleagues from government agencies and NGOs. • The Project Coordinator Shanna Challenger gained vastly increased skills and experience in project management including budget management and facilitating workshops, including a one-week project management

Project summary	Measurable Indicators	Progress and Achievements
		training course in Cambridge and proposal writing from the National Climate Finance Advisor. • Natalya Lawrence attended a Durrell-sponsored course on endangered species management with Durrell Wildlife Conservation Trust in Jersey. • More than 25 Antiguans regularly participated in key technical workshops and fieldwork, and gained more expertise in project management, protected area planning and ecosystem restoration. • In Year 3, 12 Antiguans (plus two from Anguilla and one from St Vincent) also participated in a three-day training course on protected area management planning organise by the project and delivered by Mike Appleton (Vice-Chair for Capacity, World Commission on Protected Areas, and Director of Protected Areas, Global Wildlife Conservation). • Training and experience gained from the Darwin project was applied to other sites in Antigua: For example, DoE staff who attended the training have begun developing a management plan for the Mount Obama/ Boggy Peak National Park. 4.5 Based on the questionnaire survey conducted in Year 1, most persons knew very little about Redonda at the start of this project. To quantify how the change there has been in knowledge and attitudes, the EAG repeated the questionnaire survey that was conducted in Year 1 with 150 members of the public (90.5% were nationals of Antigua & Barbuda). The survey found 100% knew about the project and over 95% could explain why Redonda merits conservation (cf. the project target of at least 75%). Furthermore, 80% correctly answered every question about Redonda's rare and endemic wildlife, and those who could describe the harmful impacts of invasive species increased from 40.9% (Year 1 survey) to 70.9%. Almost every respondent (98%) agreed that Redonda and its surrounding seas should be designated as a protected area. Although we realise this sample would ideally be much larger to represent the national population, it is genuinely difficult to find anyone in Antigua or Montserrat who has not heard about the project.

Project summary	Measurable Indicators	Progress and Achievements
Activity 4.1 Plan multi-media campaign to communicate project to the public on Antigua and Barbuda and neighbouring states.		Completed in Year 1. The project's communication strategy was developed through a 2-day workshop with local stakeholders in May 2016, and the messages were refined using the findings from the questionnaire-based survey of local knowledge and attitudes towards Redonda.
Activity 4.2 Implement campaign, including media releases, signage and phone-in radio shows, and evaluate impact on public.		Completed. Actions in Year 1 included a joint media release and multiple articles in the local press, national television interviews, signage installed on Redonda (explaining the project's purpose), and public meetings. The Darwin project received further coverage from a wide range of media groups in Year 2, many of which centred on how the invasive species were removed (e.g. the BBC: http://www.bbc.co.uk/ news/world-latin-america-39748831) and increasingly on Redonda's native wildlife. The Project Coordinator made multiple appearances on national radio and television to present Redonda and the project. Both she and Natalya Lawrence (EAG) gave numerous presentations to local stakeholders, schools, church groups and other target audiences across Antigua. Redonda and the project also featured in a wide range of Antiguan tourism magazines (many of which are distributed to almost every hotel room in Antigua), *Zing* (LIAT regional airline inflight magazine), *Caribbean Beat* (Caribbean Airlines inflight magazine), the EAG annual calendar, FFI's magazine *Fauna & Flora*, blogs by team members, and much more. The Project Leader, with assistance from the FFI Communications staff, produced a major article about the project for *BBC Wildlife* magazine, which was published in May 2018. Online, new pages about the project was put on the websites of FFI (www.faunaflora.org/projects/redonda-restoration-programme) and DoE (e.g. https://environment.gov.ag/news/article/24), and a Facebook page was set up by the Project Coordinator to share project news and updates (Redonda Restoration Programme). Actions in Year 3 included multiple articles in local and international newspapers and magazines, national television interviews, conference papers (presented at two regional conferences), and much more. Among the project's more innovative public outreach activities in Year 3 were 'Redonda on the Road" – a roving galley of stunning images from the project presented at more than a dozen public venues such as the national museum, Independence Food Fair and Arbour Day Fair. The project also invited the presenters of the ABS TV show "*You For A Day*"

Project summary	Measurable Indicators	Progress and Achievements
		to step into the Project Coordinator's shoes and try their hand at monitoring wildlife and biosecurity checks on Redonda: this episode was broadcast nationally and through live streaming in Q3. It is almost impossible to estimate how many people have been reached to date, but within Antigua, we believe more than 90,000 people would have heard about the project through national and social media. It is difficult to find a resident who has *not* heard about the project. Feedback received to date from Antigua and other islands has been very positive and supportive. The impact of this activity was more formally assessed by repeating the questionnaire survey from 4.1 (see indicator 4.5).
Activity 4.3 Analyse training needs of field personnel.		Completed in Year 1. Training needs (to implement this project and for wider biodiversity conservation actions in Antigua and Barbuda) were assessed by the team leaders through consultations with the trainees and, where relevant, their line managers.
Activity 4.4 Conduct training classes and on-the-job mentoring for local personnel participating in eradication and biosecurity activities (re Output 1).		Completed. More than 20 Antiguans government and NGO technicians participated in the removal of invasive mammals in Years 1 and 2 and participating in the biosecurity workshops. Further training and mentoring in Year 3 again reached more than 20 individuals, many of whom received hands-on experience in checking and maintaining permanent bait stations on Redonda and other Antiguan islands and/or learned how to identify and destroy invasive plants. Using the training and experience they had gained from this project, several of the EAG staff and volunteers planned and successfully implemented the eradication of rats from Maiden Island, a small islet off the West coast of Antigua, in Year 3.
Activity 4.5 Conduct training classes and on-the-job mentoring for local personnel participating in biodiversity monitoring (re Output 2).		Completed. More than a dozen Antiguans were involved in designing and implementing the monitoring programme, with training and support from FFI, in Years 1 and 2. Fifteen individuals participated in terrestrial and marine surveys in Year 3, including government staff, NGO staff and students (Activity 2.2), with mentoring from the Project Leader and other biologists affiliated to this project. Two nationals – Shanna Challenger and Natalya Lawrence – also undertook more

Project summary	Measurable Indicators	Progress and Achievements
		advanced training on wader surveys and identification at a one-week training course run by BirdsCaribbean in Jamaica in Year 3.
Activity 4.6 Local technicians participate in project meetings and key field activities with FFI training and mentoring where needed.		Completed. Well over 30 local persons participated in project management and implementation in Years 1 and 2, including 16 Antiguans on the Project Steering Committee (closely involved in most aspects of project planning and evaluation) plus others invited to take part in key workshops. In Year 3, 19 Antiguans participated in fieldwork as well as protected area planning and other technical workshops. At the request of technical staff from both the government and EAG, FFI organised a special 3-day training class for 15 individuals on protected area management planning in Year 3, which was delivered by Mike Appleton (WCPA/GWC). Two female staff from the Anguilla National Trust also attended the course to assist them with protected area management planning under DPLUS0060 in Anguilla. We also strongly encouraged and enabled our Antiguan colleagues to gain additional training from other organisations where appropriate. For example, Ms Challenger received training on drone use from Global Wildlife Conservation in and proposal writing from the National Climate Finance Advisor in Year 2, while Natalya Lawrence attended a sponsored course on endangered species management from Durrell Wildlife Conservation Trust in Jersey.
Activity 4.7 Evaluate impact of 4.4–4.6 on the competences of local personnel in government and NGO sectors.		Completed. We decided to complete the protected area management planning course and final round of monitoring (in February and March 2019) before re-assessing the competences of Antiguan personnel who gained experience and training from this project. Trainees evaluated the project's impact on a range of competences using a self-scoring system, ranging from 0 (no impact) to 100 (substantial increase in their knowledge and skills).
Activity 4.8 Student research on Redonda's biodiversity and management for postgraduate degree(s).		Completed (and ongoing). In Year 2 Shanna Challenger began studying the behavioural ecology of boobies on Redonda for her MSc degree, with support from seabird specialists at the University of Roehampton. In Year 3, fellow Antiguan Ruleo Camacho has started developing his MSc study on the corals around Redonda. Ms Challenger is expected to work on this full time from September 2019 onwards and submit her thesis in 2020 or early 2021.

Annex 3 Standard Measures

Code	Description	Total	Nationality	Gender	Title or Focus	Language	Comments
Training Measures							
1a	Number of people to submit PhD thesis						
1b	Number of PhD qualifications obtained						
2	Number of Masters qualifications obtained						
3	Number of other qualifications obtained						
4a	Number of undergraduate students receiving training						
4b	Number of training weeks provided to undergraduate students						
4c	Number of postgraduate students receiving training (not 1-3 above)	2	Antiguan	1 female 1 male	MSc on Behavioural ecology of Redonda seabirds; PhD on the reefs around Redonda	English	Underway
4d	Number of training weeks for postgraduate students						
5	Number of people receiving other forms of long-term (>1yr) training not leading to formal qualification (e.g., not categories 1-4 above)	20	18 Antiguan, 1 Vincentian, 1 St Kittian,	9 female, 11 male	Invasive species eradications and biosecurity Biodiversity surveys and monitoring Education and outreach	English	

Code	Description	Total	Nationality	Gender	Title or Focus	Language	Comments
Training Measures							
6a	Number of people receiving other forms of short-term education/training (e.g., not categories 1-5 above)	20	18 Antiguan, 2 Anguillian[11]	9 female, 11 male	Invasive species eradications and biosecurity Biodiversity surveys and monitoring Protected area management planning	English	Vocational training for adults. (Figures do not include school classes)
6b	Number of training weeks not leading to formal qualification						
7	Number of types of training materials produced for use by host country(s) (describe training materials)	1	Antigua & Barbuda		*Protected Area Management Planning Manual* (and accompanying training PowerPoint package) provided by Mike Appleton (Vice-Chair of Capacity, World Commission on Protected Areas).	English	
Research Measures		**Total**	**Nationality**	**Gender**	**Title**	**Language**	**Comments/ Weblink if available**
9	Number of species/habitat management plans (or action plans) produced for Governments, public authorities or other implementing agencies in the host country (ies)	2	Antigua & Barbuda		Bell, E.A., Challenger, S. & Daltry, J.C. (2017) *Biosecurity Plan, Redonda (Antigua and*	English	Developed using highly participatory process. Lead

[11] In addition to West Indian beneficiaries, in 2017, FFI contracted 6 British (2 female, 4 male) and 2 Irish (1 female, 1 male) interns who also each spent a minimum of 5 weeks on Redonda and received advanced training on goat removal and art eradication techniques.

Code	Description	Total	Nationality	Gender	Title or Focus	Language	Comments
Training Measures							
					Barbuda). Redonda Restoration Programme, St John's, Antigua. *Management Plan for the Redonda Ecosystem Reserve* (2019).		authors are female
10	Number of formal documents produced to assist work related to species identification, classification and recording.	2	Antigua & Barbuda		Janzan, S. (2017) *Biodiversity Monitoring Manual: First Edition*. Prepared for the Redonda Restoration Programme by Fauna & Flora International, Cambridge, UK. Lindsay, K, Daltry, J.C., Challenger, S., Otto, A., Lawrence, S.N. (2019) *Assessment and Survey of the Flora of Redonda Two Years Post-Rat Eradication and Feral Goat Removal*. Redonda Restoration Programme, St. John's, Antigua. (Annex contains photos for identification purposes).	English	
11a	Number of papers published or accepted for publication in peer reviewed journals	4			Daltry, J.C. (2016) *Copeoglossum redondae*. In *The IUCN Red List of Threatened Species 2016*: e.T47102774A47102780	English (all)	See Annex 5. Note: IUCN Red List accounts are peer-reviewed

Code	Description	Total	Nationality	Gender	Title or Focus	Language	Comments
Training Measures							
					Daltry, J.C. (2017) *Pholidoscelis atratus*. In *The IUCN Red List of Threatened Species 2017*: e.T50009685A121638486. Daltry, J.C. & Bell, E.A. (2018) Can brodifacoum save endangered species? Recent experiences from the West Indies. *Outlooks on Pest Management*, 18, 80–85. Donihue, C.M., Daltry. J.C., Challenger, S., Losos, J. & Herrel, A. Population increase and changes in behavior and morphology in the Redonda ground lizard (*Pholidoscelis atratus*) following the successful removal of alien rats and goats. *Integrated Zoology.* Plus news items published in *Oryx – the International Journal of Conservation* and *IRCF Reptiles & Amphibians* in 2018		
11b	Number of papers published or accepted for publication elsewhere	5			Holden, J. (2017) Redonda resurrection: Restoring an island gem to its former glory. *Fauna & Flora*, 7–11.	English (all)	See Annex 5

Code	Description	Total	Nationality	Gender	Title or Focus	Language	Comments
Training Measures							
					Daltry, J.C. (2018) A new dawn for Redonda. *BBC Wildlife*, May 2018, 46–52. Knight, T. (2018) Removal of rats and goats transforms Redonda. *Caribbean Compass,* September 2018, 12–13. Marshall, E. (2018) What is it like to work on a remote Caribbean island? *FFI Update* No. 33, p. 6. Lawrence, N. (2018) Redonda rebounded. *Zing Caribbean*, November–December 2018, p. 24. (Inflight magazine of LIAT airline).		
12a	Number of computer-based databases established (containing species/generic information) and handed over to host country	8			Bait stations; Lizards; Birds (land birds and seabirds); Terrestrial invertebrates (pitfall and malaise trap data); Soil samples; Marine fish; Corals; Fixed point photographs	English	All georeferenced data are also being entered into EIMAS, the Dept of Environment's national database
12b	Number of computer-based databases enhanced (containing species/genetic information) and handed over to host country						

Code	Description	Total	Nationality	Gender	Title or Focus	Language	Comments
Training Measures							
13a	Number of species reference collections established and handed over to host country(s)	2			Lichens of Redonda Terrestrial invertebrates of Redonda		
13b	Number of species reference collections enhanced and handed over to host country(s)						

Dissemination Measures		Total	Nationality	Gender	Theme	Language	Comments
14a	Number of conferences/seminars/workshops organised to present/disseminate findings from Darwin project work						
14b	Number of conferences/seminars/ workshops attended at which findings from Darwin project work will be presented/ disseminated.	8			Regional workshop on Invasive Alien Species, Montserrat, 2016. Regional conference of BirdsCaribbean, Cuba, 2017 Regional conference of Caribaea Initiative, St Kitts, 2017 Regional meeting of Critical Ecosystem Partnership Fund, Jamaica, 2018 Regional conference of Caribaea Initiative, Guadeloupe, 2018	English (plus some abstracts translated into French and/or Spanish)	

Dissemination Measures		Total	Nationality	Gender	Theme	Language	Comments
					Regional CARICOM meeting, Jamaica, 2018. Regional conference of LACCCB in Trinidad, 2018. Regional conference of Caribaea Initiative, Dominican Republic, 2019.		

Physical Measures		Total	Comments
20	Estimated value (£s) of physical assets handed over to host country(s)	£18,700	Camping equipment, computer, survey equipment (e.g. microscope, cameras, drop camera), rodenticide, goat pens (purchased using Darwin grant and matched funding).
21	Number of permanent educational, training, research facilities or organisation established		
22	Number of permanent field plots established	172	Fixed point photograph sites (33), Vegetation plots (5), Invertebrate pitfall traps (2 lines, each comprising 7 traps), invertebrate malaise traps (2), Seabird transects (5), Lizard and land bird point counts (100), Coral reef fixed point phot quadrats (8), Marine fish transects (8), Soil sampling points (11).

Financial Measures		Total	Nationality	Gender	Theme	Language	Comments
23	Value of additional resources raised from other sources (e.g., in addition to Darwin funding) for project work	£ 464,854					See section 8.2. Not including in-kind support

Annex 4 Aichi Targets

	Aichi Target	Tick if applicable to your project
1	People are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.	✓
2	Biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.	
3	Incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.	
4	Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.	
5	The rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.	
6	All fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.	
7	Areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.	
8	Pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.	
9	Invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.	✓
10	The multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.	
11	At least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.	✓
12	The extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.	✓
13	The genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.	✓

14	Ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.	
15	Ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.	✓
16	The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.	✓
17	Each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.	
18	The traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.	
19	Knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.	✓
20	The mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.	

Annex 5 Publications

Type * (e.g. journals, manual, CDs)	Detail (title, author, year)	Nationality of lead author	Nationality of institution of lead author	Gender of lead author	Publishers (name, city)	Available from (e.g. web link, contact address etc)
Journal *	Can brodifacoum save endangered species? Recent experiences from the West Indies. Daltry, J.C. & Bell, E.A. (2018). *Outlooks on Pest Management*, 18, 80–85.	UK	UK	Female	Research Information Ltd., UK	https://www.researchgate.net/publication/324675566_Can_Brodifacoum_Save_Endangered_Species_Recent_Experiences_from_the_West_Indies
Journal (news section)	Redonda island thrives after complex conservation project: magical transformation spells brighter future for Redonda's fantastic beasts. Knight, T. (2018) *IRCF Reptiles & Amphibians,* 25, 232–236.	UK	UK	Male	International Reptile Conservation Foundation, California, USA	http://www.ircf.org/journal/wp-content/uploads/2018/11/RA-25.3_232-236_Redonda.pdf
Journal (news section)	Redonda recovers rapidly after rodent and goat removal. Hochbach, J. (2018). *Oryx—the International Journal of Conservation,* 52, 605.	UK	UK	Female	Cambridge University Press, UK	https://www.cambridge.org/core/journals/oryx
Magazine *	Redonda resurrection: Restoring an island gem to its former glory. Holden, J. (2017). *Fauna & Flora,* 7–11.	UK	UK	Male	Fauna & Flora International (FFI), Cambridge, UK.	
Magazine	Redonda rebounded. Lawrence, N. (2018). *Zing Caribbean,* November–December 2018, p. 24. (Inflight magazine of LIAT airline).	Antigua	Antigua	Female	Gecko Publishing Ltd, Oxford, UK	https://www.ta-emags.com/customer-magazines/zing

Type * (e.g. journals, manual, CDs)	Detail (title, author, year)	Nationality of lead author	Nationality of institution of lead author	Gender of lead author	Publishers (name, city)	Available from (e.g. web link, contact address etc)
Magazine *	A new dawn for Redonda. Daltry, J.C. (2018). *BBC Wildlife*, May 2018, 46–52.	UK	UK	Female	BBC Wildlife, Immediate Media Company, Bristol, UK	
Online magazine	Island lizards shift to evolutionary fast-track after invasive goats and rats are eradicated. Giller, G. (2018) *Scientific American*, April 30, 2018. (NB Team members participated in this research, but regrettably this article was prepared by a journalist without consulting the project team or acknowledging the project sponsors).	USA	USA	Male	Scientific American, Springer Nature America, USA	https://www.scientificamerican.com/article/island-lizards-shift-to-evolutionary-fast-track-after-invasive-goats-and-rats-are-eradicated/
Magazine *	Removal of rats and goats transforms Redonda. Knight, R. (2018). *Caribbean Compass*, September 2018, 12–13.	UK	UK	Male	Compass Publishing Ltd, Bequia, St Vincent & the Grenadines	https://www.yumpu.com/en/CARIBBEANCOMPASS
Newsletter	What is it like to work on a remote Caribbean island? Marshall, E. (2018). *FFI Update* No. 33, p. 6.	UK	UK	Male	Fauna & Flora International (FFI), Cambridge, UK.	
Conference proceedings	Relocating feral goats and eradicating Eurasian ship rats to save Redonda's birds. Lawrence, S.N., Challenger, S., Bell, E.A., Daltry, J.C. & Steele, S.M. (2017).	Antiguan	Antiguan	Female	BirdsCaribbean	Program and Abstracts: BirdsCaribbean, 21st, Regional Meeting, Cuba

Type * (e.g. journals, manual, CDs)	Detail (title, author, year)	Nationality of lead author	Nationality of institution of lead author	Gender of lead author	Publishers (name, city)	Available from (e.g. web link, contact address etc)
Conference Proceedings	Recovery of an island ecosystem after eradication of rats and goats: the lizards of Redonda. Herrel, A., Losos, J., Daltry, J., Challenger, S. & Donihue, C. (2018).	Belgium	France	Male	Third Conference of the Caribaea Initiative, Guadeloupe	https://caribaea.org/en/
Conference Proceedings	Early impacts of invasive species removal on a remote Caribbean island ecosystem. Challenger, S., Steele, S., Daltry, J., Lawrence, N., Bell, E., Jeffery Brown, H. & Haverson, P. (2018).	Antiguan	Antiguan	Female	Latin America and Caribbean section, Society for Conservation Biology, Washington DC, USA.	https://conbio.org/groups/sections/latin-america-caribbean
Conference Proceedings *	Redonda's nearshore marine habitat and its associated offshore banks. Camacho, R., Challenger, S., Steele, S. & Archibald, M. (2019).	Antiguan	Antiguan	Male	Fourth Conference of the Caribaea Initiative, Dominican Republic	https://caribaea.org/en/
Conference Proceedings *	Redonda reborn: The impact of invasive species removal on a Caribbean island ecosystem. Challenger, S., Camacho, R., Daltry, J.C. & Hill, A. (2019).	Antiguan	Antiguan	Female	Fourth Conference of the Caribaea Initiative, Dominican Republic	https://caribaea.org/en/
Technical report	*Preliminary Report on the Cultural Heritage of Redonda.* Waters, C., Brown, M. & Murphy, R. (2016).	USA	USA/ Antiguan	Male	National Parks Authority/ Redonda Restoration Programme (RRP), St John's, Antigua.	
Technical report	*Redonda Feral Goat Rescue: Operational Plan*. Campbell, K. *et al.* (2016).	Australian	USA	Male	Island	*Ibid*

Type * (e.g. journals, manual, CDs)	Detail (title, author, year)	Nationality of lead author	Nationality of institution of lead author	Gender of lead author	Publishers (name, city)	Available from (e.g. web link, contact address etc)
					Conservation/ RRP, St John's, Antigua.	
Technical report	*Operational Plan for the Eradication of Black Rats* Rattus rattus *from Redonda (Antigua and Barbuda).* Bell, E.A. & Daltry, J.C. (2016).	New Zealand & UK	New Zealand & UK	Female	Wildlife Management International Ltd (WMIL) and Fauna & Flora International (FFI)/ RRP, St John's, Antigua.	*Ibid*
Technical report	*Health and Safety Plan for Fieldworkers on Redonda*. Bell, E.A. (2016).	New Zealand	New Zealand	Female	WMIL/ RRP, St John's, Antigua	*Ibid*
Technical report	*Redonda Knowledge Surveys Report.* Lawrence, S.N. (2017).	Antiguan	Antiguan	Female	Environmental Awareness Group (EAG)/ RRP, St John's, Antigua.	*Ibid*
Technical report	*Biodiversity Monitoring Manual: First Edition*. Janzan, S. (2017).	Antiguan	Antiguan	Female	FFI/ RRP, St John's, Antigua	*Ibid*
Technical report	*Technical Report on the Removal and Relocation of Feral Goats* Capra hircus *From Redonda (Antigua and Barbuda).* Haverson, P.J. & Janzan, S. (2017).	UK & Antigua	UK	Male and female	RRP, St John's, Antigua.	*Ibid*
Technical report	*Technical Report on the Eradication of Black Rats* Rattus rattus *from Redonda (Antigua and Barbuda*). Bell, E.A., Ibbotson, J., Challenger, S. & Daltry, J.C. (2017).	New Zealand	New Zealand	Female	WMIL and FFI/ RRP, St John's, Antigua	*Ibid*

Type * (e.g. journals, manual, CDs)	Detail (title, author, year)	Nationality of lead author	Nationality of institution of lead author	Gender of lead author	Publishers (name, city)	Available from (e.g. web link, contact address etc)
Technical report	*Biosecurity Plan, Redonda (Antigua and Barbuda).* Bell, E.A., Challenger, S. & Daltry, J.C. (2017).	New Zealand	New Zealand	Female	WMIL and FFI/ RRP, St John's, Antigua	*Ibid*
Technical report	*Redonda Plant Survey*. Thomas, C. (2018).	Antiguan	Antiguan	Female	EAG/ RRP, St John's, Antigua.	*Ibid*
Technical report	*Assessment and Survey of the Flora of Redonda Two Years Post-rat Eradication and Feral Goat Removal.* Lindsay, K., Daltry, J.C., Challenger, S., Otto, A., Lawrence, S.N. (2019).	Antiguan	Antiguan	Male	Natural Resources Management Initiatives, FFI and EAG/ RRP, St. John's, Antigua	*Ibid*
Technical report	*Technical Report on the Final Check Following the Eradication of Black Rats* Rattus rattus *From Redonda (Antigua and Barbuda), June-July 2018*. Bell, E.A. & Challenger, S. (2018).	New Zealand	New Zealand	Female	WMIL and FFI/ RRP, St John's, Antigua	*Ibid*

Annex 6 Darwin Contacts

Ref No	23-003
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Annex 7 Supplementary material

Appended to this report are:-

a) A selection of images from Output 1
b) A selection of images from Output 2
c) A selection of images from Output 3
d) A selection of images from Output 4
e) List of Project Steering Committee members and their affiliations
f) Project media release (July 2016)
g) Peer-reviewed paper describing rat eradication methods and results
h) Article published in *Fauna & Flora* magazine (2017)
i) Article published in *BBC Wildlife Magazine* (May 2018)
j) Article published in the regional magazine *Caribbean Compass* (September 2018)
k) Article published in the national newspaper *Daily Observer* (March 2019)
l) Abstracts of papers presented in the Dominican Republic (May 2019)

Reports and other materials mentioned in this report can be provided on request.

Checklist for submission

	Check
Is the report less than 10MB? If so, please email to Darwin-Projects@ltsi.co.uk putting the project number in the Subject line.	✓
Is your report more than 10MB? If so, please discuss with Darwin-Projects@ltsi.co.uk about the best way to deliver the report, putting the project number in the Subject line.	
Have you included means of verification? You need not submit every project document, but the main outputs and a selection of the others would strengthen the report.	✓
Do you have hard copies of material you want to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number. However, we would expect that most material will now be electronic.	
Have you involved your partners in preparation of the report and named the main contributors	✓
Have you completed the Project Expenditure table fully?	✓
Do not include claim forms or other communications with this report.	